A GUIDE OF GOOD PRACTICES on SUSTAINABLE URBAN MOBILITY
SUM PROJECT

Published by

A GUIDE OF GOOD PRACTICES on SUSTAINABLE URBAN MOBILITY
SUM PROJECT
Disclaimer statement

The Guide of Good Practices on Sustainable Urban Mobility has been produced as part of the SUM PROJECT - Sustainable Urban Mobility, which is co-financed by the Interregional Cooperation Programme INTERREG IVC, and belongs to the Priority 2: Environment and risk prevention, in particular to the sub-theme: Energy and sustainable transport under the European Regional Development Fund (ERDF).

The Interregional Cooperation Programme INTERREG IVC, financed by the European Union Regional Development Fund, helps Regions of Europe work together to share experience and good practice in the areas of innovation, the knowledge economy, the environment and risk prevention. EUR 302 million is available for project funding, more than that, a wealth of knowledge and potential solutions are also on hand for regional policy-makers.

This publication describes the information gathered by the partners of SUM Project and the European Commission cannot be held responsible for the outcome of any action or decision based on the information contained in this publication.

Interregional Cooperation Programme INTERREG IVC site:
www.interreg4c.net

Publisher:
Municipality of Vigo - (Lead Partner)
http://hoxe.vigo.org/

Authors

The Lead Partner – Municipality of Vigo, (Spain) with the contribution of all the Partners of SUM Project: AREAL - Regional Agency for Energy and Environment in the Algarve, Portugal; Municipality of Messina and Municipality of Reggio Emilia, Italy; Riga City Council, Latvia; City of Katowice, Poland; Municipality of Vratsa and Municipality of Sofia, REAP - Regional Energy Agency of Pazardjik, Bulgaria; Amiens City Council, France; The Skåne Association of Local Authorities and ESS - Energy Agency for Southeast, Sweden; Essex County Council, United Kingdom and INFO – Murcia Region Development Agency, Spain.

February, 2014
Edited paper copies: 200
Photographs provided by Project Partners

This publication is available digitally on the SUM Project site at:
www.sumproject.eu
# TABLE OF CONTENTS

## 1. INTRODUCTION AND CONTEXT

1.1. SUM PROJECT  
1.2. SUM PROJECT CONSORTIUM  
1.3. THE GUIDE OF GOOD PRACTICE  
1.4. EU POLICY CONTEXT ON SUSTAINABLE URBAN MOBILITY  

## 2. SUM PROJECT GOOD PRACTICES  

2.1. TABLE OF GOOD PRACTICES BY THEMATIC AREA  
2.2. A DETAILED DESCRIPTION OF THE GOOD PRACTICES  

**THEMATIC 1 – ELECTRIC MOBILITY**  
1.1. MILTON KEYNES TO TRIAL WIRELESS CHARGING FOR ELECTRIC BUSES – Milton Keynes (United Kingdom)  
1.2. USE OF ELECTRIC VEHICLES IN THE FLEET OF CESPA – Murcia (Spain)  
1.3. MOBI2GRID – PILOT EXPERIENCE ABOUT ELECTRIC MOBILITY – (Galicia/North of Portugal Euroregion).  
1.4. IMPLEMENTATION OF ELECTRIC VEHICLE CHARGING NETWORK IN FARO – (Portugal)  
1.5. EMOBILITY Malmö – DEMONSTRATION PROJECT TO LEARN MORE ABOUT PRACTICAL DAY TO DAY USE OF ELECTRICAL VEHICLES – Malmö (Sweden).  

**THEMATIC 2 – BIO-FUELS**  
2.1. ENERBIOALGAE – ENERGY USE OF BIOMASS IN DEGRADED WATER RESOURCES RICH IN MICROALGAE – Galicia (Spain)  

2.2. COLLECT THE COOKING OIL IS TO CARE FOR THE ENVIRONMENT – (Spain)  
2.3. AMEB PROJECT: BIOGAS AS AUTOMOTIVE FUEL – Murcia (Spain)  
2.4. INTRODUCING OF BROWN GAS TECHNOLOGY IN VEHICLES WITH COMBUSTION ENGINES – Bulgaria  
2.5. CNG (BIOMETHANE) AS A FUEL FOR SUSTAINABLE CITY DISTRIBUTION – Skåne region (Sweden)  

**THEMATIC 3 - OTHERS SUSTAINABLE URBAN MOBILITY PRACTICES**  
3.1. CONSOLIDATION OF GOODS AND SUSTAINABLE PROCUREMENT WITHIN THE MUNICIPALITY OF VÄXJÖ – Sweden  
3.2. ESSEX COUNTY COUNCIL TRAVEL PLAN – Essex (UK)  
3.3. SOFIA REAL TIME PUBLIC TRANSPORT INFORMATION – Sofia (Bulgaria)  
3.4. BUSCYCLETTE: A PUBLIC SERVICE DEDICATED TO BICYCLES – Amiens (France)  
3.5. CARTAGENA’S OLD TOWN, SUSTAINABLE CITY – Cartagena - (Murcia)  

## 3. LIST OF ALL THE REGIONAL STUDIES DEVELOPED BY THE PARTNES OF SUM PROJECT  

4.2 COLLECT THE COOKING OIL IS TO CARE FOR THE ENVIRONMENT – (Spain)  
4.3. MANAGEMENT SYSTEM FOR USED COOKING OILS IN THE ALGARVE REGION – Portugal  
4.2. AMEB PROJECT: BIOGAS AS AUTOMOTIVE FUEL – Murcia (Spain)  
4.2. INTRODUCING OF BROWN GAS TECHNOLOGY IN VEHICLES WITH COMBUSTION ENGINES – Bulgaria  
4.2. CNG (BIOMETHANE) AS A FUEL FOR SUSTAINABLE CITY DISTRIBUTION – Skåne region (Sweden)  
4.3. CONSOLIDATION OF GOODS AND SUSTAINABLE PROCUREMENT WITHIN THE MUNICIPALITY OF VÄXJÖ – Sweden  
4.3. ESSEX COUNTY COUNCIL TRAVEL PLAN – Essex (UK)  
4.3. SOFIA REAL TIME PUBLIC TRANSPORT INFORMATION – Sofia (Bulgaria)  
4.4. BUSCYCLETTE: A PUBLIC SERVICE DEDICATED TO BICYCLES – Amiens (France)  
4.5. CARTAGENA’S OLD TOWN, SUSTAINABLE CITY – Cartagena - (Murcia)  

5.2 COLLECT THE COOKING OIL IS TO CARE FOR THE ENVIRONMENT – (Spain)  
5.3. MANAGEMENT SYSTEM FOR USED COOKING OILS IN THE ALGARVE REGION – Portugal  
5.2. AMEB PROJECT: BIOGAS AS AUTOMOTIVE FUEL – Murcia (Spain)  
5.2. INTRODUCING OF BROWN GAS TECHNOLOGY IN VEHICLES WITH COMBUSTION ENGINES – Bulgaria  
5.2. CNG (BIOMETHANE) AS A FUEL FOR SUSTAINABLE CITY DISTRIBUTION – Skåne region (Sweden)  
5.3. CONSOLIDATION OF GOODS AND SUSTAINABLE PROCUREMENT WITHIN THE MUNICIPALITY OF VÄXJÖ – Sweden  
5.3. ESSEX COUNTY COUNCIL TRAVEL PLAN – Essex (UK)  
5.3. SOFIA REAL TIME PUBLIC TRANSPORT INFORMATION – Sofia (Bulgaria)  
5.4. BUSCYCLETTE: A PUBLIC SERVICE DEDICATED TO BICYCLES – Amiens (France)  
5.5. CARTAGENA’S OLD TOWN, SUSTAINABLE CITY – Cartagena - (Murcia)  

1.1 Sum project

SUM project’s aim is to promote the implementation of local/regional policies regarding sustainable urban mobility, trying to minimize three serious problems: CO2 emissions causing the greenhouse effect, energy dependence which puts us in a situation of high economic and political instability, and pollution of the cities which leads to serious consequences for our health and quality of life.

The overall objective of SUM Project is to contribute through interregional cooperation to promote and consolidate the sustainable urban transport mode, as universal and competitive, highlighting the potential of using electric and biofuel vehicles and other modes of sustainable transport and encouraging a dialogue to develop a joint European strategy aimed at strengthening the Sustainable Mobility.

The consortium was created to integrate complementary knowledge and experiences between members of two different natures and complementary in their knowledge and skills. Sum Project led by the Municipality of Vigo has an European consortium comprised by 14 partners of which 9 are Municipalities, 3 are Energy agencies, 1 is an Association of local authorities and 1 is a Regional development agency.

SUM PROJECT CONSORTIUM

MUNICIPALITY OF VIGO, AREAL - REGIONAL AGENCY FOR ENERGY AND ENVIRONMENT IN THE ALGARVE, MUNICIPALITY OF MESSINA, MUNICIPALITY OF REGGIO EMILIA, RIGA CITY COUNCIL, CITY OF KATOWICE, MUNICIPALITY OF VRATSA, SOFIA MUNICIPALITY, REAP - REGIONAL ENERGY AGENCY OF PAZARDJIK, AMIENS CITY COUNCIL, THE SKANE ASSOCIATION OF LOCAL AUTHORITIES, ENERGY AGENCY FOR SOUTHEAST SWEDEN, ESSEX COUNTY COUNCIL, INFO - MURCIA REGION DEVELOPMENT AGENCY.

“The cooperation of the partnership promotes a change in mentality and patterns of urban mobility of citizens contributing to the fight against climate change, reducing dependence on oil and improving the environment of our cities”

SUM Project

The European cooperation network created in this project between local / regional bodies, which have the same concerns, similar responsibilities and competences in this area, has a key role to play in SUM Project, promoting sustainable urban mobility, both raising awareness and promoting the use of
more sustainable means of transport. Because of its proximity to the population and its flexibility to react to changes they are in the forefront in order to identify opportunities and implement measures within this project.

SUM Project seeks to promote an alternative model of urban transport under the principles of sustainability, universality and competitiveness. Cooperation in this area is articulated through activities aimed at selecting those measures which have proved more effective and efficient in promoting of urban transportation alternatives to traditional vehicle, highlighting the promotion and widespread use of electric vehicle, as well as biofuel vehicle and any other means of sustainable transport.

**Overall aims of SUM Project:**

- Promoting knowledge sharing and joint discussion on regional practices to benefit sustainable mobility, creating greater awareness in the field of sustainable urban mobility.
- Enhancing the regions with less experience in new eco-friendly modes of transport so that they can work together with more advanced regions in this field, drawing on their knowledge and expertise.
- Identifying the most effective practices to ensure that citizens adopt behaviours and habits more sustainable in urban mobility, analyzing information and awareness campaigns, the sustainable transport alternatives available and advantages for the population.

**“Regional and local authorities have a key role to play in promoting sustainable urban mobility, both raising awareness and promoting the use of more sustainable means of transport”**

**SUM Project** has been implemented from January 2012 within a period of 30 months to develop all of the activities planned. The consortium of SUM Project has developed knowledge and shared experience throughout the project aiming to identify the best practices in the various regions of the partners in their effort towards more sustainable urban mobility.

The partners contribute from their areas of responsibility to achieve the main goal of the project. Thus, municipalities and other regional authorities are committed to all the problems associated with the serious consequences of air pollution and congestion resulting from the prevailing patterns of mobility. Regarding energy agencies, they direct their work to the rational use of energy, harmonizing the use of energy resources, promoting the diversification of it and the environmental respect.

SUM Project is composed of three main work packages: Management and Coordination, Communication and Dissemination and Exchange of Experiences dedicated to the identification and analysis of Good Practices.

The core packed of the project is component 3 which intended to identify, analyze and assess the transferability of regional practices on sustainable
urban mobility by the following actions already developed with a great effort by all the partners of SUM Project:

- **Regional studies/good practices:** Partners collected current, specific and proven information about practices in their own regions, analyzing possible alternatives to conventional urban transportation, and social and personal benefits which can be achieved with its use. Also, the transferability of these practices to other regions was a fundamental factor to be considered as a good practice and to be presented to the consortium.

- **Interregional visits:** Three Interregional visits were organized by the partnership in Riga (Latvia), Malmö (Sweden) and Vratsa (Bulgaria). The main purpose of the Interregional Visits was to identify the most effective and transferable policies and practices developed by the partners and learn from them. These events were useful for acquiring a first-hand knowledge of those practices being developed, which led the partners to the acquisition of interesting ideas related to sustainable mobility.

- **Interregional Workshops:** With the aim to promote knowledge-sharing and joint discussion among the partners about the regional practices, 3 workshops were organized in Vigo, (Spain), Amiens (France) and Sofia (Bulgaria) to finally analyse, identify and select by consensus the 15 best practices out of the 85 good practices developed by all the partners throughout the project. These 15 good practices chosen by the partners will be described on the following pages of this guide.
1.2. SUM project consortium

**MUNICIPALITY OF VIGO – Lead Partner**

Geographical and geopolitical localization: Vigo, in the northwest of Galicia, Spain, is a medium size city with 300,000 inhabitants and with importance industrial activity linked with automotive and fishing.

Special features for urban mobility: With hilly orography, heavy mixed traffic -tourism and tracks through the city-, and complex urban layout.

Commitment of the Institution with urban mobility: Vigo Municipality is doing a constant effort improving public transport and electric vehicle.

**AREAL- REGIONAL AGENCY FOR ENERGY AND ENVIRONMENT IN THE ALGARVE**

Geographical and geopolitical localization: Algarve, south of Portugal, 4,995,2 km² total area, 16 municipalities, 450,000 inhabitants

Special features for urban mobility: Algarve is a region with small urban households by that mobility has to be treated to an inter-municipal level.

Commitment of the Institution with urban mobility: The Regional Agency of Algarve is working in projects that aimed the improving of energy efficiency and increased supply of renewable energy in all sectors of society.

**MUNICIPALITY OF MESSINA**

Geographical and geopolitical localization: The city of Messina is the third largest demographic area of Sicily. The area is a vital service centre not only for the city and the surrounding municipalities of the Province, but also for Calabria and Straits area.

Special features for urban mobility: Messina has one of the most important Italian harbours in south Mediterranean, especially for passengers, cars and trucks.

Commitment of the Institution with urban mobility: The Municipality is strongly committed to re-think a smart mobility system which improves the exchange modal points and to foster public transport, use of bicycles and pedestrian areas.

**MUNICIPALITY OF REGGIO EMILIA**

Geographical and geopolitical localization: Reggio Emilia is a medium sized city (> 170,000 inhabitants), located in the “Pianura Padana” area. The most important industrial activities are: mechanics, food processes and tiles industry.

Special features for urban mobility: Reggio Emilia is located in a flat area and has a quite compact urban structure: residential areas are located in the southern side and the productive ones in the northern areas (along the main infrastructures).

Commitment of the Institution with urban mobility: Main challenges: Improving air quality, increasing proportion of trips by public transport, decreasing road fatalities and bring the traffic out of the city center.
RIGA CITY COUNCIL

Geographical and geopolitical localization: It is the largest city in the Baltic States, with a population of more than 650,000. Riga is an important transit point with a well-developed airport, port and railway network system.

Special features for urban mobility: There is a high density of different transport modes, including freight transportation in Riga streets. The main municipal emphasis is made on sustainable, modern, multi-modal and integrated transport system - electric public transport and development of hydrogen transport fleet in parallel to the bio-fuel transport.

Commitment of the Institution with urban mobility: Riga Sustainable Energy Action plan for smart city for the period 2014 to 2020, where the direction of Riga sustainable urban mobility development is stated.

CITY OF KATOWICE

Geographical and geopolitical localization: The City of Katowice is the capital of a vast agglomeration of 2.1 million inhabitants in the Upper Silesian Industrial District, one of Europe’s biggest industrial centres. Katowice is located on a major European communication junction and is today a major commercial and cultural centre.

Special features for urban mobility: The city’s main challenges were environmental. Improving public and private transport could improve air quality, reduce oil dependency, and strengthen sustainable mobility.

Commitment of the Institution with urban mobility: City Development Strategy “Katowice 2020”, which combines: reconstruction of the city centre as a hub, walking and cycling trails, and electro mobility infrastructure as well as replacement of the public transport fleet with the priority on trams, supported by buses.

MUNICIPALITY OF VRATSA

Geographical and geopolitical localization: The Municipality is located in the north-western Part of Bulgaria covering area of 679 m2. Its territory includes part of the Danube plain and the front part of the Balkan Mountain. The population of the Municipality is 73,894 people.

Special features for urban mobility: The major transport in the Municipality is the motor transport. Vratsa also has a well-developed trolley bus transport. The railroad transport also plays an important role, with 10 km of double railway and 35 km of electrified railway.

Commitment of the Institution with urban mobility: Provision of an efficient (maximum benefits) effective (with minimal cost) and sustainable (with minimal external influences) transport to support balanced regional development.

SOFIA MUNICIPALITY

Geographical and geopolitical localization: Sofia is the capital and the largest city of the Republic of Bulgaria and one of the oldest cities in Europe. With 1.4 million inhabitants Sofia is the main administrative, industrial and transportation center of the country.

Special features for urban mobility: It is located on the Balkan Peninsula and is the focal point of three pan-European corridors – 4, 8, 10. The boost of the city economy and population has caused a lot of environmental, traffic and transport issues that the Municipal Administration has to solve.

Commitment of the Institution with urban mobility: Urban mobility management is one of the top priorities of Sofia Municipality, which addresses the critical needs of the transport infrastructure and mobility issues.
**REGIONAL ENERGY AGENCY OF PAZARDZHIK – REAP**

Geographical and geopolitical localization: The region of Pazardzhik is located in South-central part of Bulgaria, with diverse climate and population about 280,000 people; agriculture, forestry and various industries are well-developed in the region.

Special features for urban mobility: Heavy traffic only in town of Pazardzhik; although lots of people are cycling, there are too few bicycle paths; the number of old second hand vehicles is quite large leading to high air pollution.

Commitment of the Institution with urban mobility: The Regional administration of Pazardzhik carries out the national governmental policy at regional level; it aims to improve its policy and implement measures for sustainable mobility.

**AMIENS CITY COUNCIL**

Geographical and geopolitical localization: Located in Picardy, a key position among Paris, London and Brussels, Amiens is a medium-sized city. The city has a long industrial tradition characterized for a long time by the textile industry.

Special features for urban mobility: Amiens has a flat orography. No concerned by heavy traffic jam but the car is a main form of means of transportation. However, pedestrian cities centre with a dense bus network.


**MTHE SKÅNE ASSOCIATION OF LOCAL AUTHORITIES**

Geographical and geopolitical localization: Skåne is the southernmost region of Sweden and has a population of 1.2 million.

Special features for urban mobility: The region consists of both big cities as well as smaller towns. A well-built regional network for commuter trains. Mostly flat land well suited for biking.

Commitment of the Institution with urban mobility: The Skåne Association of Local authorities run the regional energy agency and also participate in the Climate cooperation group on transports for Skåne.

**ENERGY AGENCY FOR SOUTHEAST SWEDEN**

Geographical and geopolitical localization: The Energy Agency for Southeast Sweden serves a region equivalent to nine percent of Sweden and with a population of approximately 570 000 inhabitants. The region is highly industrialized and is well-known for its entrepreneurial traditions.

Special features for urban mobility: Scarcely populated region with rather long distances between towns and low Public Transport usages.

Commitment of the Institution with urban mobility: The Energy Agency is working to initiate, coordinate and implement projects aimed at improving the energy efficiency and increased supply of renewable energy in all sectors of society.
**ESSEX COUNTY COUNCIL**

**Geographical and geopolitical localization:** Essex is a county in South East England with a population of 1,729,200 that borders London. It has a large coast line and has a mixture of large towns and rural communities.

**Special features for urban mobility:** Essex has a large commuter population that work in London and rely on good public and private transport networks. The mix of urban and rural communities requires good transport links.

**Commitment of the Institution with urban mobility:** Essex County Council is the Highways Authority for Essex and is committed to supporting all road users and promoting sustainable mobility measures.

**INFO – Regional Development Agency of Murcia**

**Geographical and geopolitical localization:** Murcia “in the southeast of Spain” is a medium size with 440,000 inhabitants and with its main activity on the services sector in the metropolitan area, and an intense activity in the food and beverages, chemical and textile industries in the surrounding area of the city.

**Special features for urban mobility:** Flat orography with the Segura River dividing the city in two. Mixed traffic of cars and light delivery trucks through the city. Pedestrian old town and a complex urban layout with wide arteries across it.

**Commitment of the Institution with urban mobility:** Murcia Municipality is constantly improving the public transport and municipal vehicle fleet with incorporation of sustainable mobility measures.
1.3. The Guide of Good practices on Sustainable Urban Mobility

The SUM Project cooperation network has analysed the solutions and measures implemented in their different European regions in the field of sustainable urban mobility, with the purpose of sharing these experiences with the consortium and identifying those practices most effective in achieving a more sustainable mobility pattern.

The Guide of Good Practices on Sustainable Urban Mobility has been designed based on the research and analysis carried out by each partner in their own regions and presented throughout a series of workshops and Interregional visits conducted at international level.

The Guide of Good Practices for Sustainable Urban Mobility is finally produced based on the conclusions adopted by the partnership of SUM Project at the Interregional Forum of SUM Project celebrated in Messina, in February 2014.

The guide promotes the exchange of knowledge and know-how between regions with different levels of experience. The aim is to improve the effectiveness of regional / local policies and instruments of the involved partners, adding the experiences of partners in order to reach a higher level of knowledge. Thus, this knowledge could serve as a roadmap for the adoption of Good Practices in sustainable urban mobility in the different regions of the Consortium and also in a near future in other regions.

“Sustainable urban mobility actions are those helping to reduce the negative effects of the mobility, either responsible mobility practices by people, development of new technologies expanding the sustainable mobility options, or decisions of the administrative authorities or other social partners to raise public awareness or promote such practices”

We introduce in this guide the experiences which have been identified by partners as the most effective practices for sustainable urban mobility and with the greater potential for transferability. This guide aims to provide current information on the different regional practices of sustainable mobility selected by the consortium in the following areas:

**THEMATIC AREAS**

- Electrical Sustainable Mobility
- Sustainable Mobility related to Bio-fuels
- Others Sustainable Mobility practices

In order to reach a consensus on the selection of the 15 most relevant Good Practices, 5 by each thematic area, a unified criterion was used. The 15 good practices were selected out of the 85 regional studies developed by the consortium.
Here we display the set of unified criteria considerate by all partners when chosen the 15 best practices:

**UNIFIED CRITERIA**

**SUSTAINABILITY:** to balance economic development, social equity and environmental quality.
**TRANSFERIBILITY:** to verify if it is possible to apply a good practice developed in one urban reality to another one.
**EFFECTIVENESS:** to verify how the implementation of the good practice influenced the wealth of local people, both considering pollution reduction and traffic reduction.
**INNOVATION:** to verify the environmental sustainability of the mobility system.
**AN INTEGRATED APPROACH:** To considers practices and policies of different policy sectors, authority levels, and neighbouring authorities.

From all the good practices presented by each partner at the workshops, the consortium has selected 5 good practices of each of the three thematic areas; Electrical Sustainable Mobility, Sustainable Mobility related to Bio-fuels and Others Sustainable Mobility practices. This guide describes a summary of the best 15 good practices on Sustainable Urban Mobility from 6 different European countries; United Kingdom, Spain, Portugal, Sweden, Bulgaria and France.

The Guide of Good Practices ensures that the most effective sustainable transport is identified and can be transferred and adopted by other local and regional actors. This document will be presented to the regional and local authorities of all regions where the partners are located to be able to select one of the Good Practices in order to develop an implementation plan within their region. These plans created under de coordination of SUM Project lead Partner, Municipality of Vigo, it will describe the process of implementing the good practice selected by each Partner of the Consortium in their own region.
Environmental sustainability is the main challenge of SUM Project, helping from the perspective of urban mobility to promote choices and behaviour more environmentally friendly and sustainable. Specifically, SUM Project works in line with EU policy on environmental sustainability:

- Reducing the CO2 emission into the atmosphere,
- Fighting against the current problems of energy dependence on fossil fuels.
- Increasing energy efficiency of transport.
- Promoting the penetration and consolidation of renewable energy in transport.

In this way, partners are committed to protect and preserve the environment through their policies on mobility and urban transport.

The project, through interregional cooperation, contributes to the European Territorial Cooperation Objective, to improve the effectiveness of regional development policies in the areas of innovation, knowledge-based economy, environment and risk prevention. At the same time, it represents a great potential to promote economic modernisation and to improve European competitiveness, working on improving the effectiveness of local and regional policies on sustainable transport and mobility.

The strategy of this project converges with the provisions of the Lisbon and Gothenburg strategies to move towards competitive economy and society, dynamic, subsumed within a larger ecological dimension.

So, on one hand, it fits the basic principles of the Treaty of Lisbon, helping to turn the EU economy into a knowledge-based economy and strengthening innovation. As long as electrical vehicles usage may be extended, it will allow an industrial sectorial development making it possible for this industry to become real and not just experimental, encouraging local administrations, energy agencies and citizens to work on continuous improvement.
On the other hand, the project continues with the line drawn by the Gothenburg European Council bearing in mind the economic, social and environmental dimension. Thus we can state that the project meets the objectives and actions proposed as general guidelines:

- **Fighting against Climate Change**: Helping to meet the Kyoto targets and encouraging the production of electricity from renewable sources.
- **Ensuring sustainable transport**: Encouraging the use of non-polluting transport modes, or less harmful to the environment.
- **Addressing threats to public health**: Promoting the use of non-toxic materials.
- **Managing natural resources more responsibly**: Addressing the use of natural resources in a consistent manner, reducing oil consumption by promoting the use of renewable raw materials so as to ensure biodiversity and ecosystem conservation.

**EUROPE 2020 STRATEGY**

In a changing world, the EU wants to become a smart, sustainable and inclusive economy with greater coordination of national and European policy, which is the reason why the Europe 2020 Strategy proposed by the European Commission (EC) on 3 March 2010 has included among its many objectives; sustainable urban mobility as one of the priorities to tackle within the European framework.

**Urban transport** is a relevant subject because it affects each and every one of the residents of a city. Mobility has become an ever increasing need; however it may be accomplished by many different types of transport like cars, trams or bicycles. Transport is also important because it is a major consumer of energy - it is responsible for about one-quarter of total energy consumed in the EU—and a heavy emitter of GHG (Green House Gases) emissions between one-fifth and one-third of all emissions; factors which are nowadays hot topics in the political agenda. As cities strive to be more self-sufficient in terms of energy security, the transport sector should be high in the list of priorities because of its immense potential in reducing energy consumption and GHG emission.

Currently, following this Europe 2020 Strategy, the EC is developing a wide range of measures, from recommendations to concrete programmes, in order to foster sustainable urban mobility among the territory of the European Union.
Main recommendations on this field in chronological order in the last years:

- **2007 Green Paper on Urban Mobility**
- **2009 Action Plan on urban mobility**
- **2011 Transport White Paper**

**Green Paper on Urban Mobility - 2007**

It set the foundations for a new European agenda for sustainable mobility policy (in which, e.g. legislative initiatives are developed in an integrated, and not fragmented, manner) and invited stakeholders to a debate on what support the EU should provide, and how best to provide it (e.g. how to achieve optimal European added-value through the effective promotion of best practices). In parallel to the publication of the Green Paper, the EC published a preparatory document called ‘Sustainable Urban Transport Plans – Preparatory document in relation to the follow-up of the Thematic Strategy on the Urban Environment’.

**Action Plan on urban mobility - 2009**

The Action Plan proposes twenty measures to encourage and help local, regional and national authorities in achieving their goals for sustainable urban mobility. With the Action Plan, the European Commission presents for the first time a comprehensive support package in the field of urban mobility.

Local, regional and national authorities are free to use this support, and the tools that will be offered. By doing so, they will be better equipped to address the challenge of sustainable urban mobility, which will facilitate their policy making.

In 2012 was published the Action Plan on Urban Mobility – State of Play, the actions under this report aim to support and enable efforts at the local level, rather than prescribe one-size-fits-all or top-down solutions.


The European Commission adopted a roadmap of 40 concrete initiatives for the next decade to build a competitive transport system that will increase mobility, remove major barriers in key areas and fuel growth and employment. Some initiatives focus on reduction of the conventionally-fuelled cars in cities.
EUROPEAN PROGRAMMES AND INITIATIVES

The European Commission, in addition to these recommendations also finances several programmes that have, directly or indirectly, an important impact in the field of sustainable mobility.

We present briefly the following programmes relevant on the field of Sustainable Urban Mobility:

**EUROPEAN RELEVANT PROGRAMMES**

**HORIZON 2020**

SUSTAINABLE URBAN MOBILITY PLANS (SUMP) – PLANNING FOR PEOPLE

SET-PLAN

SMART CITIES INITIATIVE

LIFE

**HORIZON 2020:** Among its many action areas, the Horizon 2020 Programme is a European initiative which also promotes strategies for a more sustainable, efficient and cleaner urban transport with higher quality in the use of energy. This programme includes some of the programs under the previous programming period 2007-2013 such as Civitas, Intelligent Energy and 7TH Framework Programme.

The working areas of Horizon 2020 are the following:

- Transforming the use of conventionally fuelled vehicles in urban areas.
- Reducing impacts and costs of freight and service trips in urban areas.
- Tackling urban road congestion.
- Strengthening the knowledge and capacities of local authorities.
- Demonstrating and testing innovative solutions for cleaner and better urban transport and mobility.

**SUSTAINABLE URBAN MOBILITY PLANS – PLANNING FOR PEOPLE:** An interesting example under this programme is the “SUSTAINABLE URBAN MOBILITY PLANS – PLANNING FOR PEOPLE”, a strategic plan that builds on existing planning practices and takes due consideration of integration, participation, and evaluation principles to satisfy the mobility needs of people today and tomorrow for a better quality of life in cities and their surroundings.

**SET-PLAN:** The SET-Plan establishes an energy technology policy for Europe. It’s a strategic plan to accelerate the development and deployment of cost-effective low carbon technologies. The plan comprises measures relating to planning, implementation, resources and international cooperation in the field of energy technology.
**SMART CITIES INITIATIVE:** One of the main initiatives under this plan is the “SMART CITIES INITIATIVE”: The Smart Cities Initiative aims to improve energy efficiency and to step up the deployment of renewable energy in large cities going even further than the levels foreseen in the EU energy and climate change policy. This initiative will support cities and regions that take pioneering measures to progress towards a radical reduction of greenhouse gas emissions through the sustainable use and production of energy. It will bring the cities involved to the forefront of the development of the low-carbon economy.

**LIFE:** The LIFE programme is the EU’s funding instrument for the environment. The general objective is to contribute to the implementation, updating and development of EU environmental policy and legislation by co-financing pilot or demonstration projects with European added value. (http://ec.europa.eu/environment/life/).

**Other European Co-operational Programmes** that aim to promote joint initiatives at local/regional level in the field of sustainable mobility, as in the case of INTERREG EUROPE PROGRAMME 2014-2020, Cross-Border programmes, transnational programmes, etc.

All these programmes and recommendations mentioned are in line with the European Commission objectives on trying to develop each time more defined strategy on sustainable urban mobility that can permit the fulfilment of the proposed objectives and lead the way in obtaining a common European legislation on this field.
# SUM PROJECT GOOD PRACTICES

## 2.1. Table of good practices by thematic area

### Thematic 1– Sustainable Electric Mobility

1. **MILTON KEYNES TO TRIAL WIRELESS CHARGING FOR ELECTRIC BUSES** – Milton Keynes (United Kingdom).
2. **USE OF ELECTRIC VEHICLES IN THE FLEET OF CESPA** – Murcia (Spain).
3. **MOBI2GRID** – PILOT EXPERIENCE ABOUT ELECTRIC MOBILITY – (Galicia/North of Portugal Euroregion).
4. **IMPLEMENTATION OF ELECTRIC VEHICLE CHARGING NETWORK IN FARO** – (Portugal).
5. **EMOBILITY MALMÖ** – DEMONSTRATION PROJECT TO LEARN MORE ABOUT PRACTICAL DAY TO DAY USE OF ELECTRICAL VEHICLES – Malmö (Sweden).

### Thematic 2– Bio–Fuels

1. **ENERBIOALGAE** – ENERGY USE OF BIOMASS IN DEGRADED WATER RESOURCES RICH IN MICROALGAE – Galicia (Spain).
2. **COLLECT THE COOKING OIL IS TO CARE FOR THE ENVIRONMENT** – Vigo (Spain).
3. **MANAGEMENT SYSTEM FOR USED COOKING OILS IN THE ALGARVE REGION** – (Portugal).
4. **AMEB PROJECT: BIOGAS AS AUTOMOTIVE FUEL** – Murcia (Spain).
5. **INTRODUCING OF BROWN GAS TECHNOLOGY IN VEHICLES WITH COMBUSTION ENGINES** – Bulgaria.
6. **CNG (BIOMETHANE) AS A FUEL FOR SUSTAINABLE CITY DISTRIBUTION** – Skåne region (Sweden).

### Thematic 3– Others Sustainable Urban Mobility practices

1. **CONSOLIDATION OF GOODS AND SUSTAINABLE PROCUREMENT WITHIN THE MUNICIPALITY OF VÄXJÖ** – Växjö (Sweden).
2. **ESSEX COUNTY COUNCIL TRAVEL PLAN** – Essex (UK).
3. **SOFIA REAL TIME PUBLIC TRANSPORT INFORMATION** – Sofia (Bulgaria).
4. **BUSCYCLETTE: A PUBLIC SERVICE DEDICATED TO BICYCLES** – Amiens (France).
5. **CARTAGENA’S OLD TOWN, SUSTAINABLE CITY** – Cartagena (Murcia).
2.2. A detailed description of the good practices

Thematic 1 – Sustainable Electric Mobility

- Milton Keynes – (United Kingdom)
- Murcia (Spain)
- Galicia/North of Portugal
- Faro (Portugal)
- Malmö (Sweden)
1.1. MILTON KEYNES TRIAL WIRELESS CHARGING FOR ELECTRIC BUSES – Milton Keynes – (United Kingdom)

Objectives of the Practice

The main goal of this project is the implementation of a scheme using the public and private sector working together to produce a trial of new technology for electric vehicles in public transport at Milton Keynes. The Introduction of a battery electric bus service on a fully timetabled bus route as part of an integrated low carbon transport system is the final objective of this practice.

Description of the Practice

Six organisations led by subsidiary of Mitsui & Co Europe signed a five year collaboration agreement committing to the replacement of seven diesel buses with their all-electric counterparts on one of the main bus routes in the city.

The project provides the United Kingdom’s first fully timetabled all electric bus operation. This trial installed inductive electric vehicle charging systems at selected locations in Wolverton and Bletchley which enables the Route 7 bus service to be operated by a fleet of battery electric buses.

The main results of the project are framed within the following technical activities carried out:

- Introduction of a battery electric bus service on a fully timetabled bus route as part of an integrated low carbon transport system.
- Collation and understanding of costs of introduction of zero-carbon buses on a commercial route
- Obtain operating and maintenance experience for zero-carbon buses
- Increased understanding of integration of zero-carbon buses at multi-modal interchanges; inter-urban and sub-urban train services, electric car clubs, cycling schemes etc.
- Knowledge and a validated business case that can be used to investigate the viability of the introduction of zero-carbon buses in other cities and towns.

The new buses recharge their batteries wirelessly through the day which means that for the first time, electric buses are capable of the equivalent load of a diesel bus. The buses are charged when power transmitted from a primary coil buried in the road is picked up by a secondary coil on the bus. Final testing and driver training takes place in Milton Keynes before the buses officially begin carrying passengers. The training for Arriva bus drivers covers not only how to drive the vehicle, but also how to recharge at each end of the route, and how to maximize the battery’s performance. In January 2014,
the new buses have made their debut on the 15-mile long Route 7, which runs between Wolverton and Bletchley.

Results, evidence of success and transferability

The project is providing the United Kingdom’s first fully timetabled all electric bus operation.

The number 7 route in Milton Keynes replaced seven diesel buses with eight electric buses that run 7 days a week, removing approximately 500 tonnes of tailpipe CO2 emissions per year as well as 45 tonnes of other tailpipe emissions. The route currently transports over 775,000 passengers a year over a total of 450,000 miles. The electric bus fleet is operating as a five-year, multi-partner trial program and the buses are the first of their kind in the UK.

This innovative electric bus trial aims to prove that electric vehicles have the potential to be cost-efficient as well as environmentally friendly. The buses will run for five years in a monitored demonstration programme, which will assess their technical and commercial viability.

Transferability of the Good Practice: The Implementation of the trial scheme and data collection in Milton Keynes demonstrates viability of innovative electric vehicle wireless charging technology in municipal public transport is replicable in any other region.

Contact: John Miles Arup
Mail: John.miles@arup.com
Web Page: http://www.essex.gov.uk
Full study may be downloaded [here](http://www.essex.gov.uk)
Objectives of the Practice

The aim of the practice is to study the use of electric vehicle fleet CESPA for street cleaning, waste collection and treatment of the city of Murcia. The stakeholders are the Municipality of Murcia and CESPA.

Description of the Practice

The origin of this initiative comes from the specifications of the public contest for the contract for street cleaning, waste collection and treatment, there were specified maximum emission rates which had to be complied with. This meant having to incorporate among the various services, electric vehicles that would reduce the values of CO2. Electric vehicles are used by service personnel of CESPA for the purpose of cleaning and waste collection and management.

The main objectives of the introduction of electric vehicles are:

- Comply with the requirements of the specifications of the contest
- Decrease of emissions (cleaner fleet)
- Reduction of noise pollution
- Reduction of fuel costs

CESPA Therefore, as in other municipal service contracts in other cities of Spain, acquired electric vehicles for its fleet in Murcia.

These vehicles work in the historical centre of Murcia and gardens associated with that area. The historical centre of Murcia is characterized as an area with many pedestrian streets and a great amount of people. Apart from avoiding CO2 emissions, NO, CO and particulate matter emission are also prevented, at the same time that the noise in the area is minimized. Twenty four workers are involved every year in the services provided with these electric vehicles.

Regarding the initial proposition, the fleet of vehicles has increased up to 19 due to the recent incorporation of 3 new vehicles.

The intention is to increase the number of electric vehicles over the next 20 years, as they have to go by fleet renewals and adapting to improvements in supply and performance of electric vehicles in the future.
Results, evidence of success and transferability:

Indicators are not available to evaluate results but there are available studies in the sector, technical data of the vehicles and calculations made in the presentation of the project.

“Electric Power Research Institute” calculated, as an average, that substitution of other conventional vehicles by electrical ones reduced by more than 90% urban emissions of NOx and CO and that the total amount of CO\textsubscript{2} emitted decreased by 50%.

From the standpoint of energy efficiency, the energy efficiency of electric vehicles against the traditional diesel combustion, improved values at around 10%, so the use of these solutions is ideal for electrical fleets of vehicles used for performing public services.

The overall amount of electric vehicles currently operating in the municipality of Murcia is 19. According to this, 225 tons of CO\textsubscript{2} emissions to the atmosphere are avoided every year, if we compare an electric vehicle to a diesel vehicle of similar characteristics.

The lifespan of these vehicles is estimated to be 10 years, so at the end of their operative life the emission of 2,250 tons of CO\textsubscript{2} will have been avoided.

Contact: Jose Manuel Ruiz
Email: josem.ruiz@info.carm.es
Web page: http://www.institutofomentomurcia.es/
Full study may be downloaded here
MOBI2GRID – PILOT EXPERIENCE ABOUT ELECTRIC MOBILITY IN Galicia/North of Portugal Euroregion

Objectives of the Practice

MOBI2GRID aimed to develop and implement an integrated and interoperable cross border mobility system with the development of a pilot test with electric vehicles in the Vigo (Spain) - Porto (Portugal) corridor of electric mobility.

Description of the Practice

This initiative has the support of the European Union and responds to its priorities within the POCTEP -Cross-border Cooperation Programme Spain-North of Portugal, and it is develop by CEIIA in Portugal and CTAG in Spain.

The electric mobility corridor aims to cover the main roads connecting the cities of Vigo and Porto, the main connecting links in the Euro-region as they are the two most populated cities on both sides of the border, Spain and Portugal, and the more competitive areas that attract industry and investments. Thus, it is intended that the corridor provides interurban service in the main routes, developed through AP9 and A55 in Galicia, and the A3, A28 and N13 in Portugal.

The main objectives achieved within a period of 3 years were:

■ To carry out R&D activities on the development, testing and validation of the electro-mobility system based on renewable energy sources with a cross-border dimension.
■ To carry out R&D activities on the development of a remote diagnostic system of the electric vehicle with real time data monitoring.
■ To develop pilot experiences in the electric mobility corridor (Vigo-Porto), including an analysis of the electric vehicles acceptance by the user in the Euro-region.
■ To get the involvement of regional entities, companies and universities in creating the conditions for the generation and attraction of new investments associated with the development, production and testing of systems and solutions in the field of electric mobility.

Results, evidence of success and transferability:

The main results of the project are framed in the technical activities, especially related to the Observatory for the Electric Mobility of the Euroregion Galicia-North of Portugal, with the preparation of the electric mobility corridor and with the development and evaluation of the pilot tests.
An electric mobility corridor between Vigo and Porto

The Electric Mobility Corridor Vigo-Porto covering 150 km was developed connecting with 8 electric charging points for electric vehicles, with the electronic stations monitoring and results tracked system at real time from a data center, where behavioral electric car data is obtained.

Test and Pilot experience in the cross-border electric mobility corridor Porto/Vigo.

- The development of the pilot test enables the evaluation of the main technical and socioeconomic barriers for the effective deployment of the electric mobility, as well as the development of recommendations for an effective implementation of the electric mobility in the Euro-region.

This practice could be transferred to many EU regions which suffer from heavy traffic and air pollution from the use of conventional vehicles.

Development of an integrated and interoperable electric mobility system of the Euro-region

- The design of a remote diagnosis system of electric vehicle with real time data monitoring, analysis and interaction with the user and the study of future solutions on V2G (Vehicles to Grid)
- Prototyping of the hardware and software components of the mobility system, remote diagnosis systems and charging systems.
- Technological reports and development of the data acquisition systems of the vehicle and driver and of monitoring for pilot testing.

Development of Electric Mobility Observatory in the Euro-region Galicia/North of Portugal

- The Observatory takes place in the context of a working group which aimed to create joint conditions for the implementation of the initiative and its consistency with the national priorities, through the continuous monitoring of the technological, social and political environment of electric mobility.

Contact: Diego Rodríguez Nión - CTAG
Mail: diego.rodriguez@ctag.com
Full study may be downloaded here
Objectives of the Practice

The content of the practice is to propose the measures to introduce a charging network in the Municipality of Faro integrated with the national charging network (Mobi.e) in 3 stages:

- Evaluation of the present situation concerning EV’s in the Municipality;
- Viability analysis of the measures aimed to promote the integration with the transport system of the Municipality and the coordination with other modes of transport;
- The promotion of campaigns to publicize the advantages of EV’s.

The stakeholders are: GAMEP – Office for Electric Mobility, Faro Municipality and the Portuguese Government.

Description of the Practice

National program MOBI.E, sponsored by the Portuguese Government to develop electric mobility in Portugal, through the installation of a common network of 1,350 charging stations, national wide, managed by a central system, was signed by 25 municipalities, including Faro, where 8 normal charging points were installed.

The electric mobility behavior will be the turn on for and during the next years, the private sector will get along this idea.

Even with a higher cost, comparing to engine combustion vehicles, electric vehicles started to be seen circulating around the city, most of them owned by public entities, but also by private owners, the usual earlier adopters.

On the one hand, the economic crises had slowed the “electric vehicles rush”, but on the other hand the need to import all the oil used in vehicles and the integration of renewal energies production into the electrical grid, turns electric mobility as the right way to the future.

The first phase was to evaluate the present situation concerning the number of the existent EV in the municipality and also the potential demand that will be the future users.

The definition, and the viability analysis, of the measures aimed to promote the integration with the transport system of the Municipality and the coordination with other modes of transport; these are another main actions of the practice. The promotion of campaigns to publicize the advantages of the EV, mainly using international examples is another content of the practice.
Results, evidence of success and transferability:

The electric vehicle recharging stations in the city of Faro (capital of the Algarve region) is an important infrastructure to widespread the implementation of electric and hybrid electric private car and fleet vehicles in the city and in the region. The actual system is composed of eight charging stations, each one with four charging points. The total network is composed by 32 charging points in a population of 58,675 inhabitants. This infrastructure was applied within Portuguese Electric Mobility program MOBI.E that involved the implementation in 2009 of a network of 1,350 charging stations, national wide, managed by a central system in 25 municipalities.

The electric vehicle charging network aims to increase the use of electric vehicles in Faro and has challenged in the regional scale the actors to make advances for the decarbonisation of transport. Also, this infrastructure was a key to put electric vehicles in the regional political and media agenda.

In addition, the electric vehicle charging network had a spatial planning procedure by promoting an assessment study with the considerations for choosing the location of a charging point number. Some of the criteria were in compliance with street design, potential demand, vehicle parking facilities, safety implications and link with existing city transport infrastructure.

A free of charge access card is provided to electric vehicle users and more or less a dozen of vehicles are actually using the network. Another evidence of success of this Good Practice is what concerns to be the multiplier effect. This infrastructure had deployed other cities in Algarve to introduce electric charging points in their facilities. For instance, the city of Albufeira had introduced electric vehicle charging points in a public park.

Transferability: This practice is potentially transferable to other countries.

Contact: Municipality of Faro
Energy, Environment and Mobility Division
Mail: daem.dpoem@cm-faro.pt
Web page: http://www.cm-faro.pt/
Full study may be downloaded here
1.5. E-MOBILITY Malmö – Demonstration Project to Learn More about Practical Day to Day Use of Electrical Vehicles - Malmö (Sweden)

Objectives of the Practice

E- Mobility Malmö is a project that energy company E.ON runs in corporation with the City of Malmö and with support from Swedish Energy Agency. The project aims at gaining knowledge about electricity vehicles, and collect the needed information to be able to develop a future proof infrastructure for a sustainable transportation system.

Description of the Practice

E-Mobility is a demonstration project to learn more about practical day-to-day use of electrical vehicles with E.ON and City of Malmö as partners.

The project runs between 2009-11-01 and 2012-12-12. The main scope of the project is that test persons from different social and employment groups in society will test different kinds of electrical vehicles. By making it possible for the cities employees to use electrical vehicles using pool sharing, even more people will have the opportunity to use electrical vehicles. The purpose of all this testing is to gain experiences and knowledge about using electrical vehicles and electrical infrastructure on a daily basis. With the information gathered, E.ON had the possibility to evaluate and streamline their future efforts within the area.

The purpose is to introduce e-cars, e-bikes and e-scooters and to strengthen the infrastructure for electric vehicles. The two main mobility concepts that were tested and evaluated by E.ON are electric vehicles in private test households and electric vehicle pools in E.ON offices. This is thanks to the cooperation with the housing companies in the city as well as the City of Malmö. It has also helped kick-start the retail organization when it comes to sales activities in E-mobility.

Main task of the project

- The vehicle pools have been placed at the three E.ON offices in Malmö and include in total 10 e-cars, 3 e-scooters and 20 e-bikes. The pools have been running since May 2011.
- E-cars (Peugeot iOn), 2 e-scooters and 5 e-bikes were placed in test households in 3-month periods. E.ON mainly targets households living in multi-family houses in Malmö.
- Two rounds of test households have been carried out in 2011 and three rounds remain in 2012. In total, 50 households will have tested e-vehicles from E.ON when the project is finished.
- Driver behavior is logged via GPS-trackers. If the household owns a car, this car is also logged before a new e-car is introduced and it can thereby be investigated how driving behavior changes when an e-car is introduced.
Results, evidence of success and transferability:

Main results and changes found

For e-scooters and e-bikes, the transport behavior has changed in an environmentally adapted direction: E-scooters and e-bikes replace trips with conventional cars; the e-bike trips are much longer than traditional bike trips.

- The first indication shows that the number of car trips increase when an e-car is introduced, but driving behavior changes in an environmental direction (eco-driving).
- A large information campaign with internal test driving events was needed to increase the interest of the vehicle pool.
- E-cars are more popular than combustion cars. 2 e-cars placed at one office have been used twice as much as the 4 combustion engine cars.
- The pure battery electric cars (not plug-in hybrids) have almost only been used for shorter trips (below 30 km).

It is a good way of engaging the public with electric vehicles and seeking to enable their acceptance and cooperation between a public and private sector. It’s also important the fact of collecting data about driver behavior by GPS tracker.

Transferability: The results and data collected could be very important to implement similar project in other countries.

Contact: Per-Arne Nilsson
Organization: Malmö city environmental office- Skåne
Mail: Per-Arne.Nilsson@malmo.se
Web page: http://www.kfsk.se/
Full study may be downloaded here
### Thematic 2–Bio–Fuels

<table>
<thead>
<tr>
<th>Practice</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1. ENERBIOALGAE – ENERGY USE OF BIOMASS IN DEGRADED WATER RESOURCES RICH IN MICROALGAE – Galicia (Spain).</td>
<td></td>
</tr>
<tr>
<td>2.2. COLLECT THE COOKING OIL IS TO CARE FOR THE ENVIRONMENT – Vigo (Spain)</td>
<td></td>
</tr>
<tr>
<td>2.2. MANAGEMENT SYSTEM FOR USED COOKING OILS IN THE ALGARVE REGION – (Portugal)</td>
<td></td>
</tr>
<tr>
<td>2.3. AMEB PROJECT: BIOGAS AS AUTOMOTIVE FUEL – Murcia (Spain).</td>
<td></td>
</tr>
<tr>
<td>2.4 INTRODUCING OF BROWN GAS TECHNOLOGY IN VEHICLES WITH COMBUSTION ENGINES – Bulgaria</td>
<td></td>
</tr>
<tr>
<td>2.5 CNG (BIOMETHANE) AS A FUEL FOR SUSTAINABLE CITY DISTRIBUTION – Skåne region (Sweden)</td>
<td></td>
</tr>
</tbody>
</table>
A detailed description of the good practices

Thematic 2 – Bio - Fuels

- Galicia (Spain)
- Vigo (Spain)
- Algarve (Portugal)
- Murcia (Spain)
- Bulgaria
- Skåne region (Sweden)
Objectives of the Practice

The main goal of this European project is to boost energy efficiency across the territory to solve environmental issues linked to degraded water resources. Working in this direction has stimulated and reinforced growth of the renewable energy sector, contributing to energy diversification, reduction dependence on fossil fuels and ensuring a quality power supply.

Description of the Practice

The ENERBIOALGAE project studied the technical, economic and environmental possibilities of obtaining of biofuel from microalgae at the same time that the wastewater is purified. Focusing on the utilization and treatment of urban and industrial wastewaters, whose treatment would lead to a cost reduction in existing wastewater treatment plants as well as in the use and purification of flue gases, where it would be removed the components which most contribute to the greenhouse as the CO2, NOx and SOx.

EnerBioAlgae project seeks to ensure that sustainable bioenergy develops its full technological, energetic and environmental protection potential, in particular:

- Refine algal biomass production system for energy purposes to improve the efficiency of the algal cultures productivity. Development of methodological, technical, economic and environmental aspects, to advance in the energy potential of microalgae.
- Identify and exploit degraded water resources with high inorganic load and energy potential.
- Develop instrumentation technologies for monitoring and on-line control of energy cultures using a system based on the use of LIDAR technologies with pattern recognition algorithms that would enable to know the state of the cultures at all times.
- Optimize the quality of biodiesel based on microalgae (complying European regulation) to stimulate public and private investment.
- Assess and demonstrate the technical, economic and environmental feasibility of the developed technologies and the commissioning process.

The work plan of the Energibioalgae project was based on the following Tasks:
Resources location. Identification and characterization of strains.
On-line monitoring of cultures.
Characterization of biomass and processes of biofuels.
Demonstration of technical, economic and environmental feasibility.

**Results, evidence of success and transferability:**

The joint efforts of the I+D+I partnership have led to increased economic competitiveness of biofuels, therefore fostering its use and as a consequence reducing emissions of greenhouse gases.

One of the main objectives has been achieved as a result of the implementation of the project which is the production of microalgae biomass using only industrial effluents such as waste water and combustion gases.

It was also proved that the production of microalgae in this type of water, allows in addition to producing microalgae at minor cost, remove these contaminants totally, so the water can be poured without risk of contamination. Relevant cost savings, environmental saving, due to the CO₂ emissions associated to the production of freshwater, to obtained agricultural fertilizers.

Contact: Jesús Torres Palenzuela
Mail: jesu@uvigo.es
Web page: www.enerbioalgae.com
Full study may be downloaded [here](#)
COLLECT THE COOKING OIL IS TO CARE FOR THE ENVIRONMENT - Vigo (Spain)

Objectives of the Practice

The overall objective of the practice is the collection of the used cooking oils of the neighbourhood associations in the Municipality of Vigo through the collaboration between the public administration and the private enterprises. This practice provides a good example of how local authorities can combine better waste separation, production of renewable fuel and positive contributions to the regional waste management system.

Description of the Practice

The base of this practice was an agreement signed in 2006 between the Municipality of Vigo and private organisations in order to install and exploit several recovering oil units in order to be recycled to biodiesel. In the case of Vigo, neighborhood associations started collaboration with the public administration and some private enterprises.

Through PMA and Nutrigas (private organizations), and with the support of Vigo Municipality, a campaign of collection of domestic cooking oils was launched.

Both companies provided their experience and know-how for the proper development of the objectives of the project. Thus, PMA is private company dedicated to the collection, transportation and waste management, while Nutrigas is dedicated to the valorization of the used cooking oil. In addition, with the objective to assist the collection process the partners signed a first agreement with the company Vegonsa in order to put containers in the supermarket chain Eroski and Familia.

These were the specific objectives under this practice:

- Reduction of the pouring of cooking oils through the sanitation systems, since it damages the plumbing, pollutes the rivers and hinders the operations of water treatment plants.
- Promotion of the culture of recycling in the citizenship of Vigo.
- Compliance with environmental legislation, in particular with the Waste Framework Directive 008/98/CE.
- Energetic evaluation of the cooking oils and processing of all oils that could be used as biodiesel.
- Creation of jobs in the management area of oil cooking waste.
- Improvements in the development of new technologies for the recycling of waste in Galicia.
- To promote the use of biodiesel as a fuel due to its low emission of sulphide and its faster degradation.

Results, evidence of success and transferability:

In the first 11 months, since the beginning of the campaign in 2006, the helpline of the company PMA-Nutrigas received a total of 1,117 telephone calls of which 607 were from neighbouring communities that wanted to join the campaign. This involved the distribution of 633 containers to the collect oil cooking waste.
At the end of the year 2007 the number of neighboring communities taking part in the campaign reached the amount of almost 700, along with 19 supermarkets and 16 social associations. The number of containers installed in the city of Vigo was of 723 units.

During the following years the collection of used oil cooking in Vigo households increased significantly, having also the support of many supermarkets collaborating in this green initiative.

By 2012, 18 municipalities of the province of Pontevedra (where Vigo is included) had adopted the same initiative that the Municipality of Vigo started in the year 2006.

Currently, the city of Vigo and its citizens are maintaining the commitment towards the collection of waste cooking oil and this is reflected in the fact that in the last years the number of liters collected increased in an average of 20-30% per year.

The communication campaign carried out in order to reach this level of success consisted of the use of informative displays in different points of the city of Vigo, the printing of more than 100,000 explicative brochures that were sent to the citizens jointly with the water monthly bill. Other tools used were radio slots, with the intention of raising awareness among the population about the desirability of changing the bad habits and promoting the storage of the used cooking oil in containers for its subsequent collection and transformation into biodiesel.

Contact: Arancha Mañas Álvarez
Manager of PMA Company
Mail: pma@amos.es
Full study may be downloaded here
MANAGEMENT SYSTEM FOR USED COOKING OILS IN THE ALGARVE REGION – Algarve (Portugal)

Objectives of the Practice

The aim of this good practice is to promote the recycling and the valorization of used cooking oil into biodiesel in the Algarve Region, taking into account that in Portugal, under this framework, the experience in the use of biofuels is particularly limited. Indeed, only a few specific uses can be identified, which never passed the stage of pilot project with scientific and technical objectives and/or promotional purposes.

Description of the Practice

This practice addresses the EU regulations concerning the promotion of biodiesel as a way to ensure energy supply and protection of the environment. Thus, it complies with the Directive 2003/30/EC, aiming to establish a framework to promote the use of biofuels, thereby improving security of energy supply and contribute to the reduction of emissions of greenhouse gases (GHG).

Promoting the use of biofuels is also seen as a way of boosting agricultural activity, maintaining or creating employment in rural areas. The recycling of used cooking oil is related both to lower cost of the raw material and the environment protection by preventing their deposition in landfills and the discharge to the water treatment plants. At the same time, the European Directive 2009/28/CE aims that biofuels shall not be made from raw material obtained from...
land with high biodiversity value (i.e. primary forest). Under this scope the recycling of used cooking oil for producing biodiesel may have a boost in the next future.

Both municipalities and private entities were the bodies involved in the implementation of this practice.

The main target group addressed by the practice was the inhabitants of the Algarve region. However, public and private companies are other groups that this initiative tried to address, for example National Post services and rent-a-car companies.

Results, evidence of success and transferability:

In 2012, 12 of the 16 municipalities (75%) have a management system to recover cooking oil. There are 219 recovering units spread for all the Algarve with a major density in urban areas.

Currently, there are more than 220 recovering units in the region that have collected more than 35 tons of cooking oil per year.

It can be inferred that the average density of the recovering (kg of oil) per square kilometre is 10.87. The top 3 major densities were verified in Portimão, Faro and Vila Real de Santo António. The more rural municipalities have a low density of recovering.

Regarding the communication of this experience, many communication campaigns about biofuels were made by municipalities with the scope of environmental management system campaigns, which ensured that the entire Algarve region has received the benefits acquired by this practice, something that for sure will lead to the transferability of this good practice to other regions.

Contact: AREAL
Web page: http://www.areal-energia.pt/
Full study may be downloaded here
AMEB PROJECT: BIOGAS AS AUTOMOTIVE FUEL – Murcia (Spain)

Objectives of the Practice

The main objective of this project is the development of a technology for providing alternative fuel to vehicles from biogas generated at a wastewater treatment plant (AMEB) in Murcia.

Aguas de Murcia (Emusa) designed and started up a plant where biogas is cleaned and later transformed into an ecological automotive fuel at the Murcia East Sewage Plant for its use by company vehicles.

Description of the Practice

The aim of the AMEB project was to obtain an automotive, called BIOEDAR (WWTP Biogas), from a renewable energy as it is a biogas generated at an urban wastewater treatment plant, in the Region of Murcia. This project develops an integrated process to get the sustainable biogas use by the selective elimination of undesired compounds that could difficult its later use.

AMEB allows, besides reducing polluting gas emission to the atmosphere, taking advantage of methane and carbon dioxide by an ecological and environmental friendly use.

The main objectives of the introduction of biogas as automotive fuel are:

- Reducing fuel costs
- Reducing emissions
- Reduction of noise
- Increasing energy security. Reduce dependency on energy imports
- Showing citizens the environmental possibilities of managing the city’s sewage
- Showing citizens technologies for transport as an alternative to fossil fuels
- Improving technical/organizational capacities of institutions and experts

The first phase (2004-2006) of the research study involved the optimization of the chemical desulphurization of biogas. The second phase (2007-2009) carried out consisted of treating the biogas in a pilot plant where it underwent chemical scrubbing with amines. A fuel ready for use is obtained by the stages of the project.

Results, evidence of success and transferability:

The following successful results and conclusion were obtained at the final stage of the research:

The biogas from anaerobic digestion in wastewater treatment plants can be sufficiently purified so that it can be used as biofuel for vehicles. One way of purifying biogas is chemical desulphurization in gas scrubbing towers, followed by removal of carbon dioxide by means of absorption with MEA (monoethanol-amine). When the process was optimized, the outflowing biogas had a mean CO2 concentration of 0,1%.
By this project will be developed a new technology that will suppose a revolution in WWT by products reuse since it takes advantages of a renewable energy, biogas, from raw biogas (in pressure, temperature, relative humidity and high impurities level conditions). A ready for use fuel is obtained by the stages of the project.

The prototype car has been operating in experimental phase since 2007 and can run for about 400 km, on a single tank of biogas (164 kilos of capacity).

The EMUASA personnel use this car as a transport mean into the Murcia-Este WWTP and to manage paperwork in Murcia.

In 2010, EMUASA had two vehicles running on BIOEDAR. Greenhouse gas emissions reduction (kg CO$_2$/year). This vehicle releases into the atmosphere less than 140 g CO$_2$/km (maximum level recommended by the EU emissions).

The main future objectives are to increase the number of cars running on biogas into the fleet of vehicles and to carry out other investigations about harnessing the biogas.

Contact: Jose Manuel Ruiz
Mail: josem.ruiz@info.carm.es
Web page: http://www.institutofomentomurcia.es/
Full study may be downloaded here
2.4. INTRODUCING OF BROWN GAS TECHNOLOGY IN VEHICLES WITH COMBUSTION ENGINES – Bulgaria

Objectives of the Practice

The main objective of the good practice includes the implementation of Brown gas technology (oxyhydrogen) into engines with internal combustion. This practice is already implemented in hundreds of vehicles in Bulgaria. It can be applied in cars, trucks, and buses running on petrol, diesel and LPG.

Description of the Practice

The creation of generators of Brown gas is based on the development of the famous Bulgarian scientist Iliya Valkov.

Brown gas is a mixture of hydrogen and oxygen gases, produced by electrolysis of water. When used in internal combustion engines Brown gas does not substitute the traditional fuel.

Brown gas is produced by generators mounted additionally in the vehicle. They work on the principle of pulse electrolysis i.e. certain amount of water placed in a container is put under DC pulses with very specific frequency, amplitude and duration of pulse. As a result of that the water disintegrates into hydrogen and oxygen in its purest condition 99.99%.

Brown gas is generated by water; the gas is not toxic or explosive and is emission free. The gas is injected into the engine through an air-filter box. Brown gas in this case can be identified as a highly efficient fuel additive, which is totally renewable, and it is generated by a generator which is mounted additionally inside the vehicle, and the gas is immediately used. It is also possible to use that gas directly as a fuel, but it is needed a certain modification of the engine as well as the generator. We can say Brown gas is an important step towards Hydrogen Energetics, which can provide endless energy without the use of fossil fuels, petrol and natural gas.

The main objectives of that practice are the main advantages, and these are: significant savings in commonly used fuels and significant decrease of harmful emissions as well as decrease of engine wear.
The major advantages:

- Fuel economy up to 40%.
- Increase in performance. Regarding vehicles with diesel engines, the torque can increase up to 25%.
- Decrease of CO₂ emissions by 80%.
- Decrease of engine wear.
- Decrease in amount of carbon deposits and soot formation inside the engine.

Results, evidence of success and transferability

So far, the HHO generator has been installed in 3,251 vehicles in Bulgaria. It is applicable for cars and trucks running on petrol, diesel and LPG. The majority of vehicles that already installed technology are vehicles with engine volume of up to 3,500 cc.

Proof tests for harmful emissions have been performed in laboratories in Bulgaria, Germany, and Norway. They show a reduction of harmful emissions between 70-80% depending on the type and age of the vehicle.

Currently, the company HHO-Bulgaria performs experiments for the use of these generators in two aspects:

- For the introduction of this technology in motorships;
- For combustion of plastic and other industrial wastes which are hard or inefficient. Those are selected to be burnt separately.

This practice is already implemented in hundreds of vehicles in Bulgaria. It is applicable for cars and trucks running on petrol, diesel and LPG. Local/Regional authorities are aware of reducing emission and costs. Technology has increased the number of vehicles which are using this technology.

Contact: Mr. Stefan Panayotov.
Organization: HHO-BG" Ltd.
Mail: info@hho-bulgaria.com
Web page: http://www.hho-bulgaria.com/
Full study may be downloaded here
2.5. CNG (BIOMETHANE) AS A FUEL FOR SUSTAINABLE CITY DISTRIBUTION – Skåne region (Sweden)

**Objectives of the Practice**

The main objective has been to reduce carbon dioxide emissions and other emissions with negative local impact, such as particles and NOx and also to increase the share of renewable energy used in transport sector by using CNG/biomethane as a vehicle fuel. Testing and evaluating “new” technology/vehicles, Development of a filling station network for CNG in Skåne, Increasing the demand for renewable alternatives to CNG = Biomethane.

**Description of the Practice**

In 1996 Skånemejerier (a dairy company from Skåne) participated in a project called LB30 where they bought their first CNG/biomethane trucks. This was the company’s first step at their journey towards replacing diesel with CNG in heavy vehicles used in city distribution. In 1996 there were no factory built trucks for CNG, no filling stations for gas as a vehicle fuel CNG in the Skåne region. Building filling stations for CNG and testing and evaluating gas driven heavy vehicles were therefore the objectives for the project.

Locally produced biomethane can replace fossil energy imported solely for transport purposes. When looking at Skåne as an isolated market the transport sector is completely dependent on imported oil (petrol and diesel). Increasing the self-sufficiency on energy clearly has a positive impact on the local/regional economy.

When it comes to fuel pricing there is a price difference between CNG and petrol and diesel which the CNG costumers benefit from. In Skåne CNG is generally CNG (both natural gas and biomethane) priced about 20% below petrol, per kWh. Although there are local deviations in both directions and the price can also deviate depending on long term contracts.

Since the first trucks were taken into operation in 1996 Skånemejerier, who got positive experiences from the use of CNG trucks, has continued to replace older diesel trucks in their fleet with CNG/biomethane driven trucks for in-city distribution.

In 2012 Skånemejerier had 22 CNG trucks running in their distribution fleet in 7 cities in Skåne. 8 of the trucks are being run on 100 % biomethane and 14 on a mixture of biomethane/CNG where the proportion is 50% biomethane and 50% natural gas. At the dairy in Malmö Skånemejerier has got their own fuel depot/slow filling station for their CNG trucks situated at their facilities.

The fact that Skånemejerier is a dairy company has made it possible for them to use their own advertisements pillars – the milk packages. At some different occasions Skånemejerier has used a spot on the milk packages to inform their costumers that they run a large part of their transports on CNG/biomethane. The choice to run the distribution trucks on CNG/biomethane has also been highlighted in press releases, at the company web page etc.
Results, evidence of success and transferability

Gas driven vehicles have very low emissions of particles, carbon monoxide and other hazardous compounds and this makes them suitable for use in urban environment.

The vehicles also have lower emissions of greenhouse gases than diesel vehicles. When being run on renewable biomethane the CO$_2$-emissions are considerably lower, for biomethane produced from manure the reduction of CO$_2$-emissions can even be above 100% compared to fossil petrol and diesel.

The outcomes are that Skåne mejerier has so far purchased 22 heavy distribution trucks running in 7 cities in the Skåne region. In four cities, the gas driven trucks are filled up with 100% biomethane and in three cities with a mixture of 50% biomethane and 50% natural gas. Calculation of yearly reduced emissions because of the switch to CNG in the vehicle fleet has been SO$_2$ 160 kg.

Contact: Mårten Ahlm
Organization: Skåne mejerier
Mail: marten.ahlm@kfsk.se
Web page: http://www.skanemejerier.se/
Full study may be downloaded here
Tematic 3 – Others Sustainable Urban Mobility practices

3.1. CONSOLIDATION OF GOODS AND SUSTAINABLE PROCUREMENT WITHIN THE MUNICIPALITY OF VÄXJÖ – Växjö (Sweden)
3.2. ESSEX COUNTY COUNCIL TRAVEL PLAN – Essex (UK)
3.3. SOFIA REAL TIME PUBLIC TRANSPORT INFORMATION – Sofia (Bulgaria)
3.4 BUSCYCLETTE: A PUBLIC SERVICE DEDICATED TO BICYCLES – Amiens (France)
3.5 CARTAGENA’S OLD TOWN, SUSTAINABLE CITY – Cartagena (Murcia)
A detailed description of the good practices

Thematic 3– Others Sustainable Mobility practices

- Växjö (Sweden)
- Essex (UK)
- Sofia (Bulgaria)
- Amiens (France)
- Cartagena (Murcia)
Objectives of the Practice

The main goal of this good practice is to reduce transport work and emissions, improve road safety, reduce transport costs, and increase the proportion of organic and locally produced products in the municipality of Växjö.

Description of the Practice

Växjö was one of the very first municipalities to introduce fright consolidation in Sweden and the very first to integrate it with an e-purchasing system, ensuring that the obtained goods are as environmental friendly and locally produced as possible.

The first part of the practice was the Consolidation of goods where the situation in Växjö before 2010 was that the suppliers delivered goods directly to the Municipal unit placing the order. In the small scale, this system was fast and required little forward planning as the orders were delivered almost instantly from the supplier to the unit. On the bigger scale however, the system caused environmental problems, compromised road safety through increasing levels of heavy traffic.

The second part of the practice - The E-purchasing system. Using a consolidation central the Municipal unit must now plan their purchases, as goods are only delivered on certain days of the week from the central. However, Växjö also introduced an E-purchasing system in order to increase the effects of the Consolidation central. Simplified, the E-purchasing system works as a web-shop for the Municipal units. Hence, the units can only choose from the goods that are in the web-shop. This system is beneficial to the units, the municipality as well as the suppliers.

Initially there are costs associated in this practice with the establishment of the system, for example building the consolidation center and obtaining and implementing the E-purchasing system. However, the system will break even due to the E-purchasing system. The system reduces administration and enables the Municipality to do better procurements.
Results, evidence of success and transferability:

For the Municipality of Växjö, acting as a single unit means that they can make better deals concerning price and conditions. As they also get better statistics and better control it is easier to implement an environmental friendly purchasing behavior within units.

For the supplier, the centrally managed system gets easier to understand and get a whole of. When all the procurements are coordinated, it is easier for local and often smaller producers to take part in the procurement. Figures form Växjö shows that the system has increase the number of local producers by 60 %.

Since the start in 2010, the combination of fright consolidation (coordination of goods before transport) together with a central e-purchasing system (webshop) has resulted in:

- Reduction of kWh usage per delivered ton by 71-76 %
- Reduction of CO₂ emissions per delivered ton by 71-76 %
- Reduction of deliverables per week by 82 %
- Increase of number of local producers by 60 %

Transferability of the Practice: Växjö was one of the very first municipalities to introduce consolidation goods transport in Sweden and the very first to integrate it with an e-purchasing system.

Due to the positive results achieved in Växjö, surrounding Municipalities are interested in implementing the same systems and therefore it is monitored by other Municipalities and organizations who want to implement the systems themselves. This practice is easy transferable to any Municipality System in other regions and countries.

Contact: Ulrika Nord, Logistic officer
Organization: The Municipality of Växjö
Mail: ulrika.nord@vaxjo.se
Web page: http://www.vaxjo.se/
Full study may be downloaded here
Objectives of the Practice

Essex County Council manages sustainable Travel for new developments across the county and has developed a travel Plan for Essex County Council as an organization with the aim to set an example as an active way to contribute to the CO2 reductions in Essex and to minimize the impact that Essex County Council staff travel has on the local transport network.

It aims to offer the employees a range of options to consider for commuting and business travel. Essex County Council has 7,824 employees and their travel could have a significant impact on the local transport network.

Description of the Practice

The Essex County Council Travel Plan includes measures such as: walking, cycling car sharing, bus and Walking is the most environmentally and socially sustainable form of transport and that is why Essex CC actively seeks to promote and encourage it within Essex but to Essex CC staff.

- **WALKING:** Walking is the most environmentally and socially sustainable form of transport and that is why Essex CC actively seeks to promote and encourage it within Essex but to Essex CC staff.
- **Cycling** is promoted within Essex but as an organization Essex County Council promotes cycling among its staff by offering to its employees an interest free bike loan up to a value of £650. It also offers pool bikes. Essex County Council also offers free cycling parking including showers facilities. Also offers free training sessions for cyclists.
- **Public transport:** To encourage bus usage among its staff, Essex County Council offers discount tickets. Staff is able to get a 15% discount on annual season tickets and 6 monthly tickets, and a 10% discount on all weekly, monthly and quarterly tickets.
- **To encourage travel by rail:** Essex County Council has ensured discount carnet tickets for its part time staff, flexible workers and occasional rail users.
- **Car sharing** plays a fundamental role in the Travel Plan. Essex CC has a car share scheme and a dedicated website to the car share
The scheme offers free parking to members of the scheme.

The Travel Plans have a series of benefits to employer, staff and the local communities:

**Employer benefits are:** Reduced costs and demand on car parking, Reduced on-site congestion and pollution, improved access for visitors and deliveries, increased travel choices – aiding recruitment, retention and morale, corporate identity.

**Employee benefits are:** Fair approach to travel subsidy, Improved transport infrastructure, Better cycling facilities, Good ticketing deal on local buses, Cheaper travel to work, Healthier lifestyle, More flexible work practices, Time savings.

**Community Benefits:** Reduced congestion, Improved journey times, No “bad neighbour” parking, Improved quality of life, Less noise pollution, Reduced CO2 emissions, Better air quality.

**Results, evidence of success and transferability:**

**Proved successful**

The Essex County Council is seen as an organisation which provides travel benefits for its employees. Free car parking space for staff who car share is a good incentive and well as cycling facilities and parking for cyclists. The bus and rail discount tickets attract many of the staff to travel by train and bus, including Park and Ride. Essex County Council also provides free cycling training for its staff and interest free bike loan and pool bikes for its staff.

**Potential to be transferred to a different geographic area**

The Travel Plan has the potential to be transferred to a different organization with similar number of employees and encouraging them to shift their behaviour towards more sustainable modes of transport.

**Contact:** Helen Akpabio  
**Organization:** Essex County Council  
**Mail:** helen.akpabio@essex.gov.uk  
**Web page:** http://www.essex.gov.uk/Pages/Default.aspx  
**Full study may be downloaded [here](http://www.essex.gov.uk/Pages/Default.aspx)**
3.3. SOFIA REAL TIME PUBLIC TRANSPORT INFORMATION
– Sofia (Bulgaria)

Objectives of the Practice

This practice main goal is increasing the number of passengers by providing reliable real-time information regarding public transport services in Sofia Municipality.

Parameters of the public transport system Sofia’s public transport system is the biggest and the most complex urban transport system in Bulgaria and includes tram, trolleybus, bus and metro operations.

Description of the Practice

All real-time e-services are based on a high-technology system for management and control of the public transport, based on GPS positioning. All public transport vehicles are equipped with special devices. GPS system allows installing information boards at public transport stops showing the remaining time for vehicle arrival as well as providing real-time information in internet.

The organization involved in this practice is Sofia Urban Mobility Centre, MU-SAT - Micro-processing devices and systems for transport.

The public transport network is well-developed with 93 bus lines, 15 tram lines, nine trolleybus lines and two metro lines.

Results, evidence of success and transferability:

On Sofia Urban Mobility Centre website (www.sofiatraffic.bg) are available various e-services, such as:

- **Virtual tablets** - Real-time information for the remaining time for vehicle arrival on each of the 2500 public transport stops. Options for search of the public transport stop by route, by station or map search. Information is provided whether the vehicle is accessible and/or air-conditioned.
- **Schedules and routes** - Detailed information regarding schedules and routes of all public transport lines.
- **Public transport journey planner** - The System offers several route choices including: recommended route, route with the least transfer and route with the least walking.
- **Route changes** - Information about changes in the routes of public transport.
- **Traffic information map** - For more than 30 streets and intersections is provided detailed information about the traffic and the expected delay. The map presents information about ongoing repairs, public events and other events affecting traffic.
- **Tariff calculator** - Based on data entered by the user regarding number and frequency of trips the system will calculate the most suitable public transport travel document.

The target group is Public transport passengers (450 mil. for 2012) as well as users of other transport modes.
- **Check for towed-away vehicle** - You can verify whether a car was towed-away and at which car park is located.

- **Mobile version of site (m.sofiatraffic.bg)** - Mobile platform contains all news, articles, etc., located on the site. Through fast and intuitive menu, the user can easily obtain the necessary information. Convenient to be used at public transport stops for receiving real-time information about the remaining time for vehicle arrival only by entering the unique code placed at each public transport stop.

**Information on the movement of vehicles in real time**

Contact: Metodi Avramov
Organisation: Sofia Urban Mobility Centre /SUMC/
Mail: mavramov@sofiatraffic.bg
Web page: http://www.sofiatraffic.bg/en/
Full study may be downloaded [here](http://www.sofiatraffic.bg/en/).
BUSCYCLETTE: A PUBLIC SERVICE DEDICATED TO BICYCLES – AMIENS (France)

Objectives of the Practice

Buscyclette is a public service provided by Amiens Métropole, managed via a Public Service Delegation, the Vélo Service Association. Entirely dedicated to bicycles, the aim of this service is to increase the use of bicycles in the metropolitan area of Amiens.

Detail description of the Practice

The service was set up in 1999 in partnership with cycling associations. The service originally offered only short-term bicycle hire, safekeeping and repairs, this service has expanded considerably to increase the use of bicycles in the metropolitan area with the development of the following measures:

To increase the use of bicycles in the metropolitan area the following actions has been developed:

- **A bicycle rental service**: A wide range of bicycles for rental: city bikes, folding bikes, e-bikes, trikes, tandems, mountain bikes, etc. The majority of the bicycles are city bikes. However, due to increasing demand, the service is acquiring more and more folding bikes and e-bikes.

- **A repair service**: The Buscyclette team is responsible for repairing the fleet of bikes for rental, but also provides a bicycle repair services to individuals wishing to have their own bikes repaired.

- **A safekeeping service**: On the Buscyclette premises, in individual lock-ups situated near the train station. The 38 lock-ups are in use all the year round and priority is given to those users who combine the use of train and bicycle.

- **An educational vocation**: Visits to schools and leisure centers: Buscyclette offers several cycling proficiency training modules (a minimum of 7 to 12 sessions) for children in schools and leisure centres.

- **Cycling school**: a ‘driving school’ for bicycles: The cycling school (on Wednesdays only), gives the public (children and adults) the opportunity to...
learn or relearn to ride a bike in an urban area and basic bicycle maintenance.

- **Promoting cycling:** An evening cycling trip is organised every month. Other outings are also organised in partnership with the Tourist Office. Awareness campaigns throughout the year 2012 by setting up various events: information stands, bicycle fairs, obstacle courses for children, debates, etc.

**Results, evidence of success and transferability**

The service delegate, Vélo Service Association, publishes an annual activity report that allows Amiens Métropole to keep a close track of developments in the service, using precise indicators: number of rental days, types of users, condition of the bicycle fleet, distribution of the bicycle fleet, number of people made aware, etc.

**Main results to the practice:**

- **A bicycle rental service:** Rental days have been rising steadily: a rise of + 2056% between 2002 and 2011, which is proof of the service’s popularity with its users. The majority of bicycle renters are under 26, in other words students.

- **A repair service:** The Buscy克莱te team is responsible for repairing the fleet of bikes for rental, but also provides a bicycle repair services to individuals wishing to have their own bikes repaired. This particular sector has been a real success.

Contact: Tristan MONTIGNY
Organization: Amiens Métropole
Mail: t.montigny@amiens-metropole.com
Web page: http://www.amiens.fr/
Full study may be downloaded [here](http://www.amiens.fr/)
Objectives of the Practice

“Cartagena’s Old Town, sustainable city” is a comprehensive project led by Cartagena’s Council to restore and rehabilitate from a social, economic, urban and environmental point of view the Cartagena’s old town, built around a pedestrian and traffic calming plan in this area of Cartagena, which has been the backbone of this initiative.

Description of the Practice

This project involves the pedestrianization and traffic calming of about 100,000 sqm in the old town of Cartagena, the greatest one accomplished in the city of Cartagena and in the Region of Murcia during the latter half of last century.

The practice includes the pedestrianisation of a large set of streets that form the backbone that connects the port area and the expansion of the city, along with the creation of several common areas and calmed traffic connected with the above mentioned ones.

The key actions that constitute this project are those related to pedestrian and wheeled traffic calming in a wide range of streets of Cartagena’s old town;

- Improvement of cycling mobility: Implementing a bicycle hire point, as part of a municipal service named Bi-city, Installation of bicycle racks, New bicycle lanes.
- Improvement of accessibility.
- Increased provision of parking for vehicles.
- Pedestrianization of a large set of streets that form the backbone that connects the port area and the expansion of the city, along with the creation of several shared use zones and calmed traffic connected with the above mentioned ones.
- Restoration of facades.
- Revitalization of economic activity.
- Improvement of cleaning and waste management.

These measures have been accompanied by a wide range of complementary actions designed with the objectives of establishing a model of sustainable mobility, improving the quality of life in this area and revitalizing the socioeconomic and environmental situation of it.
Results, evidence of success and transferability

The overall result of the project has been the redirection of the development model of the old part of Cartagena with environmental, social and economic criteria.

The project has corrected much of the environmental conflicts identified and created the right conditions to foster socio-economic development of this area.
The old part of Cartagena has again become one of the areas of the city with a major attraction for both residents and occasional visitors from the business and hotels sectors.

Main evidence of success:

- **Recovery of space for pedestrians**: Pedestrianization and creation of 100,000 m² of shared use streets.
- **Modification of modal scheme streets**: Currently, most of it the trips that take place within the old part of the town are made by foot, and bicycle. The use of public transport has also experienced a significant increase in this area and the surface parking of vehicles has been reduced substantially.
- **Improvement of urban landscape**: The urban landscape of Cartagena has substantially improved, such as the restoration of 32 building facades, refurbishing pedestrian streets (lampposts and the decrease in the presence of vehicles on the streets.
- **Revitalization of economic activity**: The creation of hotels and retail businesses has reached its highest numbers in the period between 2006 and 2010.
- **Reduction of noise levels**: The elimination of wheeled traffic in the new pedestrianized streets, the reduction of speed in the new shared use ones, and the decrease in the overall number of vehicles on the others have helped to reduce noise levels in the old part of Cartagena.

Potential to be transferred to a different geographic area.

The project consists of different activities, at the same time independent and complementary, facilitating the transference to other cities.

So, it can be decided to implement only certain measures, or all, varying scope, duration and intensity, depending on the specific circumstances of the city under study.

Contact: Jose Manuel Ruiz
Mail: josem.ruiz@info.carm.es
Web page: http://www.institutofomentomurcia.es/
Full study may be downloaded [here](http://www.institutofomentomurcia.es/)
LIST OF ALL THE GOOD PRACTICES DEVELOPED BY THE PARTNERS OF
SUM PROJECT

We have listed below all the Good practices developed by each of the part-
ners during the implementation of the project.

The three thematic areas are:

- Electric Mobility
- Biofuels
- Other related practices on sustainable urban mobility.

The 15 good practices described in this guide were chosen by the consortium
of SUM Project as the best practices out of the 85 good practices presented
in the following section.

A brief summary of the 85 good practices can be found on the CD available
with this guide.

A full report of the 85 good practices is available on SUM Project Website:
www.sumproject.eu
Municipality of Vigo

- MOBI2GRID
- MOBI.EUROPE
- ENERBIOALGAE
- USE OF BIOFUEL IN THE FLEET OF BUS IN THE PUBLIC TRANSPORT SYSTEM
- COLLECT THE COOKING OIL IS TO CARE FOR THE ENVIRONMENT
- PDMAG - MANAGEMENT PLAN OF ALTERNATIVE MOBILITY OF GALICIA
- SPDP - SECTORAL PLAN OF DISSUASIVE PARKING

Municipality of Messina

- THE STREETCAR OF THE CITY OF MESSINA
- THE “METRO RAILWAY”
- THE ESCALATOR
- ZEUS PROJECT - "ZERO AND LOW EMISSION VEHICLES IN URBAN SOCIETY"
- PRODUCTION OF ALTERNATIVE FUELS
- FI.SIC.A
- THE H-BUS - FUEL CELL HYBRID ELECTRIC VEHICLES
- ME.TA & 1 S.I.D.U.M.ME

Regional Agency for Energy and Environment in Algarve

- IMPLEMENTATION OF ELECTRIC VEHICLE CHARGING NETWORK IN FARO
- MANAGEMENT SYSTEM FOR USED COOKING OILS IN THE ALGARVE REGION
- VILAMOURA PUBLIC BIKES SYSTEM

Municipality of Reggio Emilia

- ECONOLEGGIO OF REGGIO EMILIA
- TECNOPOLI’ PROJECT - REGGIO GREEN: THE METHANE DISTRICT
- BIOMASTER PROJECT
- REGGIO EMILIA ‘THE CYCLE-FRIENDLY CITY"
### Riga City Council

- **Introduction of First Five Electric Cars for Municipal Services Use in the Riga City**
- **Development of Gas Fuel Use in Vehicles in the Riga City**
- **Riga City Cycling Development Program**
- **Actions on Citizens Awareness Rising**

### City of Katowice

- **Electric Vehicles in Urban Europe EVUE**
- **The Modernization of the Infrastructure of the Tram and Trolleybus in the Upper Silesian Agglomeration**
- **Electric Vehicles in Didactics at the Silesian University of Technology**
- **Baltic Biogas Bus**
- **Biomaster**
- **GasHighway**
- **Silesian Public Services Card**

### Municipality of Vratsa

- **National Information Platform Elektromobili.b.g**
- **Integrated Urban Transport of Pleven**
- **Integrated Urban Transport of Varna**
- **Astra Bioplant Ltd Project**
- **Guide to Sustainable Biofuels Procurement**
- **SGS in Brief**
- **Green Transport Sustainable Forms of Transport Through the Exchange of Experiences and Best Practices**
- **City Bike - Model of Modern Urban Mobility**
Municipality of Sofia

- Creating and developing a network of electric vehicle charging stations in Sofia Bulgaria
- Sofia urban transport integrated project
- Use of alternative gaseous fuels (CNG) by converting older versions of diesel engines and the usage of buses with clean gas engines.
- Sofia real time public transport information
- Short-term parking zones in the city centre and park & ride at metro stations

Regional Energy Agency of Pazardjik

- Integrated approach for development of sustainable electric mobility in Bulgarian districts
- Conversion of used cars and light trucks with internal combustion engines into electric vehicles
- Introducing of brown gas technology in vehicles with combustion engines
- Biofuels networks in the community - bionic
- Introduction of innovative public vehicles with possibility for recovery of electricity
- European online platform to share travels by private cars
**Amiens City Council**

- **PROJECT PIETO +**
- **USE OF BIOFUELS IN THE AMIENS MÉTROPOLE BUS FLEET**
- **PROJECT FOR THE USE OF BIOGAS FROM METHANISATION AS FUEL FOR ITS FLEET OF BUSES**
- **REORGANISATION OF BUS LANES**
- **BUSECYCLETTE : A PUBLIC SERVICE DEDICATED TO BICYCLES**
- **CYCLE ROUTE SCHEME DIRECTIVE (SDAC) 2014-2023**

**Energy Agency For Southeast Sweden**

- **ELECTRIC CARS ON THE WAY- A COMMON CALL FOR ELECTRIC VEHICLES**
- **FILLING STATION FOR BIO-METHANE IN ORSKARSHAMN**
- **MORE BIOGAS SMÅLAND AB**
- **CAR SHARING IN RESIDENTIAL AREAS**
- **CONSOLIDATION OF GOODS AND SUSTAINABLE PROCUREMENT WITHIN THE MUNICIPALITY OF VÄXJÖ**
- **COMMUTER EXPERIMENT**

**The Skåne Association of Local Authorities**

- **E-MOBILITY MALMÖ**
- **CNG (BIOMETHANE) AS A FUEL FOR SUSTAINABLE CITY DISTRIBUTION**
- **SKÅNETRAFIKEN IMPLEMENTING CNG BUSES AND (BIOMETHANE) AS A SUSTAINABLE FUEL FOR PUBLIC TRANSPORTATION IN THE SKÅNE REGION, SWEDEN**
- **ETHANOL AS A VEHICLE FUEL IN THE SKÅNE REGION, SWEDEN**
- **SKÅNE PEDALS**
- **COMMUTER EXPERIMENT**
## Essex County Council

- **Essex Transport Strategy. The Local Transport Plan June 2012**
- **Milton Keynes to Trial Wireless Charging for Electric Buses**
- **Clean Vehicles Trial – City Norwich Projects Smile**
- **Biomaser – Biomethane as an Alternative Source for Transport and Energy Renaissance**
- **Barclays Cycle Hire**
- **Essex County Council Travel Plan**

## Region of Murcia

<table>
<thead>
<tr>
<th>Project/Institution</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Regional Management Agency of Energy – ARGEM</strong></td>
<td><strong>San Antonio Catholic University of Murcia</strong></td>
</tr>
<tr>
<td><strong>Correos y Telegrafos S.A</strong></td>
<td><strong>Cespa</strong></td>
</tr>
<tr>
<td><strong>MURCIA CITY COUNCIL</strong></td>
<td><strong>San Javier City Council</strong></td>
</tr>
<tr>
<td><strong>Regional Development Agency of Murcia</strong></td>
<td><strong>Latebus. Use of Biodiesel in Buses of the Municipality of Murcia</strong></td>
</tr>
<tr>
<td><strong>Ambe Project: Biogas as Automotive Fuel</strong></td>
<td><strong>Biodiesel Petrol Stations Thader V2</strong></td>
</tr>
<tr>
<td><strong>Cartagena’s Old Town, Sustainable City</strong></td>
<td><strong>Bicycle Master Plan of Murcia</strong></td>
</tr>
<tr>
<td><strong>info Murcia</strong></td>
<td><strong>Use of Vehicle Natural Gas in the Region of Murcia</strong></td>
</tr>
</tbody>
</table>
MUNICIPALITY OF VIGO
AREAL- REGIONAL AGENCY FOR ENERGY AND ENVIRONMENT IN THE ALGARVE
MUNICIPALITY OF MESSINA
MUNICIPALITY OF REGGIO EMILIA
RIGA CITY COUNCIL
CITY OF KATOWICE
MUNICIPALITY OF VRATSA
SOFIA MUNICIPALITY
REAP - REGIONAL ENERGY AGENCY OF PAZARDJIK
AMIENS CITY COUNCIL
THE SKANE ASSOCIATION OF LOCAL AUTHORITIES
ENERGY AGENCY FOR SOUTHEAST SWEDEN
ESSEX COUNTY COUNCIL
INFO - INSTITUTO DE FOMENTO REGION DE MURCIA
The CD contains the Guide of good practices and the summary of the 85 Good practices of SUM Project.