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Cleaner and better transport in cities
M I M O S A



THE CIVITAS INITIATIVE
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 **Regione Emilia-Romagna**



e-travel

**The new program
for sustainable mobility
in Emilia-Romagna**

**mi
nuovo elettrico**




EMILIA-ROMAGNA, A REGION COMMITTED TO ENVIRONMENTAL PROTECTION AND SUSTAINABLE MOBILITY

Situated deep within the Po valley and surrounded on three sides by mountains, a rather critical feature in relationship to air quality, as pollutants easily spread off, but hardly disperse, due to its geographic location, Emilia-Romagna suffers from a high degree of air pollution. Moreover, Emilia-Romagna is a crucial national transport knot since, besides being a junction to the **TEN-T trans-European networks**, it is characterized by high passenger and freight transport flows crossing Italy.

Therefore the improvement and protection of air quality are top priorities for the Emilia-Romagna Regional Government, which every year, since 2002, has been promoting several inter-sectorial agreements (linked to transport, environment, health, industrial activities), involving also Provinces and Municipalities, in order to activate better widespread actions in favor of environmental sustainability.

This commitment has deeply inspired also the new **Regional Integrated Transport Plan (PRIT 2020)**, the fundamental planning tool through which Emilia-Romagna sets up, on one side, courses and guidelines for regional mobility policies and, on the other side, settles its major initiatives and priority measures, coordinating them with other regional plans. One of the main new PRIT goals is in fact the overall “system sustainability”, that is the necessity to guarantee a sustainable transport development, aiming at reducing energy consumption, polluting emissions and negative mobility impacts on the territory.

flash

- Emilia-Romagna has about 4.5 million inhabitants.
- Car density in relationship to residents is higher than the national and European average.
- Thanks to the regional policies, between 2001 and 2010 air quality has improved (-25% PM10; -40% PM10 daily threshold exceeded; from -50 to -70% carbon monoxide and benzene).
- The regional average cycling modal split is three times higher than the national one.

Regione Emilia-Romagna
Assessorato Mobilità, Riqualificazione Urbana

Liberiamo L'ARIA

Da **10** anni con l'aiuto di tutti l'aria in Regione migliora:

- 25% polveri fini
- +90% piste ciclabili
- +1.640 autobus ecologici

Molto è stato fatto, molto c'è ancora da fare.

RIPARTONO I PROVVEDIMENTI ANTISMOG:

- dal 1° ottobre al 31 marzo: **STOP** ai veicoli più inquinanti;
- dal 1° ottobre al 30 novembre 2012 e dal 7 gennaio al 31 marzo 2013: **BLOCCO** del traffico il giovedì e le prime domeniche del mese.

Per ricevere SMS GRATUITI sul blocco del traffico collegati al sito:
WWW.LIBERIAMOLARIA.IT

THE INTEGRATION WITH EUROPEAN POLICIES

The Emilia-Romagna Region fosters sustainable mobility policies following the main European guidelines, such as The Transport White Paper, the European Strategy on Clean and Energy Efficient Vehicles and the Guidelines on Alternative Fuels. The integration with the EU policies is made possible thanks to the participation in European projects, which propose the development of innovative solutions and favor experience exchanges at the international level.

THE REGIONAL ALL ENCOMPASSING MOBILITY CARD “MI MUOVO”: USERS AT THE HEART OF THE SYSTEM

Transparency, accessibility and promotion of public transport in favor of a more sustainable mobility: these objectives have driven Emilia-Romagna to get committed in the project named **STIMER**, i.e. the regional integrated fare (bus plus train) and ticketing system. In the framework of this initiative new integrated **Mi Muovo** tickets were introduced, making traveling by LPT in Emilia-Romagna more comfortable, simple and easy, thanks to the use of one comprehensive chip card. Recently “Mi Muovo” has been further developed and will eventually become a **“regional all encompassing mobility chip card”**, which allows the access to different transport and mobility services (from bus and train to bike sharing and car sharing), and to electric recharge points for e-vehicles, thus facilitating the use to the drivers. The system can be potentially extended to all the mobility activated services, so to improve the implementation of an integrated transport policy. “Mi Muovo” already allows also to recharge season ticket chip cards through bank ATMs and home banking (for this purpose over 800 ATMs and 220 multimedia kiosks are already available). Soon this service will be offered also by supermarket chains and internet and mobile telephone companies.

The introduction of the integrated fare and ticketing system was supported by several information campaigns, also in cooperation with the European Civitas Plus project MIMOSA.



flash

- An all encompassing mobility chip card
- An integrated bus and train fare system
- Possibility to upload different services subscriptions
- Facilities for commuters
- E-vehicle recharge service
- Car-sharing
- Bike sharing
- RFID (radio frequency identification) chip card



Regional ticket for integrated services

■ **Mi Muovo web address:** <http://mobilita.regione.emilia-romagna.it/mi-muovo-1>



“MI MUOVO ELETTRICO” (I E-TRAVEL): EMILIA-ROMAGNA’S CHALLENGE TO PROMOTE ELECTROMOBILITY

“Mi Muovo elettrico” is Emilia-Romagna’s **regional electromobility program**. This project is based on the two principles of the interoperability on a regional scale and of the integration of all the available mobility services. Being the e-mobility promotion and dissemination at regional level rather than simply at city level the final goal of the program, the Emilia-Romagna Regional Government has signed agreements with all the electricity providers operating in the region (ENEL and HERA at first, soon to be followed by IREN), and with the main municipal administrations, setting up an **innovative charging points network**, integrated in the “Mi Muovo” chip card. According to these agreements, and following the provider business principle, e-providers are bound to realize the infrastructure, while Emilia-Romagna’s task is to extend the charging points and the “Mi Muovo” shared hardware and software standards also to big private retailers (such as shopping centers). Besides the agreements in partnerships with private and public subjects,

The photo shows Emilia-Romagna’s President Vasco Errani and the Regional Councillor for Mobility and Transport Alfredo Peri together with some Mayors while testing an electric charging point

Emilia-Romagna fosters electric mobility through other channels:

- _ incentives for the procurement of low impact buses (electric, trolleys, hybrids, natural gas and LPG powered). Trolleys circulate in Parma, Modena, Bologna and Rimini for a total amount of a 120-vehicle fleet;
- _ incentives for the purchase of e-vehicles (scooters and e-bikes);
- _ communication and information campaigns to raise awareness and to promote the use of eco-compatible vehicles.



WHY SHOULD ELECTRIC VEHICLES BE DEVELOPED?

- _ No noise pollution
- _ No air pollution and zero greenhouse gas emissions in the case of electricity generated from renewable sources
- _ Mobility cost reduction thanks to the more energy efficient electric engines
- _ Decrease of the dependence from fossil fuels and indirect support for renewable sources development
- _ Possibility of being integrated in smart grids
- _ Support to suburban mobility planning



THE E-VEHICLE CHARGING INFRASTRUCTURE

The **charging points** are the key elements of the recharge device infrastructure for e-vehicles. The most important aspect is their **interoperability**, that is the possibility for drivers to use any charging station, regardless of the operator.

In order to facilitate the access also to already circulating vehicles fleets, and while looking forward to a European regulations on standardization, charging points are provided with two different plug typologies, namely SCAME and MENNEKES. Charging stations are technically highly developed and in the future they will be able to act also as an access to the **smart grid**.

CERTIFICATED ELECTRICITY GENERATED FROM RENEWABLE SOURCES

Aiming at reinforcing the commitment for environmental sustainability, all the above mentioned agreements, signed by the Emilia-Romagna Region together with private and institutional partners, foresee that electricity must be generated from renewable sources, so that **e-mobility can be completely zero-emission**.

INTEROPERABILITY

Interoperability is the key-issue in the “Mi Muovo elettrico” plan. It means that it is possible to charge electric vehicles all across the region regardless of the electricity provider. The same regional mobility chip card “Mi Muovo”, held by LTP, bike sharing and car sharing subscribers, enables the access to all charging points.

SMART GRID

The new technologies adopted will allow the flexible energy flows management at the various grid knots. In this framework, for every smart access to the network, such as, for instance, the charging points for e-cars, it will be possible to communicate with the entire grid and to fine tune the performance in relationship to the system’s needs. In the future, an electric car connected to a charging point will be able both to recharge the battery and, potentially, also to upload electricity to the grid.



Pilot-projects, energy providers and public charging points



ENERGY PROVIDERS AND PILOT-PROJECTS

Started



PUBLIC CHARGING POINTS NETWORK

Already available



100% renewable energy

Available soon



LTZ HARMONIZATION

Activated



CITIES > 50.000 INHABITANTS



> 300.000 INHABITANTS



UNTIL 200.000 INHABITANTS



UNTIL 150.000 INHABITANTS

OTHER SYMBOLS



HIGHWAY



ROAD NETWORK



REGIONAL BORDER



PROVINCES



WATERWAYS

ON-GOING ELECTROMOBILITY PROJECTS IN EMILIA-ROMAGNA

Projects promoted by ENEL

■ **Bologna:** the complex and articulated mobility system of this city, the main in the Emilia-Romagna region, represents an ideal test field for electromobility and the charging points network, particularly referring to metropolitan area scaled journeys.

■ **Cesena:** the goal is develop and integrate the European demonstrative project GRID4EU dealing with smart grids and renewable energy sources.

■ **Ferrara:** the attention is concentrated on urban merger development between the historical center and the peripheral service areas (railway station, trade-fair district, petrochemical compound, University) by means of public and private vehicle fleets.

■ **Forlì:** is a good basis for new advanced tests also in relationship to freight transport, with its fleet of about 340 e-vehicles.

■ **Piacenza:** the charge points infrastructure is integrated within local projects on sustainable mobility to recharge freight and passenger vehicles.

■ **Ravenna:** the project support the "Ravenna Green Port" plan.

■ **Reggio Emilia:** is a good basis for new advanced tests also in relationship to freight transport, with its fleet of about 340 e-vehicles.

■ **Rimini:** the focus on electromobility is connected to services for tourists.

Projects promoted by HERA

■ **Modena and Imola:** in this two towns, characterized by high trip flows towards Bologna, the use of electrofleets is tested along suburban itineraries.

Project promoted by Iren

■ **Parma:** the goal is to setting up an innovative changing points network to promote e-mobility.



OTHER REGIONAL INIZIATIVES IN FAVOUR OF SUSTAINABLE MOBILITY

Regional bus fleet renewal

Aiming to improve air quality, the Emilia-Romagna Regional Government has been committed since a long time to renew the regional vehicle fleet. This engagement has resulted in drastically reducing the pre Euro buses while increasing the less polluting ones. The present bus fleet composition according to exhaust emission classes is as follows: Euro 0 (14%), Euro 1 (5%), Euro 2 (33%), Euro 3 (25%), Euro 4 (2%), Euro 5 or above (18%), battery electric (3%). In the region are circulating over 100 trolley buses in particular in the cities of Parma, Modena, Bologna and Rimini.

Cycling and walking mobility

The development of the regional cycling and walking network and the promotion of the bicycle culture represent one of the key-elements of the Emilia-Romagna Regional Government's sustainable mobility policy, since moving by bike is directly connected to environmental pollution abatement, safe transport, life quality improvement, landscape perception. For this reason the Emilia-Romagna Region boosts cycling through the creation of new cycle paths across the regional territory, promotes the inter-modal transport interchange terminals (bike-train, bike-bus, parking areas, etc...) and supports initiatives to disseminate the cycling culture.



SOME FIGURES ON THE BUS FLEET

- 3,282 vehicles (December 2011), of which 3,155 are buses and 127 trolleybuses
- vehicle average age: 11 years
- from 2001 to 2011, natural gas powered buses increased (from 2% to 23%), whereas diesel powered ones decreased (from 85% to 61%)
- 85 hybrid buses and 32 battery electric ones.

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- + 90% cycle paths (in 10 years)
- 1,320 km cycle paths in towns with a population over 50,000 inhabitants
- around 5,000 km cycle paths regionally



Incentives to boost electric bikes

Despite being often considered extra items compared to traditional bikes, electric bicycles on the contrary represent a good solution for daily long or repetitive trips such as home-work routes, or for elderly people and anybody else who just wishes to easily move across the city.

Thanks to combined incentives allocated by both the Emilia-Romagna Regional Government and the Municipality of Bologna, during the last twelve months the purchase of around 900 electric vehicles has been co-funded, while, in parallel, approximately 100 mopeds Euro 0 and Euro 1 were scrapped. This action highlights how **electric bikes may be a valuable alternative to scooters in an urban context.**

THE IMOSMID PROJECT

The IMOSMID project aims at defining a governance model based on sustainability criteria targeted to home-work mobility. In the pilot project, implemented in Correggio's industrial district, 30 electric cars are shared by around 100 workers on the basis of the car pooling scheme.



Investments in the railway sector

The Emilia-Romagna Regional Government is committed both to improve the railway services, whose offer on the regional level has been increased in the last years (+26% train services), and to modernize the existent local railway network and the rolling stock. During the last ten years thanks to a total investment of 400 million euros about 100 km out of an overall rail network of almost 350 km have been electrified and 12 electro-trains, 12 push-pull shuttle trains, 10 Vivalto double-deck compositions have been purchased.



flash

All electric provider involved in "Mi Muovo elettrico" plan.
_ 120 interoperable recharging points made by provider energy
_ zero costs for the public administration

EASIER ACCESS TO LTZS

The Emilia-Romagna Region recently signed an agreement with all the pilot-towns aiming at harmonizing the access rules to the LTZs in the historical centers. Thanks to this agreement electric vehicles are now allowed to:

- _ circulate within the regional LTZs without any time restrictions (h24);
- _ free park in on-street parking places.



A GOOD PRACTICE IN EMILIA-ROMAGNA

Since 2001 Reggio Emilia municipality, in co-operation with the partially town-owned company TIL Srl, has been promoting new innovative projects and sustainable mobility policies, which persuaded the municipal administration at first and afterwards several local enterprises, institutions, co-operatives and handworkers too to adopt electrovehicles for business trips. Nowadays the TIL fleet consists of 736 e-vehicles, of which 341 circulate in Reggio Emilia (the rate is 1 e-vehicle to 498 inhabitants). Thanks to this record figure the town was awarded with prestigious national and international prizes.



EUROPEAN PROJECTS IN FAVOR OF SUSTAINABLE MOBILITY

The CIVITAS Plus MIMOSA project

Through the CIVITAS Program the European Commission promotes and evaluates the implementation of urban transport integrated strategies, which can reach ambitious targets in the field of **sustainable mobility** aimed at improving citizens' well-being. In the framework of the CIVITAS MIMOSA project the Municipality of Bologna and Emilia-Romagna Region deal with several issues, among which:

- _ **alternative fuels** testing in different scenarios, including the implementation of facilities for low impact vehicles circulation and parking;
- _ the LPT support and promotion also through **integrated fare and ticketing**;
- _ the definition of new **logistic** plans, innovative and alternative freight transport systems and the integration with "road pricing" (access charge to some town zones);
- _ the **urban cycling** promotion through the development of innovative measures;
- _ **ITS** (Intelligent Transport Systems) development and implementation.

Hybrid Buses purchased thanks to MIMOSA project

Thanks to Mimosa project the city of Bologna realized a mini-fleet of 2 hybrid buses with super capacitors and tested in real service conditions. Main innovative characteristics of super capacitors:

- _ can stand a significantly higher number of charge-discharge cycles and last longer than conventional batteries, making both the super capacitor and vehicle more environmentally friendly;
- _ as super capacitors are not as restraint by low battery charge levels, these new buses make for a more reliable, constant and long serving bus service. Key results can be summarized as follows:
 - _ decrease in operating costs - The new hybrid vehicle is equipped with supercapacitors that do not need to be changed while traditional hybrid vehicles have batteries that needs to be substituted every 3 years with a cost of about 30.000,00 euro;
 - _ decrease in consumption - Data collected in real service condition demonstrated a relevant saving in fuel consumption of the new hybrid vehicles compared with the traditional ones.

■ **For further information:** <http://www.civitas-iniziativa.org>



■ **flash**

The resources of CIVITAS MIMOSA have contributed to buy two diesel-electric bus with "supercap".

The development of alternative fuels

The Emilia-Romagna Region is committed to the research and development of **natural gas** and **LPG** alternative fuels. Thanks to the regional incentives, today Emilia-Romagna is characterized by a high natural gas/LPG powered vehicles density: over 15% of the total number of circulating cars, while the national average is around 6%. In the LPT sector the natural gas powered buses percentage has raised from 2% in 2001 to 23% in 2010, while diesel buses have correspondently decreased.

MHYBUS is an experimental project whose aim is to demonstrate whether the use of an hydromethane blend is convenient, environmentally and with regard to fuel consumption, for public transport.

The project, scheduled to be completed in June 2013, has so far accomplished several steps:

- _ a new engine, identical to the one installed on the 8-meter bus owned by the START Romagna PT company, has been purchased and employed to carry out **at national research institutes bench tests** which, in terms of both emissions and fuel consumption, have showed better performances for the hydromethane blend than for natural gas;
- _ a new hydromethane **refueling station** has been built in Ravenna;
- _ a new **bus prototype** has been manufactured, optimized to be powered by an hydromethane blend with 15% hydrogen added;
- _ following the authorization released by the Ministry for Transport to conduct the on-road experimentation, the **prototype bus has started circulating** on Ravenna's streets and has almost completed the 5,000-km test loaded with on-board sacks simulating passengers' weight.

At the beginning of 2013, the bus will circulate for further 40,000 kms with passengers onboard to fully accomplish the experimentation and be homologated.



A RESEARCH PROJECT ON HYDRO-METHANE



The Emilia-Romagna Region is also putting forward a testing research on hydro-methane, a blend made of natural gas and hydrogen (with a hydrogen percentage of at least 15%).

The project goal is the homologation of the **first hydro-methane powered bus**.

■ **For further information:**
<http://www.hydromethane.net>



**mi
nuovo elettrico**

Sustainable mobility in Emilia-Romagna

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La mobilità sostenibile dell'Emilia-Romagna



COMUNE DI BOLOGNA



Comune di Cesena



Comune di Ferrara



Comune di Forlì



Città di Imola



Comune di Modena



Comune di Parma



Comune di Piacenza



Comune di Ravenna



Comune di Reggio nell'Emilia



Comune di Rimini



L'ENERGIA CHE TI ASCOLTA.

