



# CIVITAS

Cleaner and better transport in cities

## MIMOSA

# CASE STUDY



## DEMAND MANAGEMENT STRATEGIES TO IMPROVE URBAN MOBILITY

### DEMAND MANAGEMENT STRATEGIES



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**BOLOGNA**

Demand management strategies can reduce traffic through a variety of economic incentives, regulatory measures and modern communication technologies. Strategies for demand versus supply management are one of the arrowheads of Bologna's current traffic policies. As part of the CIVITAS Initiative, the city has tested a range of demand management measures to explore the merit of different initiatives and share lessons learned. These include access restrictions, road pricing, parking policies and marketing campaigns. Pricing strategies in particular can work as powerful incentives to get people to try cleaner modes of transport and make the private car a less appealing choice.

### Municipal context

Bologna is the capital of the Emilia Romagna region in Italy. The town, 140.85 km<sup>2</sup> in size and with 380,000 inhabitants, is located in the centre of the country. Surrounded by plains, hills, woods and the Apennines Mountains, the city has grown around a historic centre dating from the Middle Ages. The city centre is characterised by very narrow streets with their famous arcades, or porticoes. Even though this layout makes road space particularly cramped, the centre is still the focus of much public, commercial and cultural life.

The central location of the city, its prestigious university and numerous enterprises require a diverse mobility solution. The demand for transport results in high fuel pollutant emissions with a low diffusion rate. Therefore, Bologna suffers from a high degree of air pollution, particularly linked to fine particle concentration. The city's narrow streets in the medieval centre further complicate the matter. In June 2007, Bologna approved its new Urban Traffic Master Plan: the plan contains several urban mobility related proposals aimed at improving the circulation and road safety, reducing environmental and noise pollution, and achieving energy savings.

### MUNICIPAL PROFILE

#### LOCATION

Bologna, Italy

#### POPULATION

380,000

#### LAND AREA

140.85 km<sup>2</sup>

#### CIVITAS BUDGET

Five partners are involved in the implementation of CIVITAS MIMOSA measures in the city of Bologna. The total cost of the 19 measures is 6,596,648.12 € (with the requested EC contribution: EUR 4,071,283.59 €)



**BOLOGNA IN CIVITAS**

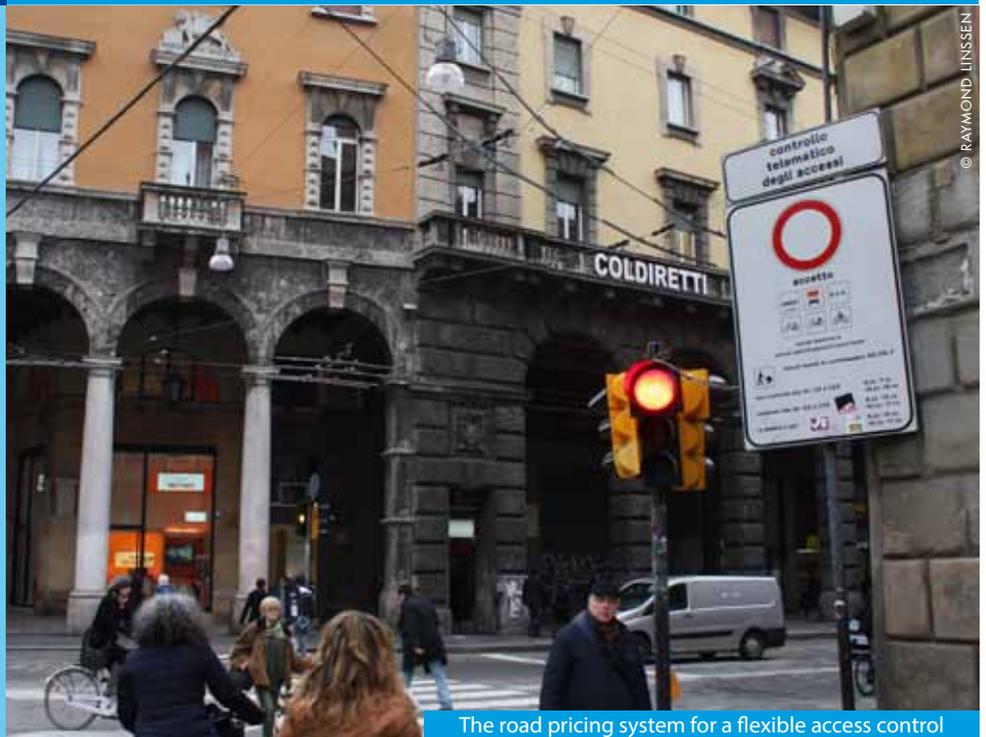
Bologna (Italy) participated in CIVITAS MIMOSA, an innovative collaboration between the cities of Bologna (Italy), Funchal (Portugal), Gdansk (Poland), Tallinn (Estonia), and Utrecht (Netherlands). The motto of the project is “Making Innovation in MObility and Sustainable Actions.”

**CIVITAS MIMOSA**

With cities drawn from a range of geographical and economic situations, MIMOSA cities implemented a range of 69 activities, aimed at guaranteeing mobility to all citizens without burdening the environment or weakening the cities’ economy. Shaping a new mentality where conscientious behaviour is perceived as rewarding rather than a sacrifice was at its heart. This effort was reinforced by a host of technical and physical measures. It ran from 2008-2012.

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The road pricing system for a flexible access control

**Introduction**

In 2006, Bologna became the first city in Italy to introduce a congestion charge ticket in conjunction with an ITS-based electronic enforcement system in the limited traffic zone (LTZ). The LTZ is a large area in the city centre where the circulation of vehicles has been restricted. CIVITAS provided an opportunity to optimise a pricing policy integrated with other traffic restriction, as well as the promotion of alternative modes. Both of which form part of the city’s urban traffic master plan.

The general purpose was to reduce pollutant emissions in the urban area by promoting public transport, cycling and walking. This was carried out by:

- **Guaranteeing flexibility** in regulations and access control;
- **Improving access policy** of the limited traffic zone (LTZ) based on economic incentives or disincentives and the support of electronic instruments;
- **Demonstrating the effectiveness** of urban mobility management through regulatory measures.

In this context, participation in the CIVITAS Initiative offered two major opportunities. On the one hand, the city could benefit from valuable experience exchanges with other European cities facing similar topics. On the

other, the city got the chance to test innovative technological measures “on the ground” and evaluate their performance in a real operative situation.

**Taking a closer look**

A set of integrated actions has been put in place to improve and maximise traffic demand management efficiency by means of a proper pricing policy.

**Fine tuning of the road pricing system** in response to traffic indicators to allow more

flexible access controls. The revision of the system carried out focused on the real external costs of journeys made by private vehicles, as well as by making regulations and access control more flexible accordingly.

**Completion of a semi-pedestrian area** within the university district. The semi pedestrian area now covers 50 hectares, i.e. most of the area in question. With few exceptions, for example residents, daily vehicular access is forbidden and access control and enforcement in the restricted area is carried out through an intelligent transport system (based on two cameras).



Car-free city centre during the T-Day



The introduction of a **new flexible system for access management** to certain zones belonging to the LTZ considered to be of historic significance and, therefore, in need of further restrictions. The result being eight pedestrian areas protected by pillars (installed in 2000). While the access feature via contactless smart card remains the same, the technology has been updated to include new services for citizens with the purpose of making it a "Mobility Card" that can be used for public transport, electronic pillars, car sharing and parking payment. The smart card has been made compatible with the Calypso protocol, an international electronic ticketing standard for microprocessor contactless smartcards. This allows the card to be used for multiple services, as well as enabling interoperability between several transport operators.

**New measures for parking** have been introduced. Firstly, the fare system has been modified to discourage citizens from leaving their cars in highly congested streets for longer than absolutely necessary. New tickets with barcodes and updated parking meters have been introduced to improve efficiency and obtain new and useful information about how people interact with urban space. New types of permits have been issued including barcodes for residents and other groups that have access rights to the LTZ. Parking controllers have been issued with new palmtop devices, which allow controllers to read the new tickets and permits. This information is then used for planning and management improvement.

The successes achieved by the measures and the positive feedback received by the citizens and stakeholders convinced the Municipality of Bologna to expand on the original actions planned. Since September 2011 the new city administration has introduced the so-called "T-days," i.e. the complete pedestrianisation of three connecting main roads in the historic city centre at weekends and holidays. Furthermore, in April 2012 a new plan for the pedestrianisation of the historic centre was approved after being discussed through a participatory process. It is foreseen that some streets and squares will be completely closed to motorised traffic 24 hours a day, while in other areas access will be restricted in favour of cycling and walking.

## Results

Reflecting on the implementation of these demand management strategies we can say that positive results have been achieved. More than ever before, citizens' ability to move around their city with minimal environmental impact has been established.

Thanks to testing and simulating measures conducted within CIVITAS, access control in the LTZ has improved. Some hidden irregular gates have been closed and new rules have been introduced (e.g. now the system is active every day, while originally Saturday was not envisaged).

A new technological permit scheme has been implemented, with users being residents as well as freight operators.



Pedestrian area

In the new semi-pedestrian area, a dramatic reduction on access by 70 percent has been registered. This had a knock on effect on new road space availability, e.g. parking for residents, and reduction of pollutant emissions.

About 3,000 updated Calypso smart cards have been distributed to residents and parking space holders in access control areas. Users may now also charge other services on their card, e.g. public transport season ticket.

Finally, questionnaires and surveys disseminated to investigate citizen acceptance of new procedures and tools for parking management, revealed support for the measures introduced.

In terms of reduction in pollutant emissions in the LTZ, very positive results have been obtained compared to the Business-as-Usual scenario:

- Carbon Monoxide (CoO) → -8,6%
- Carbon Dioxide (CO<sub>2</sub>) → -12,2%
- Nitric Oxide and Nitrogen Dioxide (NOx) → -12,1%
- Fine particulate matter (PM2.5) → -14%
- Course particulate matter (PM10) → -22%.



New parking tickets



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**References or sources**

CIVITAS webpages:  
<http://www.civitas.eu/content/bologna>

**Lessons learned**

The Municipality of Bologna encouraged debate and dialogue on access among the various stakeholders in city centre. These activities were recognised as a high priority to ensure success.

In Bologna, and in Italy in general, there is extensive conflict on road pricing and traffic limitation. The use of private vehicles to go shopping is generally considered the most convenient mode of transport, which is why shop owners initially were firmly convinced that the LTZ would impact on their revenue and alter business trends, driving people out of town towards large shopping outlets with convenient parking lots.

Nevertheless, by the end of the project, the Municipality saw an increased openness among shop owners towards traffic limitations in the city centre. As a result of the 'T-Day' event and the weekend closure of the three street T-Zone area from May 2012, many shop-owners located close to the T-Zone have asked for traffic limitations in their areas.

Finally, the evaluation process showed how achieving the objectives of the measure were closely dependent on political will. Local government commitment was crucial to the success of a measure that introduced potentially unpopular tools.

**Upscaling and transferability**

Considering the success of the measures, Bologna is now planning to further support and promote cycling and walking. A new plan to pedestrianise a larger part of the city centre and to extend other semi pedestrian areas in the future is in the pipeline.

Cities interested in these kinds of interventions should evaluate beforehand the potential difficulties when municipality decisions interfere with private habits.

Widespread information campaigns must be planned prior to and during the measure to communicate the political commitment and the administration's objectives.

Operators and stakeholder involvement is a key issue for success. This means encouraging debate with all stakeholders so that policy is continually fine tuned and restrictions can be adapted to different contexts.

Actions that involve long term planning and implementation need continuous cooperation with the offices of local government.



COMUNE DI BOLOGNA

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Access restriction in favour of cycling and walking

