



With the contribution of  
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# LIFE MONZA

## Methodologies for Noise Low Emission Zones introduction and management

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**WORKING GROUP NOISE EUROCITIES  
ESSEN, 17/18 SEPTEMBER 2017**

## SCOPE

The introduction of **Low Emission Zones**, urban areas subject to road traffic restrictions in order to **ensure compliance with the air pollutants limit values**, set by the European Directive on ambient air quality (2008/50/EC), is a common and well-established action in the administrative government of the cities and the impacts on air quality improvement are widely analyzed, whereas the **effects and benefits concerning the noise have not been addressed in a comprehensive manner**.

The definition, the criteria for analysis and the management methods of a **Noise Low Emission Zone** are not yet clearly expressed and shared.

LIFE MONZA project (Methodologies fOr Noise low emission Zones introduction And management - LIFE15 ENV/ IT/000586) addresses these issues.

The key points on which the project is based are:

- 1) it's easier to change a town than a nation
- 2) Change can start at the civic level

## First OBJECTIVE

1°

The **main objective** of the project is to **introduce an easy-repeatable method**, and related guidelines, for the **identification and the management of the Noise Low Emission Zone**, an urban area subject to traffic restrictions, whose **impacts and benefits regarding noise issues** will be analyzed and tested in the pilot area of the city of Monza, located in North Italy

## Further OBJECTIVES

2°

The second objective regards specific ***top-down measures***, adopted by the municipality and able to turn up the area in a permanent Noise LEZ, concerning infrastructural interventions

3°

The third objective is to **reduce the average noise levels** in the pilot area of Libertà district, with positive complementary effects also on the **air quality** and benefits on **wellbeing conditions** of inhabitants

4°

The fourth objective is to involve the population in an active management system (***bottom-up measures***) of lifestyle choices

## Dialogue between citizens and public bodies

**top-down measures** adopted by the municipality and able to turn up the area in a permanent Noise LEZ, concerning:

- **traffic management** (limitation of the vehicles speed and prohibition access to trucks);
- **road paving substitution;**
- **introduction of two pedestrian crossings**

**bottom-up measures:** people will be involved in an active management system of a more sustainable lifestyle choices, related to the reduction of noise and the improvement of air quality and wellbeing conditions, in their living and working environment. In order to encourage the local community involvement and to strengthen the dialogue between citizens and public bodies, many activities will be carried out, as:

- **meetings** in primary and high schools, in order to raise awareness about noise effects;
- **ideas contests** for Noise LEZ picture and logo;
- **questionnaires** on quality of life and noise and air quality perceptions;
- use of the **mobile App**, developed throughout the course of the project, devoted to manage voluntary and sustainable actions carried out by citizens.

## Contribution of the project to policy implications at different levels

### European Level

In order to contribute to the implementation of the European directives, avoiding duplications and overlaps, potential synergies existing between the issues related to noise pollution and air quality will be investigated during the project.

The methodology will contribute to the implementation of the EU Directive 2002/49/EC, related to the assessment and management of environmental noise (Environmental Noise Directive - END), which introduces noise action plans, designed to manage noise issues and effect, including noise reduction if necessary.

## Contribution of the project to policy implications at different levels

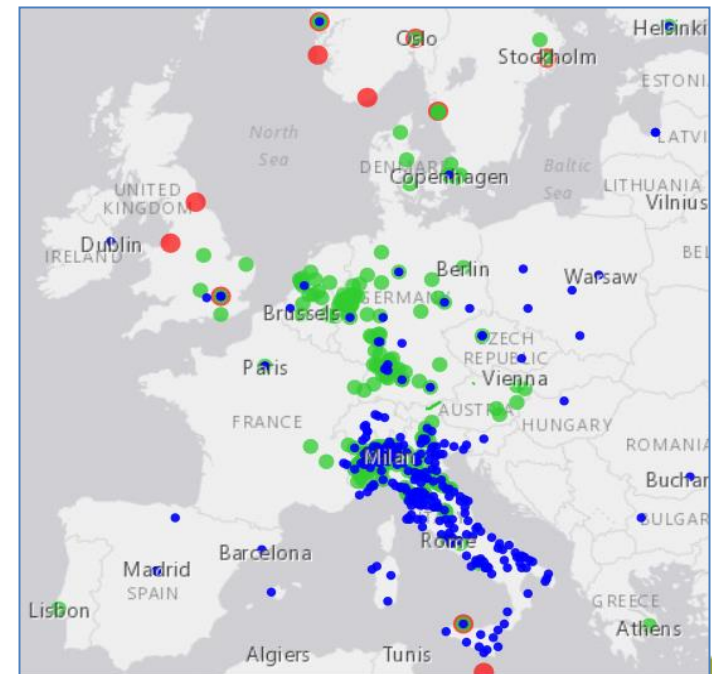
### European Level

LEZs have been implemented in more than 200 cities in Europe and they are the most common measures adopted in EU, considering traffic planning.

EU Directive 2008/50/EC on ambient air quality and cleaner air for Europe considers the establishment of LEZ a measure to be adopted in air quality action plans.

The EU 2002/49/EC Environmental Noise Directive (END) does not provide a definition of LEZ in relation to noise and it is not considered as an action to take into account in noise action plans drafting.

There is the need of synergies and LIFE MONZA project, aiming at providing management criteria of LEZ, related to noise, will contribute to the implementation of noise action plans set out in Annex V of the END Directive



Source: <http://urbanaccessregulations.eu/>



## Contribution of the project to policy implications at different levels

### National Level

Harmonization and simplification process among transposition decrees of EU Directives concerning noise and air pollution; definition of a proposal of a common method for NLEZ, as a proposal to be adopted by a national decree.

### Local Level

Availability of a common procedure for Noise LEZ able to make the cities more sustainable; more knowledge about impacts and benefits due to NLEZ introduction; implementation of EU Directives at local level; enforcement of the dialogue between public institutions and citizens.



## THE PROJECT



### A. Preparatory actions

- ✓ **A1** Operational context for Noise Low Emission Zones (LEZ) detection and management

### B. Implementation actions

- ✓ **B1** TOP-DOWN actions planning in the pilot area
- ✓ **B2** BOTTOM-UP actions planning in the pilot area and public and stakeholders information and participation
- ✓ **B3** Prototype of monitoring system for Noise LEZ design - data analysis techniques definition
- ✓ **B4** Pilot area actions implementation
- ✓ **B5** Monitoring and data collection for impact assessment
- ✓ **B6** Noise LEZ Guidelines

### C. Monitoring of the impact of the project actions

- ✓ **C1** Monitoring of the impact of the project actions. The monitoring activities in the pilot area will be carried out up to three years after the project end

### D. Public awareness and dissemination of results

- ✓ **D1** Information and awareness raising activities regarding the project to the general public and stakeholders
- ✓ **D2** Technical dissemination activities to stakeholders could usefully benefit from project's experience

### E. Project management

- ✓ **E1** Coordination, Monitoring and Project Management
- ✓ **E2** After-LIFE Plan

## Project location and beneficiaries

**PROJECT LOCATION:** ITALY - MONZA, Lombardia

The project started on 1st September 2016 and the completion date is scheduled for 06.30.2020



## PROJECT Beneficiaries

**Coordinating Beneficiary: ISPRA**

Italian National Institute for Environmental Protection and Research

**Associated Beneficiaries: MONZA Municipality**

**UNIVERSITY of FLORENCE**

**Vie en.ro.Se. Ingegneria srl**



## Monza Municipality





A map of Monza, Italy, showing the location of Villa Reale. The map highlights a specific area in the northeast, near the intersection of Via Lecco and Viale Ugo Foscolo, with a red diagonal line and a blue oval. Other labeled streets include Via Felice Cavallotti, Via Marsala, Via Gerolamo Boggazzi, Viale delle Industrie, and Via Arco. The map also shows the SS36 highway and the SP60, SP2, and SP13 roads. The area around Villa Reale is marked with a red outline. The map includes a small inset image of a building in the bottom right corner.



LIFE MONZA (LIFE15 ENV/IT/000586)

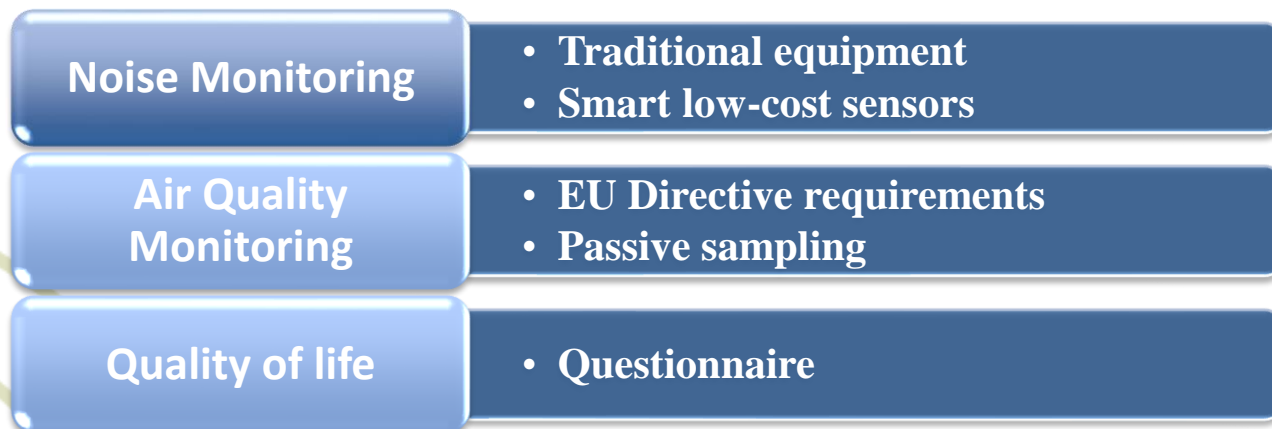
Noise strategic map of the city of Monza, dated 2012, highlights that in a range of 30 m from the Viale Libertà almost the 100% of the receivers is exposed to levels higher than 65 dB(A) during the day and 55 dB(A) during the night.



## Monitoring activities and methods tested in pilot area

Objective: reduction of **the average noise levels** in the pilot area of Libertà district, with positive complementary effects also on the **air quality** and benefits on **wellbeing conditions** of inhabitants.

Priority will be given to actions for noise reduction, but attention will be also focused on the improvement of the air quality and citizens' quality of life.



## Monitoring methods and activities tested in pilot area

### Air Quality Monitoring

- EU Directive requirements
- Passive sampling

Air Quality monitoring within the pilot area is ongoing, according to requirements provided by Directive 2008/50/EC on ambient air quality and cleaner air for Europe

Also, the low cost and easy operation of the diffusive sampling technique is used for a large scale air pollution surveys with a high spatial resolution.

In order to compare the spatial variability of air pollution before and after the noise LEZ implementation, NO<sub>2</sub> and benzene land use regression models in a defined urban area of Monza, including the noise LEZ, will be developed.

The objectives of monitoring will be to assess whether the implementation of the noise low emission zone contributes, as an ancillary effect, to reduce air pollution levels in the pilot area.



## Monitoring methods and activities tested in pilot area

### Quality of life

- questionnaire

Regarding the monitoring of the quality of life, a two-step survey will be performed: before and after the institution of the noise LEZ zone.

The use of the WHOQOL-Bref questionnaire, that is the only tool that has a specific environmental domain and it is already validated in Italian language, has been proposed and shared.

## Noise Monitoring in pilot area

### Noise Monitoring

- Traditional equipment
- Smart low-cost sensors

Regarding the noise monitoring phases planned in pilot area, the activities will be carried out referring to the standard methods, using sound level meters of class I precision, and also by developing and using a smart low-cost monitoring system.

## Noise Monitoring in pilot area

Regarding the smart low-cost monitoring system a **prototype system for smart monitoring activity of noise** has been designed and implemented, in order to be used as a continuous monitoring unit in the ex ante and ex post scenarios. In particular, in the last months the **state of the art about smart noise monitoring systems** has been defined by ISPRA, while **smart monitoring system design and data analysis procedures** have been performed by UNIFI.

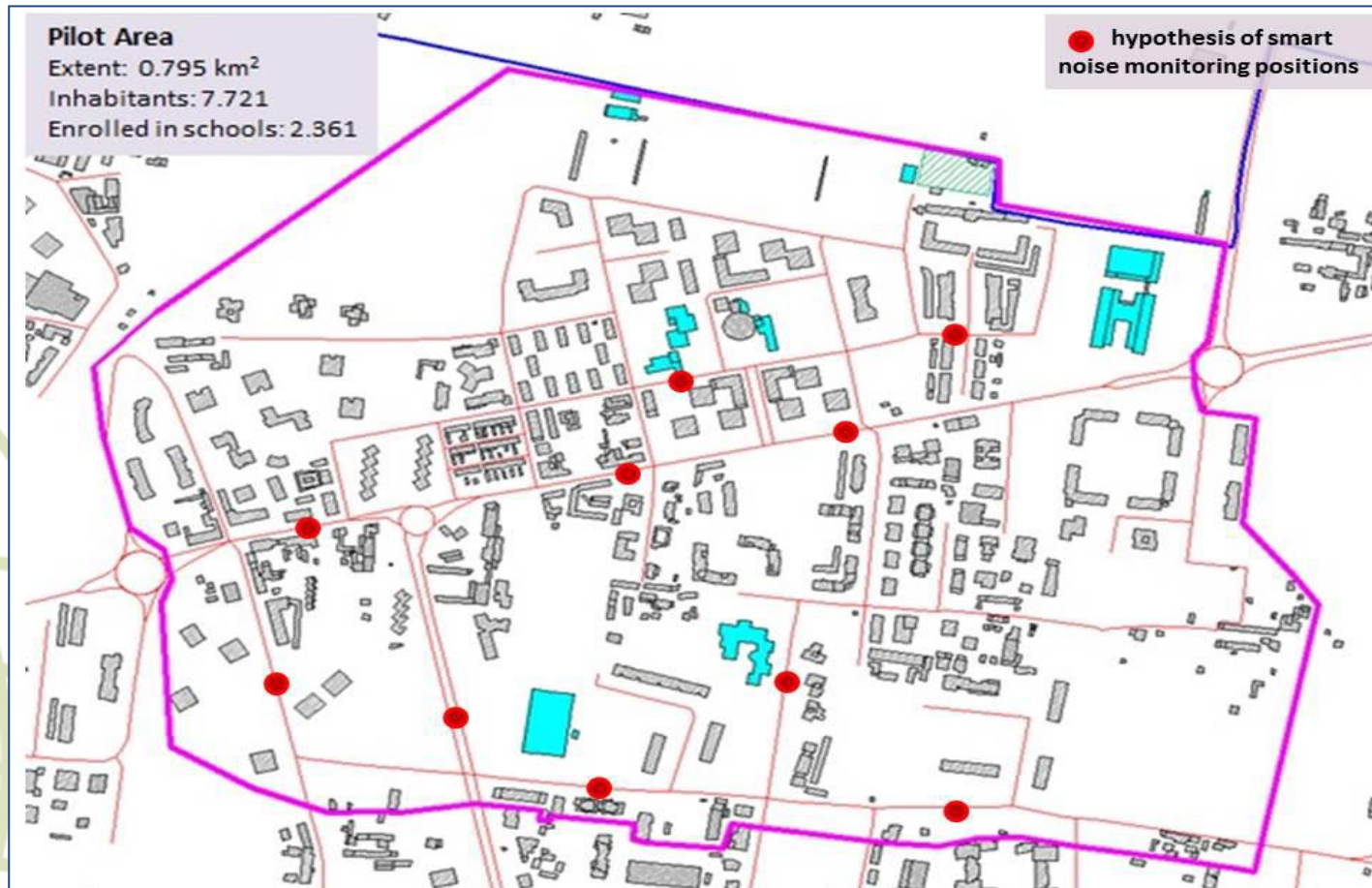
UNIFI is developing the procedures for **in situ calibration check and verification of the noise monitoring system performance**.

The system check will be performed by UNIFI for a first time period (2 months) before the monitoring period start and by UNIFI/VIENROSE for a second time period (2 years: 1 year in the ante-operam scenario and 1 year in the post-operam scenario) during the monitoring period.

After the end of LIFE MONZA project, the prototype will be given for free to Municipality of Monza that will take care of using it for monitoring activities in the three years after the project end.

## Smart low-cost noise monitoring system – LIFE MONZA

Smart low-cost noise monitoring systems, allowing an extensive and long-term noise monitoring, in medium sized territorial scale as urban area, seem to be able to ensure an appreciated quality output measurement data. 10 monitoring stations are expected to be installed in the pilot area of Libertà district.



## Smart low-cost noise monitoring system – LIFE MONZA

### Conclusions and future works about the Smart Noise Monitoring System developed in the MONZA project

- Optimization of stability check procedures
- Long term test implementation
- Analysis of long term test results

## CONCLUSIONS

The LIFE MONZA project aims to define a **guideline** describing a procedure applicable in different contexts for the definition, the identification and the management of a Noise LEZ.

In the project will be implemented and tested intervention techniques **strongly involving the population**.

Within the project activities, implementation and testing of a **new low noise monitoring system will be carried out and tested in the pilot area** in the long period, also after the project's end.

For the monitoring of the environmental impact in the pilot area, **indicators will be set taking into account both the noise and air quality** as well as the **welfare conditions** of the population.



# Thank you for your kind attention

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