



With the contribution of
the LIFE programme of the European Union



LIFE MONZA

Methodologies for Noise Low Emission Zones introduction and management

PROGRESS OF THE ACTIONS

Monza, 14 May 2019

Partner:



Azione B1 TOP-DOWN actions planning in the pilot area (Monza)

B1.1 Noise LEZ formal definition, introduction and establishment. Public tender for top-down intervention realization – MONZA

B1.2 Interventions detail design - Vie en.ro.se. Ingegneria

B1.1



- ✓ Asphaltting work:
Start date 17/09/18 – End date 22/09/18
- ✓ Restriction of traffic:
 - Heavy means > 3.5 t:
Start date 21/01/19 – End date Luglio 2019
 - Heavy means > 7.5 t:
Start date Luglio 2019 – End date Ottobre 2019

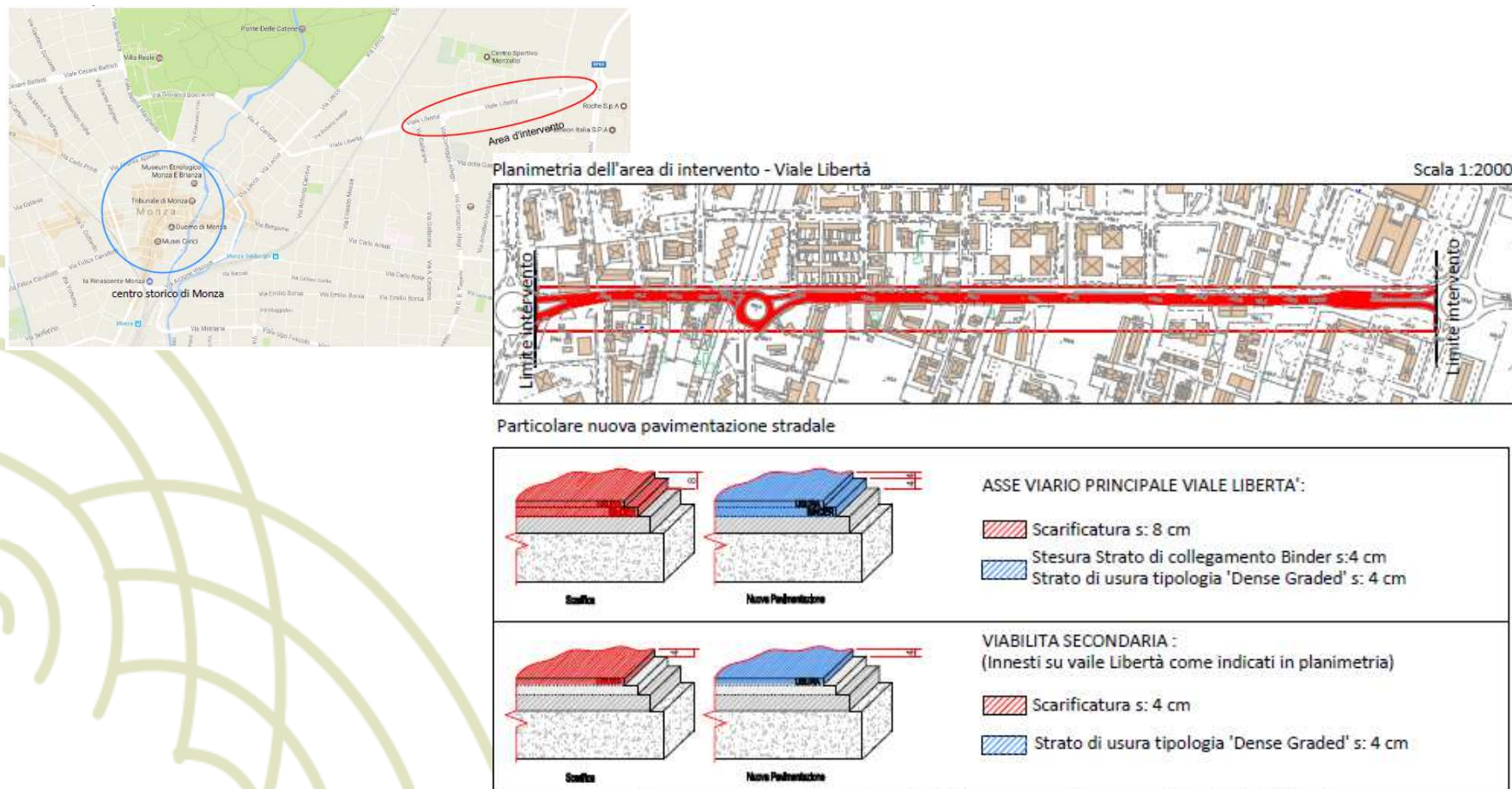
B1.2



- ✓ Executive project for the re-surfacing of Viale della Libertà, updated and integrated in March 2018.

Azione B1 TOP-DOWN actions planning in the pilot area (Monza)

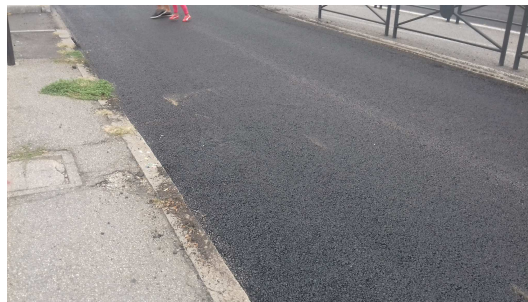
B1.2 Interventions detail design - Vie en.ro.se. Ingegneria



Azione B1 TOP-DOWN actions planning in the pilot area (Monza)

B1.2 Interventions detail design - Vie en.ro.se. Ingegneria

Work for the drafting of the new low-noise road surface (September 2018)



Azione B1 TOP-DOWN actions planning in the pilot area (Monza)

B1.2 Interventions detail design - Vie en.ro.se. Ingegneria

January 2019



State of road surface after four months since the asphaltting

May 2019



State of road surface after eight months since the asphaltting



Particular of the weaving of worn layer
'Dense Graded'



Azione B2

BOTTOM - UP actions planning in the pilot area and public and stakeholders information and participation (MONZA)

B2.1 Stakeholders/public participation in bottom-up actions proposal and management

B2.1.1 Public involvement, meetings organization, ideas contest: MONZA

B2.1.2 Public involvement: health aspects: UNIFI

B2.1.3 Public involvement: environmental aspect: Vie en.ro.se. Ingegneria

B2.2 Bottom-up actions detail design and App realization: MONZA

B2.3 People involvement: use cases identification and App design to manage public participation: UNIFI.

B2.1.3



International Noise Awareness Day (INAD) years 2017,2018,2019

Pedibus service actives since April 2019

Azione B2

BOTTOM - UP actions planning in the pilot area and public and stakeholders information and participation (MONZA)

B2.1.3 Public involvement: environmental aspect



NOISE AWARENESS DAY YEAR 2017 200 students!

Schools involved:

- ❖ Primary school «Gianni Rodari»
- ❖ High school «Achille Mapelli»
- ❖ Lower secondary school «A.B. Sabin»



Azione B2

BOTTOM - UP actions planning in the pilot area and public and stakeholders information and participation (MONZA)

B2.1.3 Public involvement: environmental aspect



NOISE AWARENESS DAY YEAR 2018

80 students

School involved:

- ❖ Lower secondary school «A. B. Sabin»

Azione B2

BOTTOM - UP actions planning in the pilot area and public and stakeholders information and participation (MONZA)

B2.1.3 Public involvement: environmental aspect

NOISE AWARENESS DAY YEAR 2019

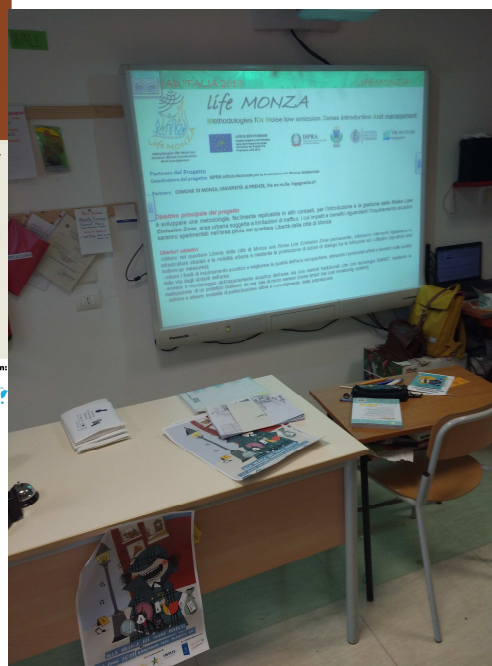
70 students

School involved:

❖ Primary school «Gianni Rodari»



14 may 2019



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Azione B2

BOTTOM - UP actions planning in the pilot area and public and stakeholders information and participation (MONZA)

B2.1.3 Public involvement: environmental aspect

NOISE AWARENESS DAY YEAR 2019

Ideas competition « The most annoying noise of my town »

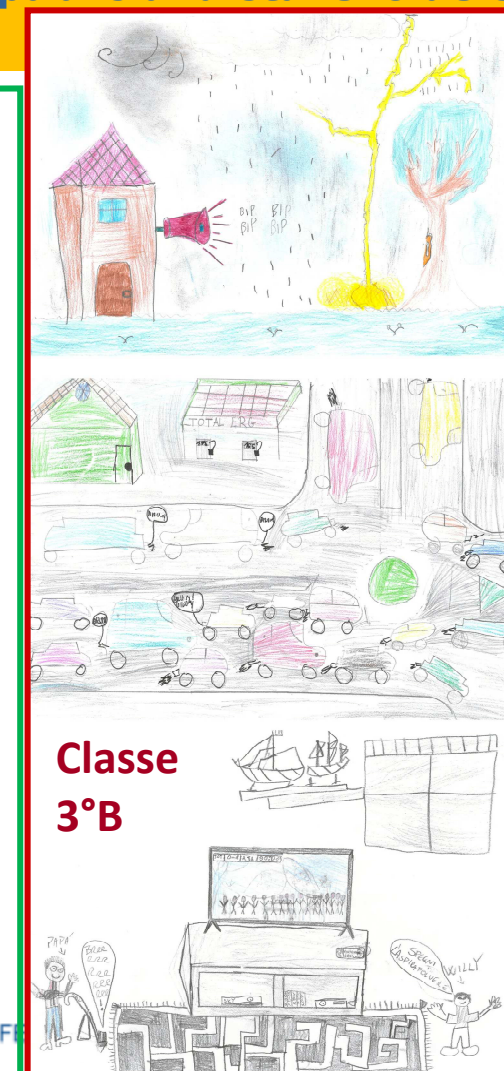
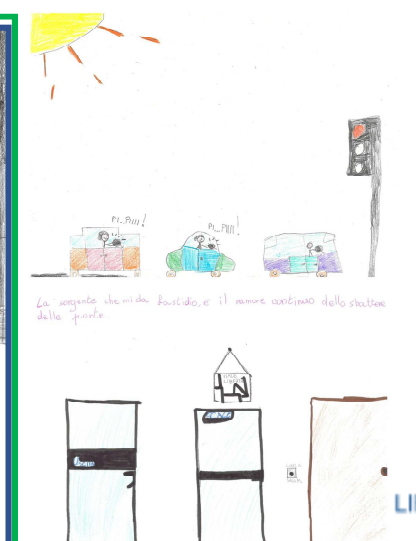


Azione B2

BOTTOM - UP actions planning in the pilot area and public and stakeholders information and participation (MONZA)



Classe
3ªA



Azione B2

BOTTOM - UP actions planning in the pilot area and public and stakeholders information and participation (MONZA)

B2.1.3 Public involvement: environmental aspect

Service Pedibus actives since april 2019 for children of Primary School 'Gianni Rodari'

**A SCUOLA CON IL PEDIBUS
UN VANTAGGIO PER TUTTI**

PER I GENITORI	PER I BAMBINI	PER IL QUARTIERE
RISPARMI TEMPO Non devi accompagnare i bambini fino a scuola.	SOCIALIZZANTE I bambini vanno a scuola insieme ad altri bambini.	STOP TRAFFICO Non intasa le strade del quartiere.
GRATUITO Accompagnamento svolto da adulti volontari.	SICURO I bambini indossano una pettorina colorata.	ECOLOGICO Non inquina, migliora la qualità dell'aria.
FUNZIONA SEMPRE Sia col bello che con il cattivo tempo.	SALUTARE I bambini camminando fanno esercizio fisico.	EDUCATIVO Un'occasione di cittadinanza attiva.

pedibus
MONZA
LIBERTÀ



UNO SCUOLABUS A PIEDI,
UN'AZIONE PARTECIPATA
CHE PROMUOVE LA MOBILITÀ
A PIEDI NEL TRAGITTO
CASA-SCUOLA.

IL MODO PIÙ SICURO,
ECOLOGICO E DIVERTENTE
PER ANDARE A SCUOLA.

Azione B2

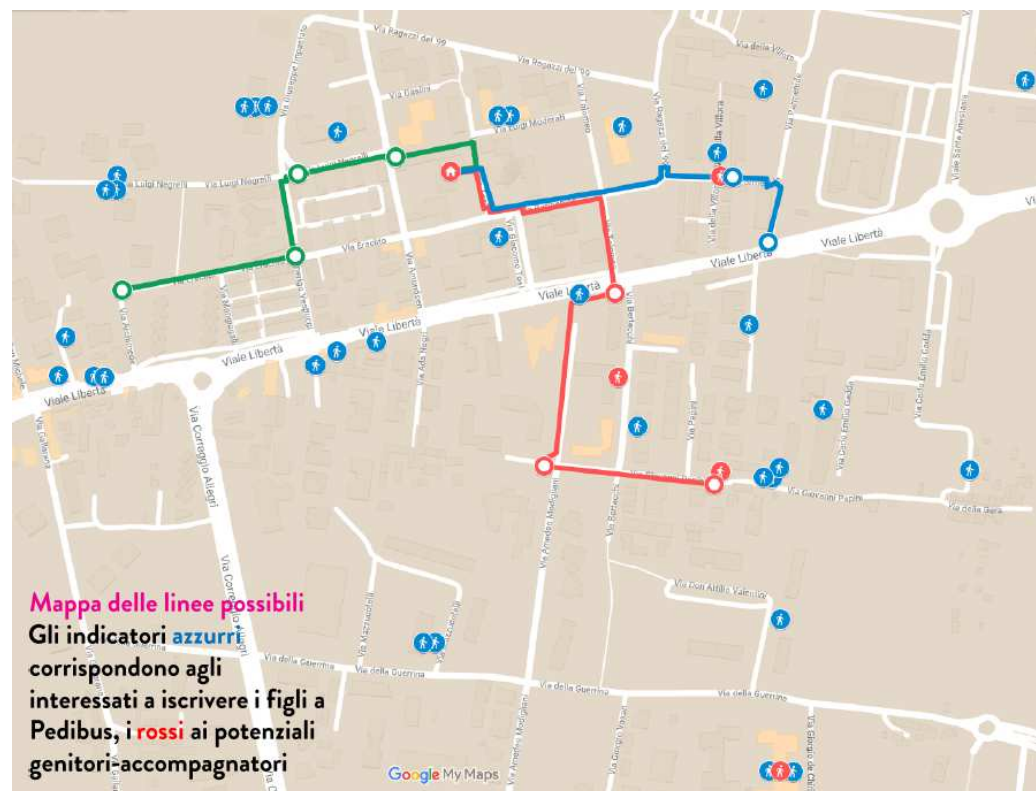
BOTTOM - UP actions planning in the pilot area and public and stakeholders information and participation (MONZA)

B2.1.3 Public involvement: environmental aspect

Service Pedibus: THREE LINES

Red line active since 11/04/2019

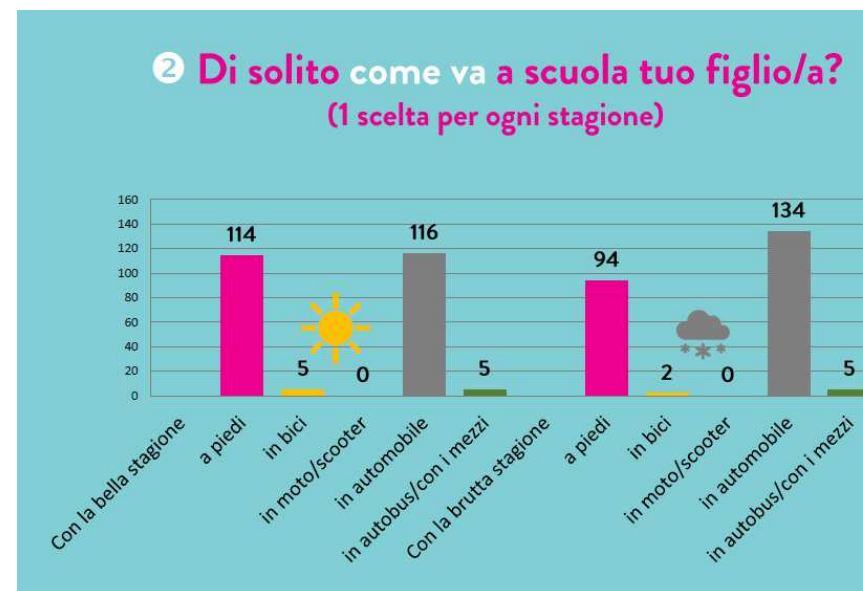
Green and **blue** lines will be active from the next school year



Azione B2

BOTTOM - UP actions planning in the pilot area and public and stakeholders information and participation (MONZA)

B2.1.3 Public involvement: environmental aspect



Azione B2.3

People involvement: use cases identification and App design to manage public participation-UNIFI

City Games

Pedibus

Walking time
within the LED
zone

Biking time within
the LED zone



Green actions



Green points





Azione B4 Pilot area actions implementation (MONZA)

B4.1 Top-down interventions implementation - MONZA

B4.2 Bottom-up interventions implementation and management: public meetings organization and monitoring of the public involvement - MONZA

B4.3 Support on bottom-up actions implementation (App management) - UNIFI

B4.4 Support on bottom-up actions implementation (school meetings, training activities on noise and other pollutants effects) - Vie en.ro.se. Ingegneria

B4.1 → Pedestrian crossings already realised.
New asphaltting of Viale della Libertà – Works carried out in september 2018

B4.2 → Meetings with the citizens

B4.3 → The App is on the way of definition yet (B2.2-B2.3). In December 2018 the contacts to decide the timesheet of “pedibus” attivation and to create the App were been restarted.

B4.4 → **Training/ information meetings, ideas competition, school- work alternation were held during the school year 2017-2018**

Azione B4 Pilot area actions implementation (MONZA)

B4.4 Support on bottom-up actions implementation

CONCORSO DI IDEE



Sono presenti vari segnali che indicano il silenzio, per esempio il megafono dentro il punto sulla "i" di Life e la faccia che fa cenno di silenzio.

Le scritte "Monza e quartiere libertà" sono state distorte, formando archi, in modo da ottenere delle onde sonore attenuate, per questo verso l'esterno.

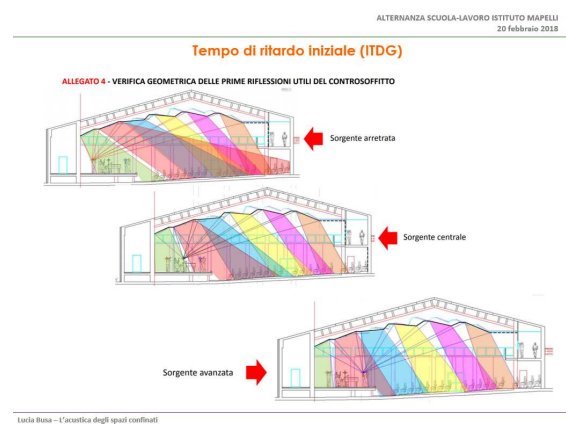
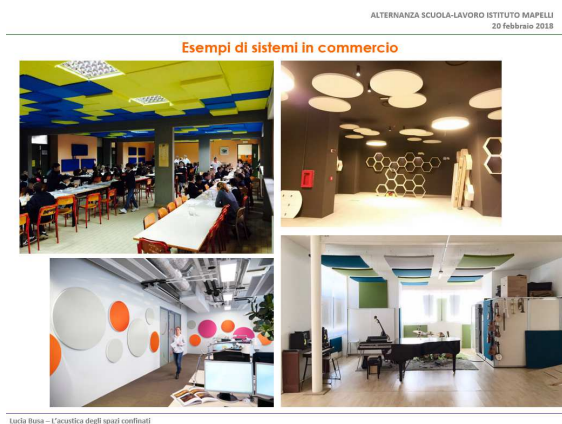
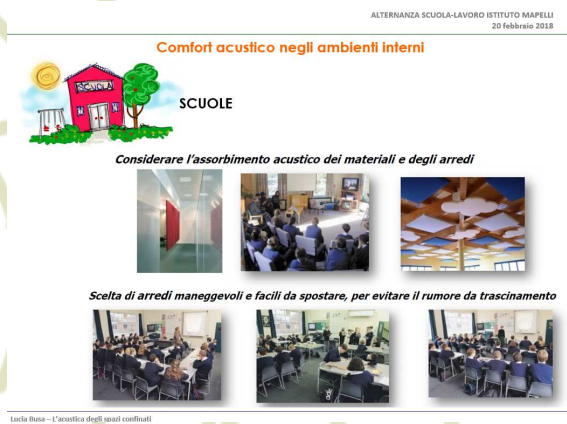
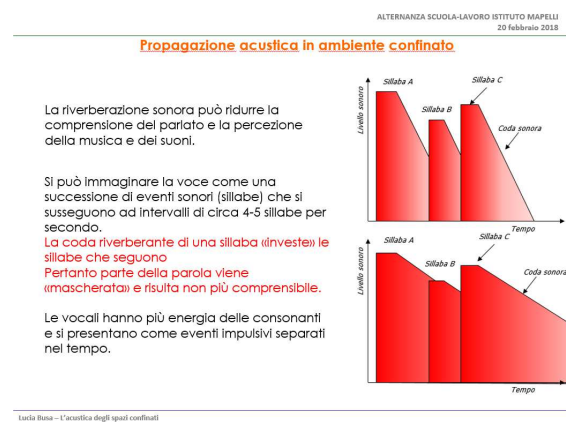
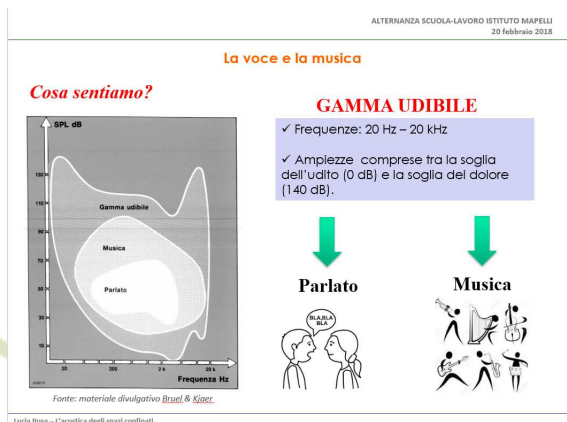
I colori che ho scelto sono, il verde (prato), il marrone (tronco di albero) e grigio oscuro (asfalto fonoassorbente).

Il messaggio che vorrei inviare è: vivremo insieme, in tranquillità e in un quartiere che equilibra la natura con contesti urbani. Sappiamo cambiare ma, rispettando ciò che abbiamo intorno.

interrotto il frastuono, sentirai la vita.

Azione B4 Pilot area actions implementation (MONZA)

B4.4 Support on bottom-up actions implementation (School- work alternation -VIENROSE)





Azione B5 **Monitoring and data collection for impact assessment (VIENROSE)**

B5.1 Smart continuous monitoring by prototype system on noise and system's check - UNIFI

B5.2 Noise and Traffic ex ante /ex post monitoring - VIENROSE

B5.3 Air quality ex ante /ex post monitoring - ISPRA

B5.4 Health ex ante/ex post monitoring - UNIFI

B5.5 Bottom up actions: ex ante/ex post people participation - MONZA

B5.6 Air quality modeling - ISPRA

B5.7 Intermediate assessment and Top down /bottom up overall data collection and systematization - VIENROSE



Azione B5.1 Smart continuous monitoring by prototype system on noise and system's check - UNIFI

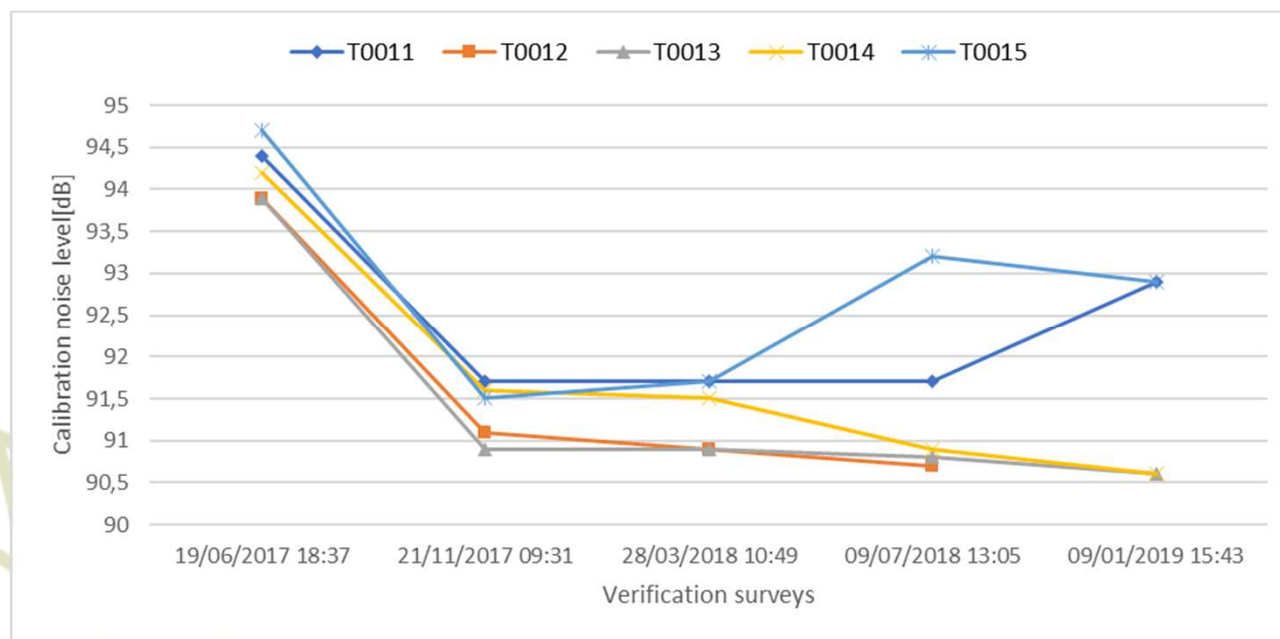
Data analysis from low cost sensors :

- Data download in progress and updated in March 2019
- Evaluation of acoustic parameters on an hourly, daily and weekly basis
- Periodic verifications of the system
- Sharing of the structure and contents of monitoring report drawn up in March 2019

Azione B5.1 Smart continuous monitoring by prototype system on noise and system's check - UNIFI

1) Calibration verify at 1kHz

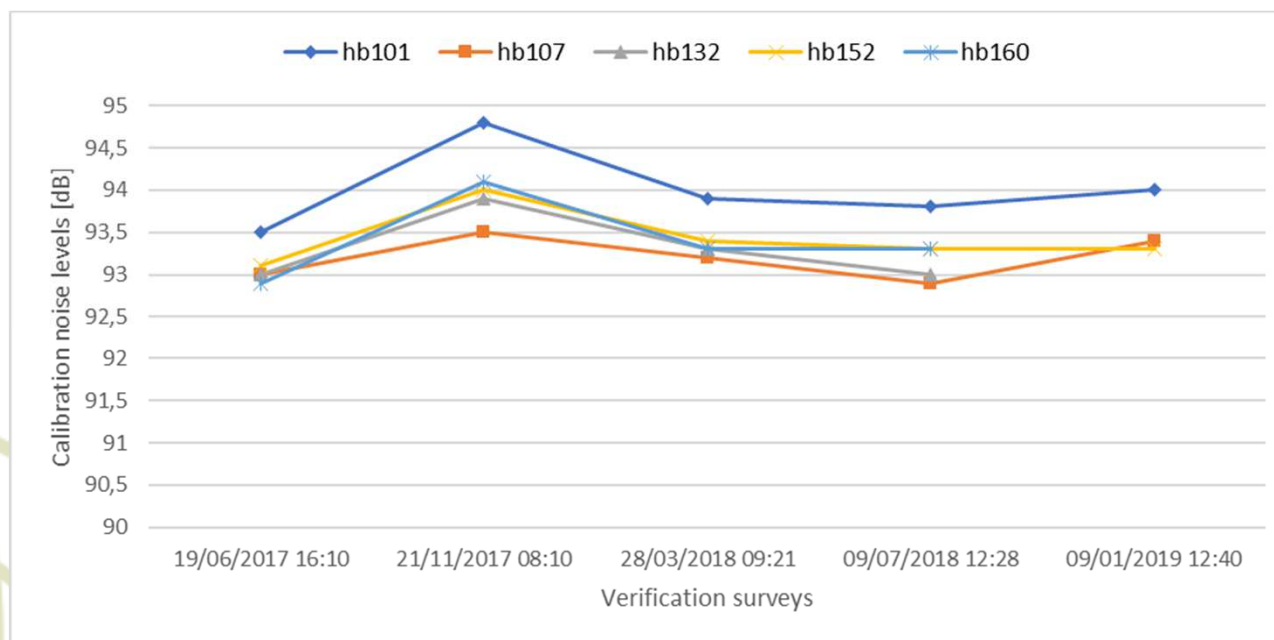
Sensors MEMs (installation on pole)



Azione B5.1 Smart continuous monitoring by prototype system on noise and system's check - UNIFI

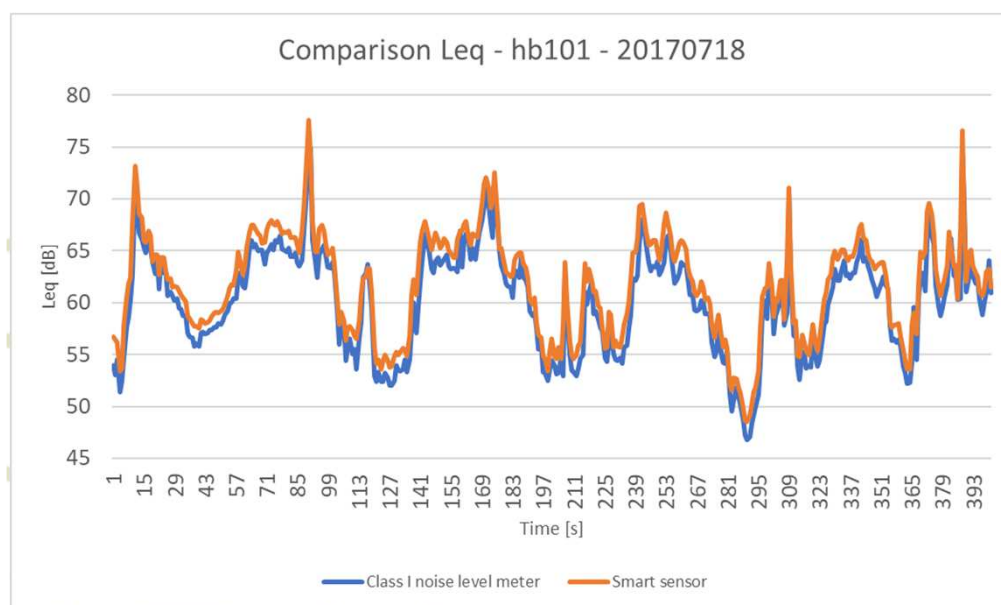
1) Calibration verify a 1kHz

Electret sensors (installation on facade)

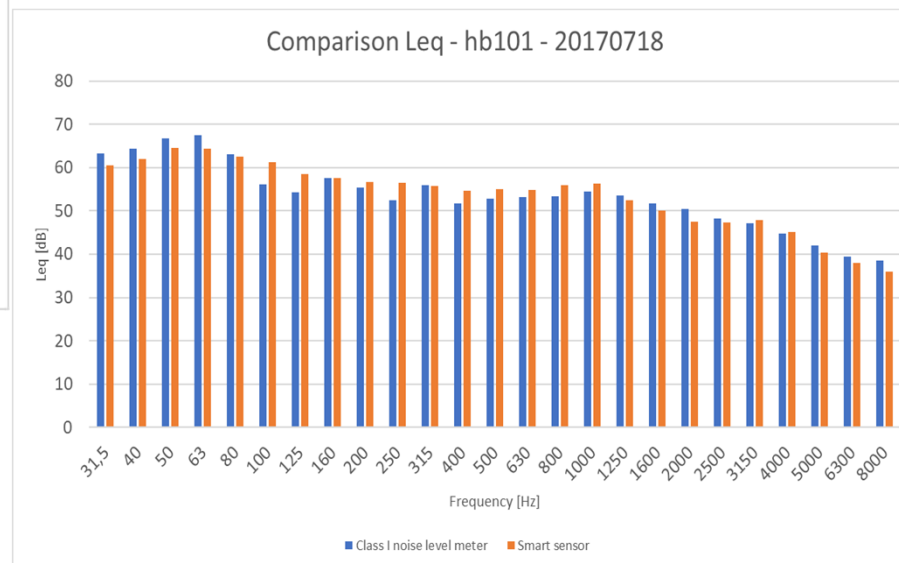


Azione B5.1 Smart continuous monitoring by prototype system on noise and system's check - UNIFI

2) Verify on wide band with shadowing of measure chain in class I



Source: noise of road traffic



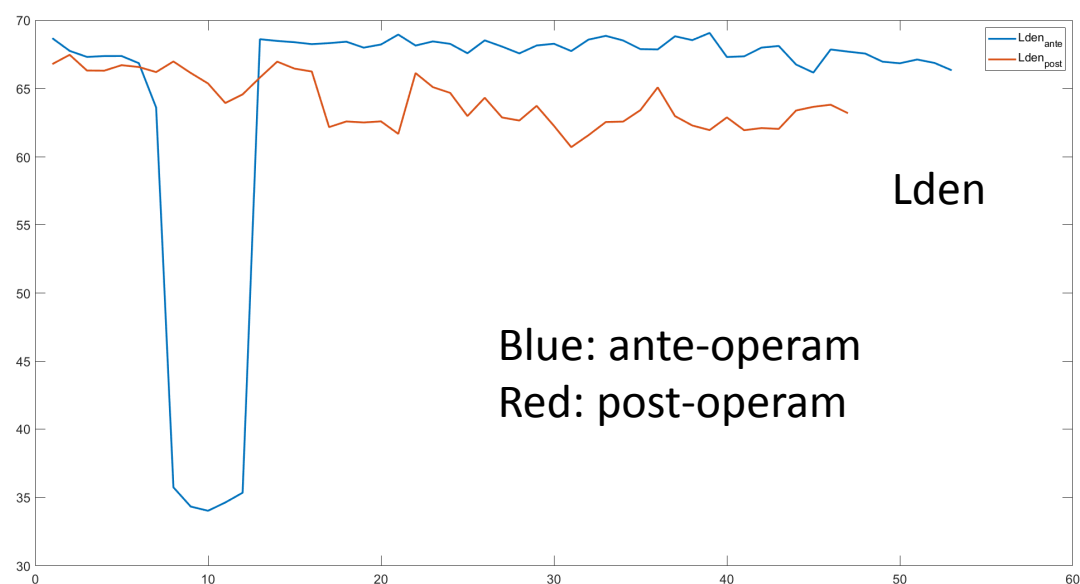
Azione B5.1 Smart continuous monitoring by prototype system on noise and system's check - UNIFI

3) Correction free field

	L _{Aeq,1h} Class I equipment	L _{Aeq,1h} Smart sensor	Free-field correction
Position	dB(A)	dB(A)	dB(A)
T0013	63,9	64,2	-0,3
T0014	70,3	69,2	1,1
hb101	63,5	64,4	-0,9
hb107	56,7	57,3	-0,6
hb152	58,7	58,3	0,4
hb160	61,5	62,0	-0,5

Azione B5.1 Smart continuous monitoring by prototype system on noise and system's check - UNIFI

4) Example ante-post



Azione B5

Monitoring and data collection for impact assessment (VIENROSE)

B5.2 Noise and Traffic ex ante /ex post monitoring

MONITORING	SESSION	DATE	ATTUATION STATE
Ante-operam	1° monitoring session	From 15 to 23 May 2017	CONCLUDED ✓
	2° monitoring session	From 20 to 27 November 2017	CONCLUDED ✓
Post-operam	1° monitoring session	From 21 to 29 January 2019	CONCLUDED ✓
	2° monitoring session	From 06 to 14 May 2019	ON GOING ⚠



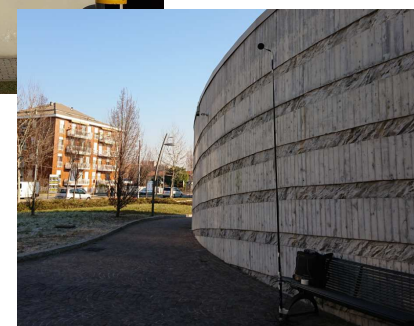
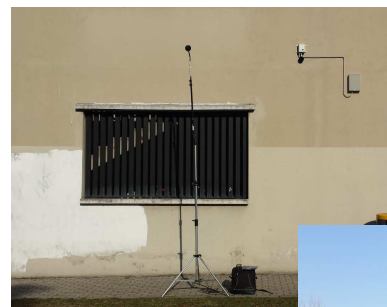
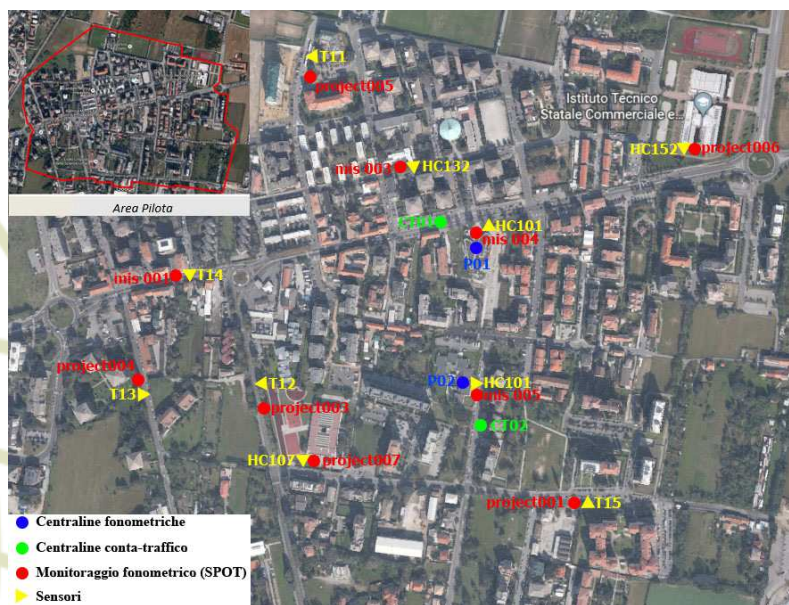
DESCRIPTION OF THE ACTIONS

Azione B5

Monitoring and data collection for impact assessment (VIENROSE)

B5.2 Noise and Traffic ex ante /ex post monitoring

1° Monitoring post-operam 2019: During the week of 21 to 29 January 2019, continuous monitoring of noise and traffic for 7 days was carried out at two fixed locations, in addition to a series of spot measurements in various daytime time slots at 10 locations in the neighborhood.



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2° Monitoring post-operam: *on going (may 2019)*

14 may 2019

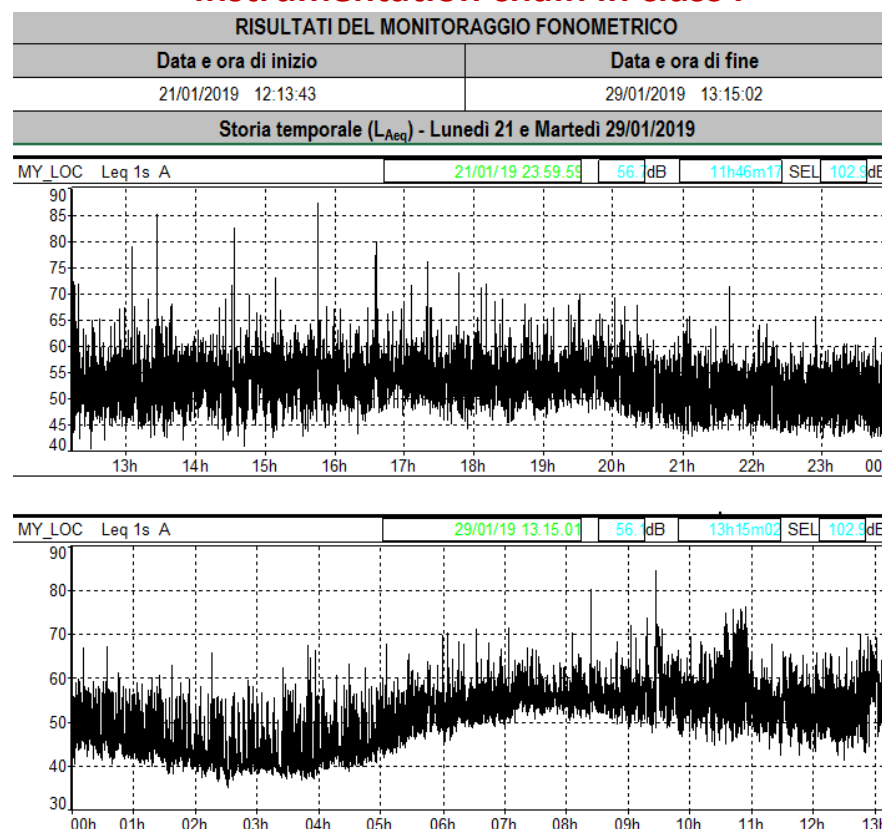
Azione B5

Monitoring and data collection for impact assessment (VIENROSE)

Dati generali dell'infrastruttura stradale		Dati descrittivi della postazione di misura	
Codifica Postazione di misura		P01	
Descrizione		Postazione di misura sul tetto del Centro Civico di Viale Libertà	
Altezza del microfono dal piano campagna		6 m	
Distanza del microfono dall'asse stradale		38 m	
Sistema di misura utilizzato		n. 1	
Classe Acustica (secondo il P.C.C.A. di Monza)		IV	
Valori limite di immissione (D.P.C.M. 14/11/1997)		60 dB(A) TR diurno - 50 dB(A) TR notturno	
Inquadramento territoriale			
			
Documentazione Fotografica			
			

Type sheet– Results of scenarios of
phonometric monitoring

Sound pressure levels monitoring Instrumentation chain in class I






Type sheet– Results of scenarios of
phonometric monitoring

LIFE MONZA (LIFE15 ENV/IT/000586)

Azione B5

Monitoring and data collection for impact assessment (VIENROSE)

 	
Dati generali dell'infrastruttura stradale	Dati descrittivi della postazione di misura
Codifica Postazione di misura	CT01 e CT03
Descrizione	conteggio flussi di traffico
Tratto oggetto del monitoraggio	Viale Libertà
Sistema di misura utilizzato	VIA Traffic Controlling GmbH (S.N.14VZZ0067 in direzione 1 - Centro; S.N.11VZZ0018 in direzione 2 - Periferia)
Inquadramento territoriale	
	

Type sheet—Results of scenarios of traffic lows monitoring

Monitoring of traffic flows

Data	Descrittore acustico	Direzione - Periferia			Direzione - Centro		
		LEGGERI veicoli	PESANTI veicoli	TOTALI veicoli	LEGGERI veicoli	PESANTI veicoli	TOTALI veicoli
Lun 21/01 e Mar 29/01/2019	Day	4991	183	5174	6706	102	6808
	Evening	807	10	817	700	4	704
	Night	493	1	494	598	6	604
Martedì 22/01/2019	Day	8701	416	9117	6843	101	6944
	Evening	857	10	867	742	5	747
	Night	936	11	947	651	4	655
Mercoledì 23/01/2019	Day	8716	380	9096	6704	107	6811
	Evening	827	17	844	721	2	723
	Night	1049	11	1060	657	2	659
Giovedì 24/01/2019	Day	8590	400	8990	6697	102	6799
	Evening	906	14	920	803	4	807
	Night	1095	6	1101	746	3	749
Venerdì 25/01/2019	Day	8943	419	9362	7058	102	7160
	Evening	989	14	1003	961	5	966
	Night	1319	10	1329	884	4	888
Sabato 26/01/2019	Day	8581	330	8911	7213	57	7270
	Evening	974	9	983	884	4	888
	Night	1756	9	1765	1224	2	1226
Domenica 27/01/2019	Day	6027	58	6085	5087	8	5095
	Evening	682	6	688	603	2	605
	Night	1275	3	1278	1079	1	1080
Media Settimanale	Day	7793	312	8105	6638	85	6723
	Evening	863	11	875	764	4	768
	Night	1132	7	1139	731	3	734

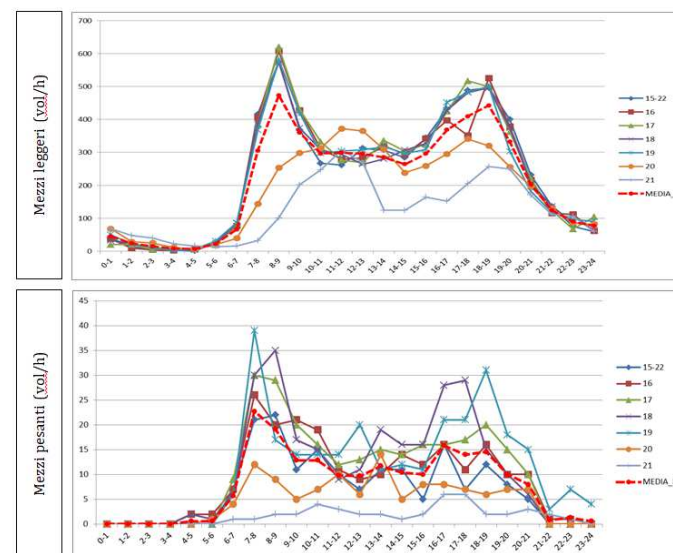
Type sheet—Results of scenarios of traffic lows monitoring

Azione B5

Monitoring and data collection for impact assessment (VIENROSE)

B5.2 Noise and Traffic ex ante /ex post monitoring

Proposed allocation of traffic flows in the pilot area



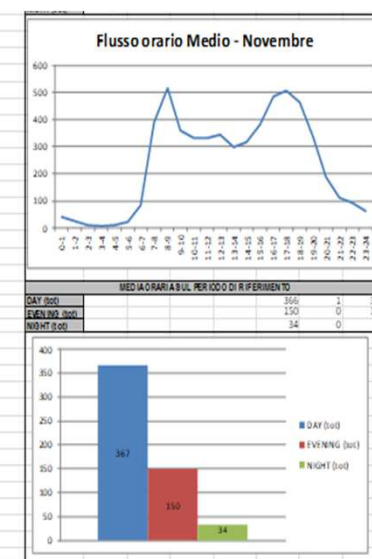
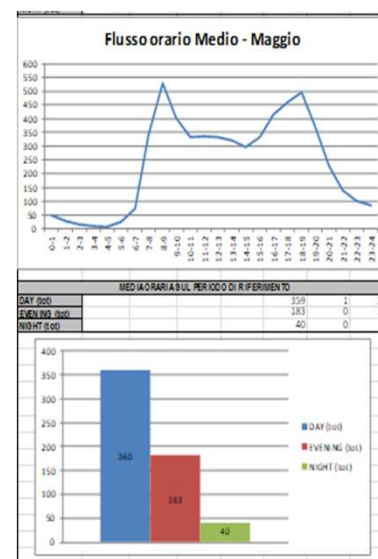
Regarding road axes, the starting point was the weekly traffic measurements carried out at the Via Modigliani station.

The hourly traffic volumes for each day were extracted (broken down for light and heavy vehicles) and the weekly average was calculated.

Azione B5 Monitoring and data collection for impact assessment (VIENROSE)

B5.2 Noise and Traffic ex ante /ex post monitoring Proposed allocation of traffic flows in the pilot area

MAGGIO									
RISULTATI DEL CONTROGGIO MANUALE DEI FLUSSI DI TRAFFICO									
Data e ora di inizio					Data e ora di fine				
17/05/2017 10:45					17/05/2017 14:45				
Data	Passo oraria	Flussi di traffico (veicoli) direzione 1			Flussi di traffico (veicoli) direzione 2			TOTALE	
		LEADERI	PESANTI	TOTALE	LEADERI	PESANTI	TOTALE		
17/05/2017	14:15	0	0	0	0	0	0	0	0
1.12 0.10									
Orario	Sevizi Modigliani re da terminare	Spot		Cambio direzionale	Spot		Cambio direzionale	TOTALE	
		LEADERI	PESANTI		LEADERI	PESANTI			
0.1	45.0	0.0	0.0	50	0	0	50	0	0
1.2	23.7	0.0	0.0	27	0	0	27	0	0
2.3	14.7	0.0	0.0	16	0	0	16	0	0
3.4	7.7	0.0	0.0	9	0	0	9	0	0
4.5	6.9	0.6	0.6	8	0	0	8	0	0
5.6	22.0	0.6	0.6	25	0	0	25	0	0
6.7	66.3	5.7	5.7	74	1	1	75	0	0
7.8	305.1	22.7	22.7	341	2	2	343	0	0
8.9	472.7	19.1	19.1	529	2	2	530	0	0
9.10	359.4	12.9	12.9	402	1	1	403	0	0
10.11	296.3	12.9	12.9	331	1	1	332	0	0
11.12	299.0	9.9	9.9	334	1	1	335	0	0
12.13	292.7	9.7	9.7	331	1	1	332	0	0
13.14	284.7	11.7	11.7	318	1	1	319	0	0
14.15	263.9	10.4	295	1	295	1	296	0	0
15.16	295.7	10.0	331	1	332	0	332	0	0
16.17	368.4	15.9	412	2	413	0	413	0	0
17.18	409.3	14.0	458	1	459	0	459	0	0
18.19	442.1	14.6	494	1	496	0	496	0	0
19.20	331.9	10.0	371	1	372	0	372	0	0
20.21	202.7	8.0	227	1	227	0	227	0	0
21.22	124.1	0.9	139	0	139	0	139	0	0
22.23	89.9	1.3	100	0	101	0	101	0	0
23.24	76.9	0.6	86	0	86	0	86	0	0
DAY 200 4491 179 5021 17 5038 5721									
EVENING 200 127 3 365 1 366 246 4 4									
NIGHT 200 287 3 321 0 321 241 2 271 0 272									

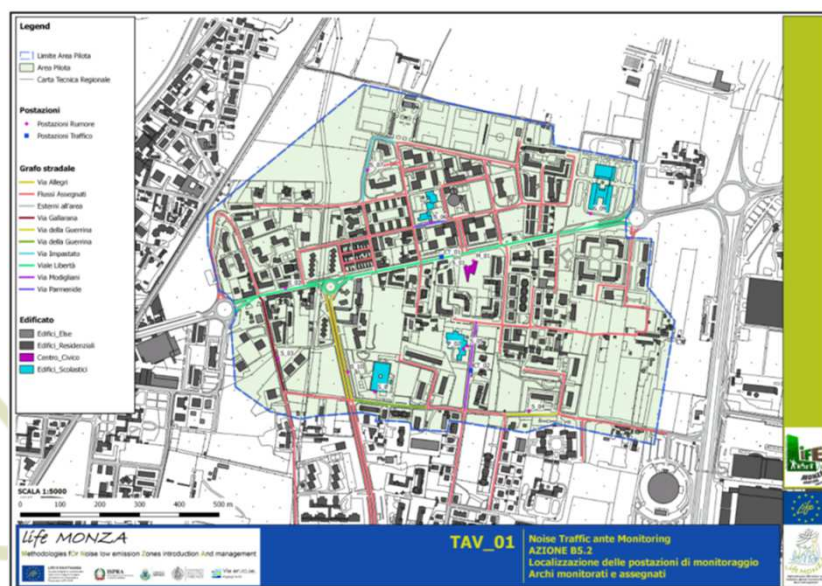


The average distribution calculated in Via Modigliani was used to reconstruct the road graph for the whole day, in all the road axes subject to spot monitoring, where only the hourly traffic data contextual to the phonometric measurement was available.

Azione B5

Monitoring and data collection for impact assessment (VIENROSE)

B5.2 Noise and Traffic ex ante /ex post monitoring



Documents produced:

- TAV_01 – Framework
- TAV_02 – Lden ante operam (May 2017)
- TAV_03 – Lnight ante operam (May 2017)
- TAV_04 – Lden ante operam (November 2017)
- TAV_05 – Lnight ante operam (November 2017)

Documents in progress:

- TAV_06 – Lden post operam (January 2019)
- TAV_07 – Lnight post operam (January 2019)
- TAV_08 – Lden post operam (May 2019)
- TAV_09 – Lnight post operam (May 2019)

Example: TAV_01 – Framework

Azione B5

Monitoring and data collection for impact assessment (VIENROSE)

B5.2 Noise and Traffic ex ante /ex post monitoring



Azione B5

Monitoring and data collection for impact assessment (VIENROSE)

B5.2 Noise and Traffic ex ante /ex post monitoring

Comparison ante- post intervention: continuous monitoring in the fixed position of Civic Centre



Mese-anno	Descrittore acustico		
	D	E	N
Nov-17	59.5	58.8	56.5
Jan-19	57.5	53.7	50.3
Differenza	2.0	5.1	6.2

Azione B5

Monitoring and data collection for impact assessment (VIENROSE)

B5.2 Noise and Traffic ex ante /ex post monitoring

Comparison of monitoring results from class I instrumentation with low-cost smart systems

	Period	Lday (06-20) [dB]	Levening (20-22) [dB]	Lnight (22-06) [dB]
Class I Instrumentation	Nov-17	59.5	58.8	56.5
Sensor HC101	Nov-17	64.6*	62.5*	59.2
	Difference	5.1	3.7	2.7
Class I Instrumentation	Jan-19	57.5	53.7	50.3
Sensor HC101	Jan-19	60.4	57.0	53.0
	Difference	2.9	3.3	2.7

	Period	Lday (06-20) [dB]	Levening (20-22) [dB]	Lnight (22-06) [dB]
Class I Instrumentation	Nov-17	59.5	58.8	56.5
	Jan-19	57.5	53.7	50.3
	Difference	2	5.1	6.2
Sensor HC101	Nov-17	-	-	59.2
	Jan-19	-	-	53.0
	Difference	-	-	6.2



Azione B6.2

Noise LEZ Guideline - specific contribution on monitoring systems (UNIFI)

Some considerations are considered of particular interest based on the operation checks of the low cost sensors installed in Monza after more than 20 months of operation (Report Action B5.1).

The report, still in draft, will be shared also with the other projects (which LIFE Dynamap) that treat the same theme of networks of low/cost sensors and whom there are some networking activities.



Azione C.1 **Monitoring of the impact of the project actions (UNIFI)**

Complex index selection (meeting 12 September 2018):

- By literature, «City Noise-Air» to adopt and extend at all the parameters (noise, air quality, health, social/economic aspects, ...) used by the project
- Possibility to define an «ex-novo» index, specif for the parameters (noise, air quality, health, social/economic aspects, ...) used by the project on based of values classes defined at hoc



Azione D **Public awareness and dissemination results (VIENROSE)**

D1 Information and awareness raising activities regarding the Project to the general public and stakeholders

D1.1 Dissemination plan and development of dissemination pack

D1.2 Website, Layman's report, Noticeboards

D2 Technical dissemination activities to stakeholders could usefully benefit from Project's experience

D2.1 Promotion of the replicability and transferability of the project results among policy makers

D2.2 Publication of technical/scientific articles in journals and magazines and participation in national or international congresses



LIFE MONZA - Methodologies for Noise Low Emission Zones introduction and management

DESCRIPTION OF THE ACTIONS



Azione D Public awareness and dissemination results (VIENROSE)

D1.1 Dissemination plan and development of dissemination pack

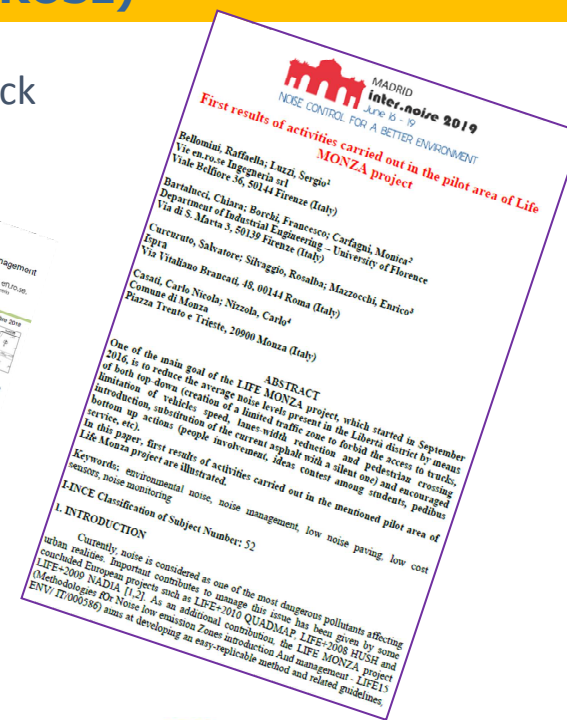
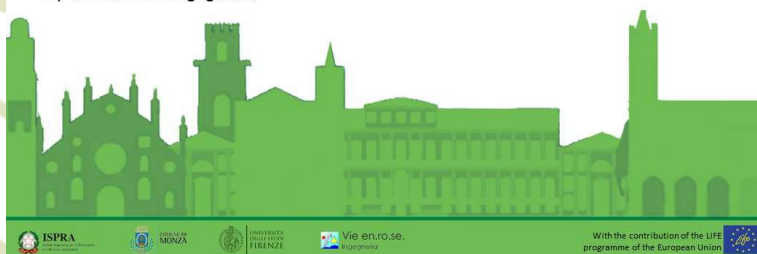
LIFE MONZA

Methodologies for Noise Low Emission Zone
introduction And management



Dissemination and participation photo album

By Vie en.ro.se. Ingegneria



2019

Life MONZA

14 may 2019



Il servizio Pedibus fa parte delle azioni bottom-up realizzate nell'ambito del progetto. Le principali azioni bottom-up sono:

- Conseguimento della popolazione ai temi legati agli aspetti ambientali e delle auto;
- Concorsi di idee nelle scuole;
- Attivazione di un day per fornire servizi specifici nelle Zone LEZ del Quartiere Libertà;
- Eventi di alfabetizzazione scuola-secondaria negli Istituti Superiori;
- Partecipazione delle Scuole alle edizioni DASH (Dissemination Noise Awareness Day) dal 2017 al 2019.

Una Linea Bristow Zone (LEZ) è un'area urbana sottoposta a limitazioni di traffico al fine di migliorare la qualità dell'aria.

Azioni Bottom-up

Il Pedibus è una "mobilità a piedi" attivata dai cittadini che promuove la mobilità a piedi nel territorio urbano. I bambini, accompagnati da adulti, vengono trasportati a scuola o al lavoro in bicicletta o a piedi.



IL PEDIBUS

Il Pedibus è una "mobilità a piedi" attivata dai cittadini che promuove la mobilità a piedi nel territorio urbano. I bambini, accompagnati da adulti, vengono trasportati a scuola o al lavoro in bicicletta o a piedi.



SMOG
Progetto Life Monza, inquinamento sotto la lente dell'Amministrazione
10 Febbraio 2019
Valentina Vitagliano



Azione D Public awareness and dissemination results (VIENROSE)

D1.2 Website, Layman's report, Noticeboards



Obiettivi

LIFE MONZA (Methodologies for Noise low emission Zones introduction And management) è un progetto co-finanziato dalla Comunità Europea mediante il programma finanziario LIFE 2015, il cui obiettivo principale è sviluppare e sperimentare una metodologia, applicabile in differenti contesti, per l'individuazione e la gestione della Noise Low Emission Zone, area urbana sottoposta a limitazioni di traffico.

Lingua
Italiano

Leggi tutto English

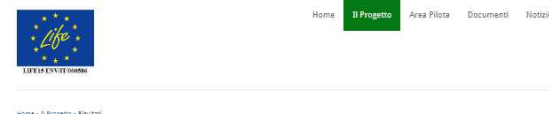
Notizie

Inviato da administrator il Mer, 06/21/2017 - 12:37



Aprile 2019

"Life Monza": gli alunni della scuola Rodari a scuola con il PEDIBUS - I volontari del quartiere accompagneranno i bimbi



Risultati

Come risultato delle azioni preliminari, è stato redatto un Abacus inerente al contesto operativo relativo alle Noise Low Emission Zones. In esso sono contenute informazioni dettagliate in merito all'analisi dello stato dell'arte effettuata nei primi mesi del progetto e riguardanti i più recenti sistemi di monitoraggio del rumore e della qualità dell'aria, gli indicatori della salute, gli interventi ed i relativi effetti attesi sul rumore, la qualità dell'aria e la salute.

Per quanto riguarda gli **interventi "top down"**, questi si sono concentrati sul Viale della Libertà. In particolare, è stata introdotta formalmente la **Zona a Traffico Limitato**, principalmente consistente in un intervento di limitazione degli accessi al viale per i mezzi pesanti superiori a 3,5 tonnellate in una prima fase del progetto (dicembre 2018 - maggio 2019) e a quelli superiori a 7,5 tonnellate in una seconda fase (maggio 2019-agosto 2020), fornendo a tali mezzi un percorso alternativo più distante dal centro abitato.

Inoltre, è stata progettata una **nuova pavimentazione a bassa rumorosità** del tipo *dense-graded* facendo particolare riferimento alle tipologie studiate e proposte all'interno del progetto Leopoldo (progetto a livello regionale, coordinato dalla Regione Toscana) che fornisce le linee guida per la pianificazione, la costruzione, il controllo e la manutenzione della pavimentazione delle strade ordinarie. La nuova pavimentazione è stata realizzata a settembre 2018 (Figure 1, 2).



Figura 1 - stesura della nuova pavimentazione su Viale della Libertà (foto: staff LIFE MONZA)



Figura 2 - nuova pavimentazione a bassa rumorosità su Viale della Libertà (foto: staff LIFE MONZA)

Sono poi stati **istituiti due attraversamenti pedonali** più sicuri per i pedoni. In particolare, la posizione degli attraversamenti pedonali è stata stabilita sia per rallentare il flusso del traffico, sia per garantire

