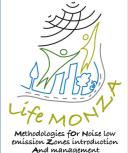


**REPORT Public involvement: environmental aspect**SUB-ACTION B2.1.3
Pilot area actions implementation
SUB-ACTION B4.4





## LIFE15 ENV/IT/000586

# LIFE MONZA Methodologies fOr Noise low emission Zones introduction And management

# **Technical Report on Pilot area actions implementation**

Deliverable			
Action/Sub-action	B2.1.3 e B4.4		
Authors	Vie en.ro.se Ingegneria		
Status - date	Version- 09/05/2019		
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# 1. Introduction

In this report has reported the activities carry out for the sub-action B2.1.3 "Public involvement: environmental aspect" and in the sub-action B4.4 " Support on bottom-up actions implementation (school meetings, training activities on noise and other pollutants affects" in which the beneficiary is Vie en.ro.se Ingegneria.

# 2. Action B2.1.3 "Public involvement: environmental aspect"

In this paragraph it'll be presented the activities about the action B2 " "BOTTOM - UP actions planning in the pilot area and public and stakeholders information and participation", with particular attention at the sub-action B2.1.3 "Support on bottom-up actions implementation (school meetings, training activities on noise and other pollutants effects".

Action	Activity	Beneficiary
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

Table 1 –B2 sub-	actions
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In the context of action B2.1.3 have been carry out several activities including participation of the Primary School Gianni Rodari, of the Istitute Achille Mapelli and of the Secondary School Sabin at the International Noise Awareness Day (INAD) in the school years 2017, 2018 and 2019.

## 2.1 Monza's Schools participation at the International Noise Awareness Day INAD-Italia

The initiatives of INAD-Italy in the years 2017,2018,2019 have involved other projects such as the European project LIFE Monza. The International Noise Awareness Day aimed to promote the knowledge of the acoustics, the awareness of risks due to a long-term exposure at the noise and to fight the harmful effects on the hearing and, more in general, on the health of kids, boys and all the citizens.

During the edition INAD 2017 "Sounds of my place" the Primary School Gianni Rodari, the Istitute Achille Mapelli and the Secondary School Sabin have been involved.

In the class of all these schools lessons have been held regarding the items related at the acoustics with subjects different on based of level of education.

All the students have received the material put at disposal by Associazione Italiana di Acustica (AIA) and the video-cartoon "Sound of my place" realized by European Acoustics Association (EAA) has been distributed.

In totally, about 200 students has been involved in this edition.



Figure 1 – Education days in the context of INAD 2017 "Sounds of my place"

The edition of the following year, INAD 2018 "Let's free us of the noise" has saw the participation in total of four classes of the Secondary School Sabin with 80 students involved in the following items linked with the acoustics: difference between sound and noise, knowledge of soundscape of own cities and the actions that can oppose the harmful noise effects on the health.

The edition INAD 2019 "Looking for lost sounds" has involved three 3<sup>th</sup> classes of Primary School Rodari in two lessons direct to about 70 kids. During this educational day have been distributed divulgated materials provide by Associazione Italiana di Acustica (AIA) and some gadget of LIFE Monza project.



Figure 2 – Educational day in the context of INAD 2019 "Looking for lost sounds"

Moreover pupils have been involved with a small competition of ideas called "The most annoying noise of my city" to represent, with drawings, the noise more annoying for they in own city, home, park.

In each of the three classes, the best three drawings have been choice and the winners have had a small prize.

Drawings have been judged on based of originality, suitability with the proposed theme, recognizability and technique used for the representation.

In total 68 works have been presented. In the following figures the best three drawings for each class involved are shown.



Figure 3 – Prizes of the competition "The most annoying noise of my city"



Figure 4 – Winners of the competition "The most annoying noise of my city" of the class 3°A- School Gianni Rodari



Figure 5 – Winners of the competition "The most annoying noise of my city" of the class 3°B - School Gianni Rodari



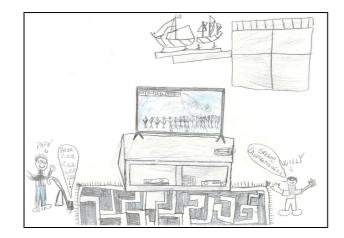
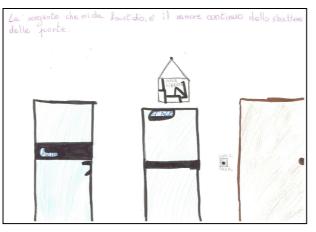


Figure 6 – Winners of the competition "The most annoying noise of my city" of the class 3°C - School Gianni Rodari





# 3. Action B4.4 "Support on bottom-up actions implementation (school meetings, training activities on noise and other pollutants effects)"

This paragraph contains the description of the activities related to action B.4 "Pilot area actions implementation", with particular reference to sub-action B4.4 "Support on bottom-up actions implementation (school meetings, training activities on noise and other pollutants effects) Sub-action B4.4 beneficiary is Vie en.ro.se. Ingegneria.

Sub-action	Activity	Beneficiary
B4.1	Top-down interventions implementation	MONZA
B4.2	Bottom-up interventions implementation and	MONZA
	management: public meetings organization and monitoring of the public involvment	
B4.3	Support on bottom-up actions implementation (App	UNIFI
	management)	
B4.4	Support on bottom-up actions implementation (school meetings, training activities on noise and other pollutants effects)	Vie en.ro.se. Ingegneria

In the sub-action B4.4 several activities were carried out where many Achille Mapelli Institute of Monza students have been involved:

- 1. Training and information meetings about the Life Monza project and acoustics topics.
- 2. "Alternanza scuola/lavoro" project in which the most interested students were involved.
- 3. Ideas competition for the creation of a Logo and Slogan for the communication and to promote the Noise LEZ in the Libertà district in Monza involving the students of the Institute Mapelli during school year 2017-2018.

## 3.1 Training and information meetings in the Mapelli school

Vie en.ro.se. Ingegneria has carried out 5 meetings, each one lasting two hours, attended by more than 100 students and several teachers per meeting, for a total of over 500 students involved and 20 teachers approximately:

- Liceo Scientifico indirizzo «Scienze applicate»;
- Istituto Tecnico indirizzo «Costruzioni, Ambiente e Territorio»;
- Istituto tecnico indirizzo «Agraria, Agroalimentare, Agroindustria»;
- Istituto Tecnico indirizzo «Amministrazione, finanza e marketing»;
- Istituto Tecnico indirizzo «Turismo».

During the meetings, each calibrated according to the specific audience (age of students and type of school) the following topics were discussed: Life Monza Project, physics and sound perception, noise disturbance and acoustic comfort of external environments and inside rooms.

Meeting date	Audience
2018 February 20th	Class rappresentative
2018 February 27th	LICEO-AGRARIO-CAT first school classes
2018 March 6th	LICEO-AGRARIO-CAT second school classes

Table 3 – Training/information meetings Calendar in the Mapelli school

2018 March 13th	LICEO 3 <sup>th</sup> , 4 <sup>th</sup> and 5 <sup>th</sup> school classes
2018 March 20th	CAT-AGRARIO-AFM-TURISTICO 3 <sup>th</sup> , 4 <sup>th</sup> and 5 <sup>th</sup> school classes

Figure 7 – Views of the auditorium where the meetings took place



The meetings have always been structured into two distinct parts.

In the first part the contents of the Life Monza Project were illustrated, with particular reference to actions that directly involve the population of the Libertà di Monza district.

The description of the infrastructural interventions of the Libertà district, as well as the promotion of bottom-up actions are been detailed.

A part of the meeting was dedicated to the illustration of the ideas contest for the creation of the logo and slogan for the communication and promotion of the Liberty district's LEZ. The participation modalities for the contest have been described too.









Figure 9 - Some slides about the ideas contest shown to the students

In the second part of the meetings, the following topics were discussed with different levels of depth: the basics of acoustics, sound perception, soundscapes and noise disturbance.

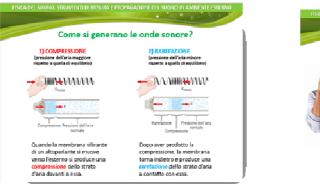
In the meetings with the older students, the sound physics (wave nature of sounds, noise parameters, time and frequency analysis of sound, etc.) was treated, also with audio and video contents.

In the meetings with younger students, sound perception in relation to visual perception, use of sounds in leisure and work environments (eg. shops, restaurants, offices, etc.) were examined.

With all the classrooms the topics related to noise disturbance, consequences on people of bad acoustics in indoor and outdoor environments, with particular reference to the acoustics of school buildings were treated. These themes raised a great interest of students and teachers, in fact they have asked many questions about how to improve the quality of listening and, at the same time, to reduce the vocal effort of the speaker especially for long periods as the teachers.



Figure 10 – Some slides about the sound perception shown to the students



	Interesità	Effetti sull'organismo	
	fino a 35 dita	Nessun disturbo	
-	40-65 484	Fastidio; disturbi di sonno e riposo	
	de 85 <u>d84</u>	Alfatistamento, reacioni di allarme Effetti psichici e meurovegetativi Iniziale danno uditivo	
	do 115 dBA	Danno saditivo Effetti psichici e meurovegetativi	
	da 130° dBA	importante dianno uditivo Evidenti effetti meurovogetattivi Disturbi vestibolari	
	oltre Jiki dita	Importanto e stapido danno uditivo Disturbi vestibolari Istollerabilità acustica	

## 3.2 School/work program

The school/work program involved 20 students from three different classes:

- Liceo Scientifico 3th e 4th class.
- "Costruzione, Ambiente e Territorio" 3th class.

Figure 11 – Activities carried out with the students



The first two meetings (February 20<sup>th</sup> and 27<sup>th</sup>) were aimed to provide the basic theoretical knowledge related to:

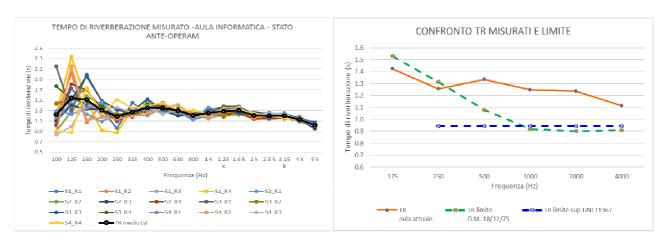
- Room acoustics;
- Sound propagation inside the rooms;
- room acoustics parameters;
- reference legislation;
- materials and solutions for the acoustic comfort optimization according to the use of the room.

In addition to this, some case studies have been shown and analysed with acoustic correction interventions designed and realized in different types of rooms (school canteens, offices, restaurants, auditoriums, etc.).

During the third meeting (on March  $6^{th}$ ), together with the students, reverberation time measurements were carried out in the computer lab, made available by the school as a case study. The students were divided into five groups and the classroom impulse response was measured in the different areas and current conditions. In addition to the acoustic measurements,

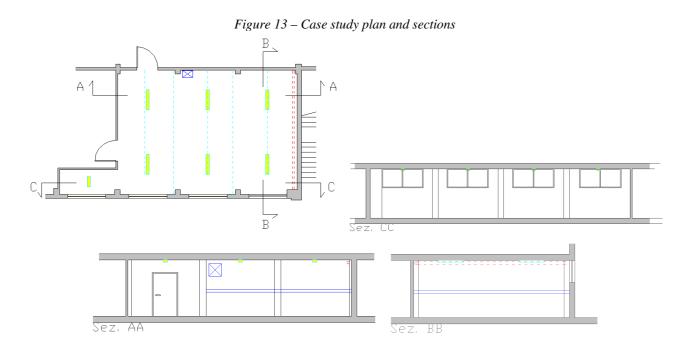
the students made the metric survey of the computer room, including the installations and furnishings present.

Then, together with the students, the acoustic measurements were downloaded from the sound level meter to the computer and shown how these data are processed to calculate the average reverberation time of the classroom to be compared with the regulation values.

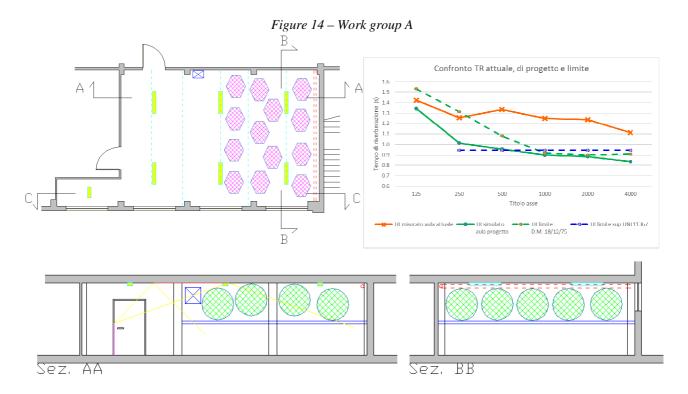


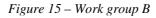
*Figure 12 – Reverberation time measurements results and comparison with regulation values* 

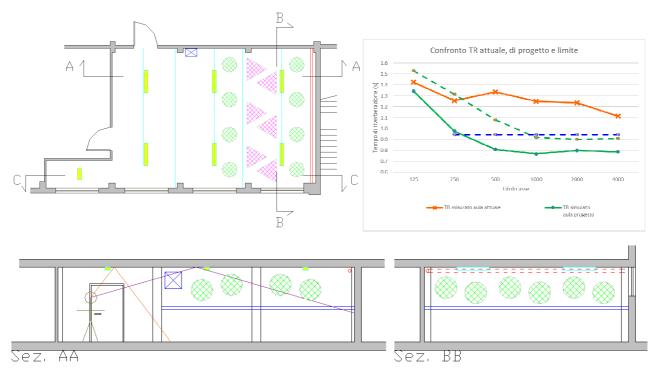
During the fourth meeting (March 13th) students were divided into five work groups, each group made metric survey by realizing the construction of DWG plan and sections of the case study in the current conditions, and calculation model calibration with an Excel worksheet, by comparison between simulated and measured RT values.

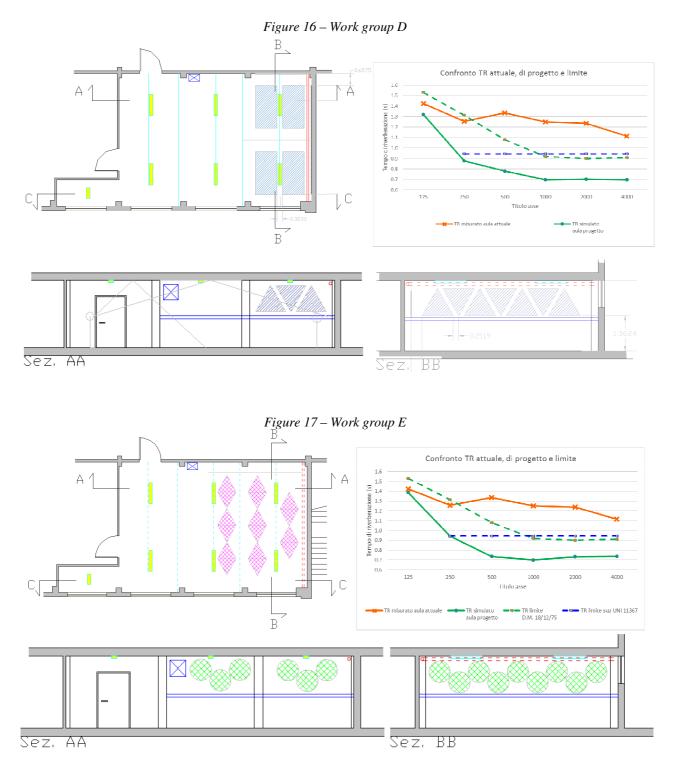


During the last meeting on March 20th, the groups worked on the acoustic project of the computer lab, by producing plan and sections of acoustic interventions, by implementing the project in the Excel worksheet in order to verify the acoustic benefit of the planned intervention and producing a technical report containing the results of all the activities carried out.









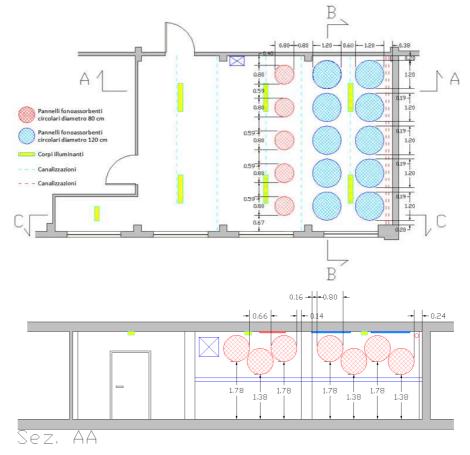
These project hypotheses were used in order to elaborate the final acoustic project that eventually the school, with right economic resources, can use to carry out the proposed interventions to improve acoustic comfort of the computer lab.

The delivered project to the Mapelli school contains technical description, drawings and economic estimate of the interventions.



Figure 18 – Project report

Figure 19 - Final project proposal



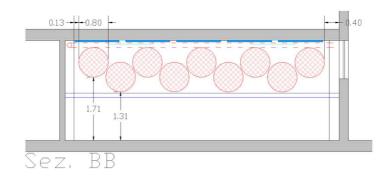


Figure 20 – Comparison between measured, calculated and reference RT values

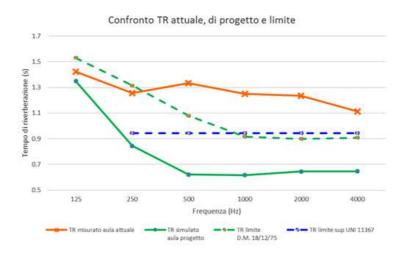


Figure 21 – Pictures of the products proposed for the improvement of the acoustic comfort of the computer lab



	Unità di		Costo unitario	
Voce di computo	misura	Quantità	€	Costo €
Pannelli Ecophon Solo Circle				
diametro 80 cm sp. 4 cm	cad	21	€ 165.47	€ 3,474.87
Pannelli Ecophon Solo Circle diametro 120 cm sp. 4 cm	cad	10	€ 204.62	€ 2,046.20
Struttura per fissaggio pannelli a parete e soffitto	cad	31	€ 20.00	€ 620.00
Posa in opera	ora	31	€ 35.00	€ 1,085.00
		COS	TO TOTALE €	€ 7,226.07
			IVA (22%) €	€ 1,589.74
		COSTO	TOTALE €	€ 8,815.81

Figure 22 – I	Economic	estimate	of the	acoustic	interventions

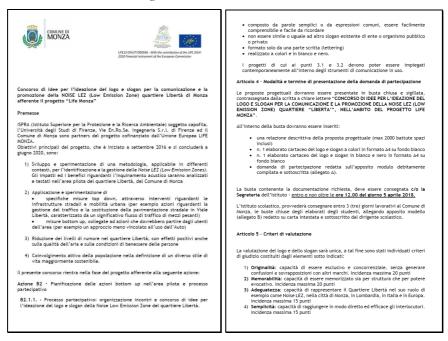
These activities have had very positive feedback:

- students have learned topics that are not in the school curriculum;
- students have showed enthusiasm for the activities carried out together. Some of them have also indicated their intention to undertake university studies in faculties such as Architecture and Engineering;
- without costs Mapelli school have received the acoustic project for the computer room. This kind of project generally costs a few thousand euros.

## 3.3 Ideas contest

During the training and information meetings described in the next paragraph, the ideas contest announced by the Municipality of Monza - Institutional Communication Service and External Relations – has been presented to Mapelli school students. The object of the contest is the creation and development of a logo and a slogan for the communication and promotion of the Noise LEZ of the Liberty district in Monza. The goal of the logo and slogan is to reflect the aspects considered essential for the connotation of the Libertà district as NOISE LEZ and support the activities for the environment, in particular against noise pollution.

Figure 23 – Ideas contest tender



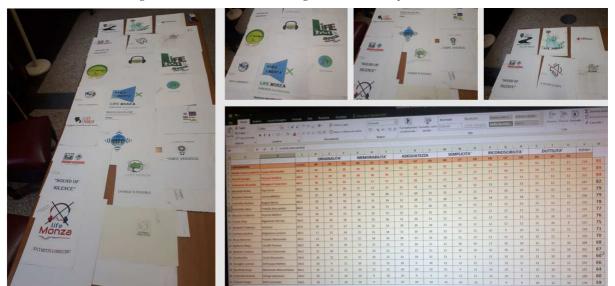
The invitation to tender was given to the school in one hundred paper copies and was made available for download from the school website.

Students, according to the tender contents, have participated in groups of two people and prepared a closed envelope containing a descriptive report of the project proposal, a paper print of the logo and slogan in A4 format and the application form completed and signed (Annex A).

The deadline of the contest was April 5<sup>th</sup>, then the school has delivered all the received works to the City of Monza which organized for May 2<sup>th</sup> the meeting of a judging commission composed by Raffaella Bellomini (for Vie en.ro.se. Ingegneria), Giulia Pessina and Bruna Bonzini (for the Municipality of Monza).

The works have been evaluated according to the following criteria reported in the tender and below listed with the relative maximum scores:

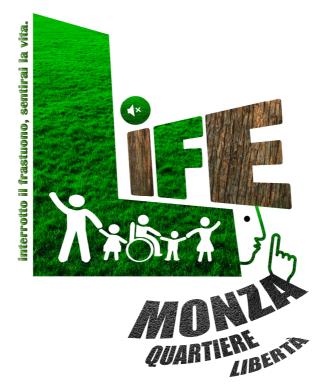
- 1. <u>Originality</u>: ability to be exclusive and competitive, without generating confusion and overlap with other brands (maximum incidence 20 points).
- 2. <u>Memorability</u>: ability to be memorized by structure and by evocative power (maximum incidence 20 points).
- 3. <u>Adequacy:</u> ability to represent the Libertà District in its role as an example as Noise LEZ, in the city of Monza (maximum incidence 15 points).
- 4. <u>Simplicity</u>: ability to reach interlocutors in a direct and effective way (maximum incidence 15 points).
- 5. <u>Recognizability</u>: ability to stand out and be immediately accepted for what it represents (maximum incidence 15 points).
- 6. <u>Ductility</u>: ability to adapt, without losing the characteristics of recognizability, to different chromatic and dimensional situations and to the tools and paper and electronic supports on which it will appear (maximum incidence 15 points).



#### Figure 24 – Pictures taken during the evaluation of the works

Twenty-one works have been presented and the work evaluated as completer and more responsive to all the requests of the tender was that of the group composed by Gabriela Maida Claros and Alessandro Gunno who had a total score of 91/100. The scores of the second and third classified group are 89/100 and 84/100.

Figure 25 - First classified logo and slogan



#### Figure 26 – Descriptive report of the winning logo and slogan

#### LOGO:

Per il logo ho optato per la scritta "life Monza" e siccome i lavori futuri, saranno sul quartiere libertà, ho aggiunto la scritta "quartiere libertà".

Ho risaltato la lettera "L" di life e dentro ho posizionato: un uomo, due bambini, un uomo in sedie a rotelle e una donna. Queste persone rappresentano la vita, la crescita e l'unità. 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.

#### SLOGAN:

Tutto gira intorno alla vita, questa viene influenzata da tutto ciò che ci circonda. La vita può essere ascoltata (Le foglie degli alberi che si strusciano), toccata (il legno, ruvido e duro, l'erba del prato, liscia da una parte e ruvida dal altra), assaporata (Il sapore dei frutti), vista (Alberi in tutte le tonalità di verde, fiori di tutti i colori) e odorata (il profumo dei fiori, l'erba appena tagliata).

Molte volte, distratti da tantissime fonti rumorose, non riusciamo a sentire la bellezza delle piccole cose, che aspettano in silenzio armonioso. Il cielo per esempio, è immenso ed è sopra di noi ciò nonostante, non ci fermiamo nemmeno un secondo a contemplarlo. I bambini, noi ragazzi e probabilmente anche alcuni adulti, siamo talmente distratti a sentire i motorini o le macchine che passano veloci, provocando un frastuono fastidioso, e non facciamo caso di quello che si ha attorno.

Perciò mi aspetto che con questi miglioramenti, interrotto il frastuono, sentiremo la vita e cambieremo sempre in modo positivo.

## 3.3.1 Ideas contest awarding

The awards ceremony for the ideas contest took place on May 25 th, 2018 (see Figure 21 and 22) at the *Centro Civico Libertà* of the city of Monza.

During the award ceremony following people were present: the mayor of the city of Monza who awarded the first classified group, Mapelli Institute vice-principal, judging commission composed by Raffaella Bellomini (for Vie en.ro.se. Ingegneria), Giulia Pessina and Bruna Bonzini (for the Municipality of Monza), Prof. Tomaino, referent of the school for the Life project, parents representative and the students participating in the contest, to which the names of the winners were announced only during the meeting at the Civic Center where the works of all the participants had been exhibited (see Figure 23).

Each of the first three classified groups received a pair of city-bikes (see Figure 24, 25 and 26), while all the participating groups received gadgets prepared for the occasion: a t-shirt and a pencil on which the winning logo and slogan were printed.



#### Figure 27 – Ideas contest awarding leaflet





Figura 28 – Ideas contest poster

Figure 29 – Exhibition of the works of all the participating groups at the Civic Liberty Center

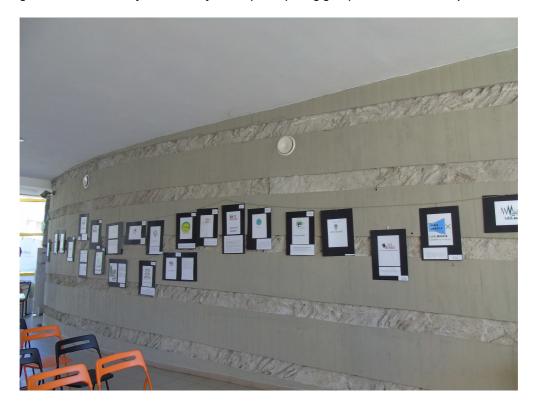




Figure 30 – First classified group awarding

Figure 31 – Second classified group awarding

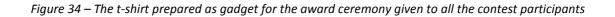




Figure 32 – Third classified group awarding

Figure 33 – Picture during the award ceremony





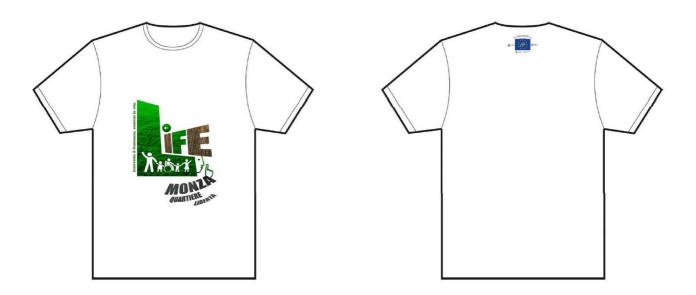


Figure 35 – Detail of the front and back t-shirt





Figure 36 – The pencil prepared as gadget for the award ceremony given to all the contest participants

