



Nadia project

Fact Sheet - how to do it?

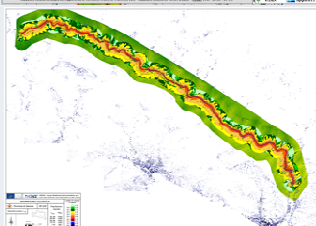
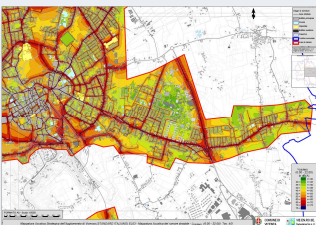
WWW.NADIA-NOISE.EU



Directive 2002/49/EC relating to the assessment and management of environmental noise on 25 June 2002, also known as the "END".

The END aims to "define a common approach intended to avoid, prevent or reduce on a prioritised basis the harmful effects, including annoyance, due to the exposure to environmental noise" to reduce energy costs.

According to this Directive and national transpositions, Local bodies have to monitor, map and reduce the environmental noise and in particular that produce by traffic.



The project NADIA – Noise Abatement Demonstrative and Innovative Actions and information to the public-

It has been widely recognised that the noise is not only a form of disorder, but a real causes of environmental pollution. You estimate that it affects the health and quality of life of about 20% of the population and is even regarded as the most urgent environmental problem and the main because of worsening environmental standards in urban areas.

NADIA is a project on the reduction of the noise from traffic co-financed by the European Commission under the LIFE+ programme (2009 call) (ENV/IT/000102).

It began as a tool to implement procedures for the reduction of environmental noise and it consists in the following main actions:

- ✚ noise mapping of a significant portion of urban areas and some provincial roads;
- ✚ draw up action plans for noise reduction according to innovative working methods;
- ✚ implementation of demonstration actions;
- ✚ make available to the schools the knowledge acquired in order to sensitise and educate students on dangers related to noise and possible solutions to avoid and reduce it

The project ensures the participation of stakeholders and accurate communication with the population, according to statement of the European working groups.

Where has it been implemented?

The project has been carried out in Italy and in particular in three Italian Regions: Veneto, Liguria and Toscana.

The participant local bodies were both, Municipalities with more than 100000 inhabitants and Provinces managing roads with more than 3.000.000 vehicles per year.

Who can benefit from the project?

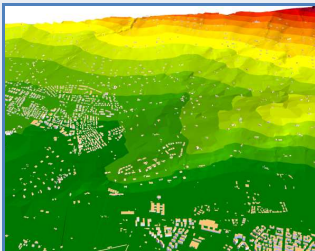
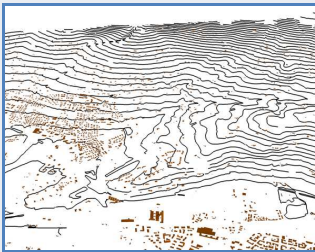
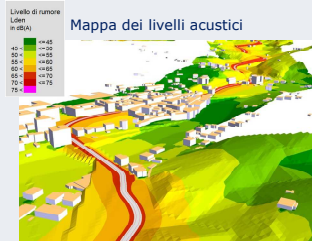
End users are local bodies that are in charge for environmental noise management according to roles attributed by national transposition of Directive 2002/49/EC:

- ✚ Municipalities with more than 100.000 inhabitants,
- ✚ Provinces and similar local bodies (NUTS III) and Regions that manage roads with more than 3.000.000 vehicles per years

On the other side other organisations that have to reduce noise emissions such as airports, railways, etc. may benefit from some project solutions as well as technicians and other interested parties that are involved in noise management.

What are main questions to which the project responds?

- ✚ How to collect reliable data?
- ✚ Which kind of model we have to use to produce noise maps?
- ✚ How to move from the maps to the noise reduction action plan?
- ✚ How to communicate to the public?
- ✚ How to take advantage from the experience and know how to increase the awareness of pupils?
- ✚ What are technical solutions available to reduce the noise produced by traffic and which are their performances?



From data to noise mapping

- ✚ The data set needed for noise simulating were established in the Milestone 1 of the project "Data quality and quantity with regard to models specifications". Instructions for the collection and aggregation of input data for noise mapping were given in Deliverable 2, "Noise propagation model optimized and validated".
- ✚ The noise propagation model used in the noise mapping activity is the NMPB-Routes-96. The noise emission of each modelled road depends on the average traffic flow and its composition (% heavy and lightweight vehicles and speed in the reference periods day, evening and night), the road slope (evaluated by the DGM) and the type of the road pavement surface.
- ✚ The information about traffic flow has been taken from traffic measurements. The ground use, the buildings height and the population density were taken into account
- ✚ Two kind of results were produced: graphical maps and numerical estimates.
- ✚ The graphical maps are easier to be analysed by people who are not expert in acoustic problem.
- ✚ The numerical estimates allow to evaluate the acoustical criticism of the roads combining the results of the noise simulation with other information like the use of the building and the people living inside. This methodology allows to evaluate the value of the indicators "population exposed to noise" and "number of people living in buildings that have a quiet façade (NPQ)" in compliance with 2002/49/EC.

From noise mapping to noise reduction action plans

The noise maps are the starting points for the action plans. The noise action plans define the strategies for the realization of noise abatement measures. The steps of a noise action plan are the following:

- ✚ comparison between noise maps and law limits and definition of the critical areas. A critical area is a part of territory that can be acoustically rehabilitated using the same noise abatement measure.
- ✚ Definition of a ranking of priority of the critical area. The results of the comparison, together with buildings and dwellers information, are used to select the areas in which the acoustic environment is more critical.
- ✚ Selection of the most efficient noise abatement measure for each critical area. A cost-benefit analysis was defined to identify the best noise reduction measure.



Barriers are made of wood and the noise absorbing layer is made of recycled polyester fiber



Materials and air circulation system make the difference. Windows are made of two or three glasses of different thickness, with the insertion of a transparent film useful to the elimination of vibrations.

The solution is in line with the energy saving needs as well.



The asphalt used is made of a relevant percentage of recycled rubber with high sound absorption performances (3-4 dB less than conventional asphalt in European applications in urban areas at 40-45 kmh speed)



Adopted noise abatement innovative solutions

The NADIA project allowed to improve the noise level in critical Cities areas and along some provincial road.

The main target of the project are the primary and secondary schools because they need silence, they are attended by children and they are the best place where results can be valorised in terms of education and teaching.

The adopted solutions are:

- ✚ Noise barriers, for instance, made of wood and recycled polyester fiber with the following abatement performance:
 - Acoustic absorption DLa= 17dB Cat. A4
 - Acoustic insulation DLR= 26 dB Cat. B3 – Rw=31 dB
- ✚ Asphalts made of a relevant percentage of recycled rubber with high sound absorption performances (3-4 dB less than conventional asphalt in European applications in urban areas at 40-45 km h speed).

Their initial costs are a bit higher than traditional asphalts but the maintenance is less intensive and less expensive. The Life Cycle Cost is lower.
- ✚ Windows composed by 2-3 glasses of different thickness with the insertion of a film to eliminate vibrations. Such solutions are also useful to reduce the energy consumptions because they reduce the air circulations as well as the transmittance.

Education

Each investment made to improve the environmental quality has to be exploited for increasing the awareness of people (mainly youngsters) and changing their behaviour. This is added value.

The NADIA project stressed this principle and develop more ways to reach young people to convince them that too much noise is a serious pollution problem very harmful to health and to their quality of life.

Schools were the main actor addressed by the project: the project partners were in touch with several schools and proposed to them to benefit some free lectures on noise from the NADIA project. An initial informal proposal was sent and, once an agreement was met, a final document was shared and signed or letters were sent.

On the other side, some educational events were exploited such as the Science festival hold each year in Genova. So, thanks to this kind of institutional events, hundreds or thousands of pupils can be reached by the activities.

What are its strengths?

The project demonstrates the effectiveness of the involvement of the stakeholders and of the communication to the public for increasing the awareness on traffic noise topic.

Moreover the project allowed to define a methodology for the realization of noise action plan through an innovative cost-benefit analysis.

Some concrete solutions have been tested on real scale and made available to the public. They allowed to reduce the noise level in critical contexts.

Difficulties and lesson learnt

Floods in Italy affected the project and delayed it but, from the technical and organisational points of view, no relevant problems was met.

The initial set of data wasn't adequate to face the obligations on noise mapping and reducing due to the models requirements.

The project provide local bodies with requirements on data useful to organise themselves (milestone 1)

Few citizens participated in the communication events. Nevertheless an active participation of technicians and pupils in the project activities was observed. Future project could focus their dissemination activities on this part of population.

What kind of materials are available?

The NADIA project makes available:

- ✚ The project deliverables which stress the methodological approach adopted.
- ✚ The technical documents that are strategic maps, plans
- ✚ Communication and education material
- ✚ Works done that are available for visits to citizens, technical experts, local bodies in charge, etc.

Results are available at the following internet site:

<http://www.nadia-noise.eu/en/download>

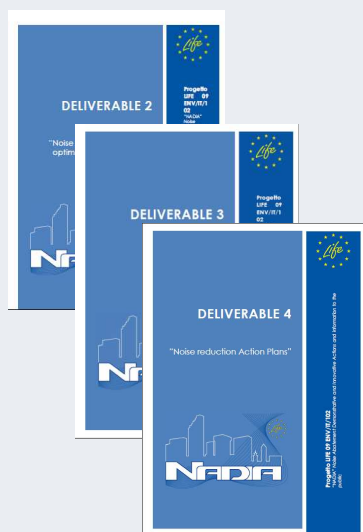
How the NADIA project is structured?

The NADIA project includes five phases:

1. Survey: using questionnaires and propagation models to gather data on the photometric measurements, population distribution, meteorological conditions, soil characteristic, etc.
2. Noise mapping according to European experts good practices of urban areas (Cities of Vicenza and Prato) and some provincial roads (Provinces of Genova and Savona);
3. Action plans: the establishment of small local working groups involved in the drafting of the Action Plans (participatory approach)
4. Noise abatement demonstrative actions adopting the best noise remediation solutions which are available to schools and events
5. Dissemination: dissemination and presentation of the project and its results through a website and events

Who to contact?

Ms. Cecilia Brescianini - Province of Genova - Project Coordinator
Mr. Alessandro Conte – Province of Genova
Mr. Danilo Guarti – Municipality of Vicenza
Mr. Sergio Spagnesi – Municipality of Prato
Ms. Stefania Ghirardo - Province of Savona
Prof. Francesco Asdrubali – CIRIAF, University of Perugia



For more information
on the
NADIA project
visit
www.nadia-noise.eu

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