

NOISE TRAINING PROJECT

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Erasmus+

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HANDBOOK 3,4,5 Technical and Communicative Aspects of Environmental Noise Management

Vie en.ro.se. Ingegneria - ITALY
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UNIVERSITÀ
DEGLI STUDI
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IMPROVEMENT OF ENVIRONMENTAL
NOISE
MANAGEMENT
SKILLS IN AUDITS





ENVIRONMENTAL NOISE MANAGEMENT



Regulatory framework analysis

IO1: Authorities responsible of Environmental noise management

IO2: Legal aspect on Environmental noise management

Technical context

IO3: Technical aspects of Environmental Noise Management – curricula and procedures for noise measurements in noise audits

IO4: Communicative aspects of Environmental Noise Management (Public Noise Awareness)

IO5: Technical aspects of Environmental Noise Management – Noise mapping: procedures and communication actions



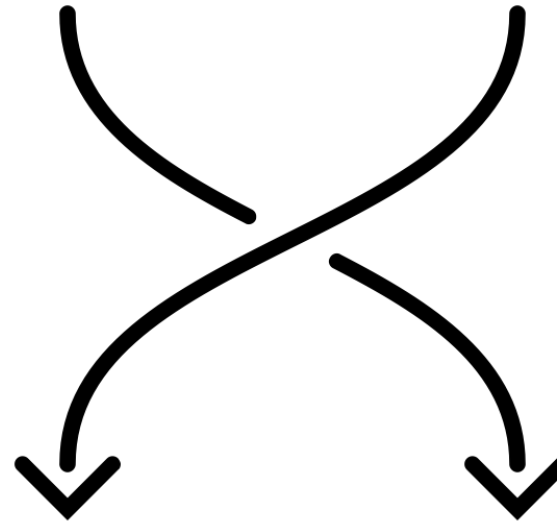
TECHNICAL ASPECTS



Technical context of the project



ENVIRONMENTAL NOISE MANAGEMENT



IO3: Technical aspects of Environmental Noise Management – curricula and procedures for noise measurements in noise audits

NOISE AUDITS

NOISE MAPPING

IO5: Technical aspects of Environmental Noise Management – Noise mapping: procedures and communication actions



INTELLECTUAL OUTPUT 3



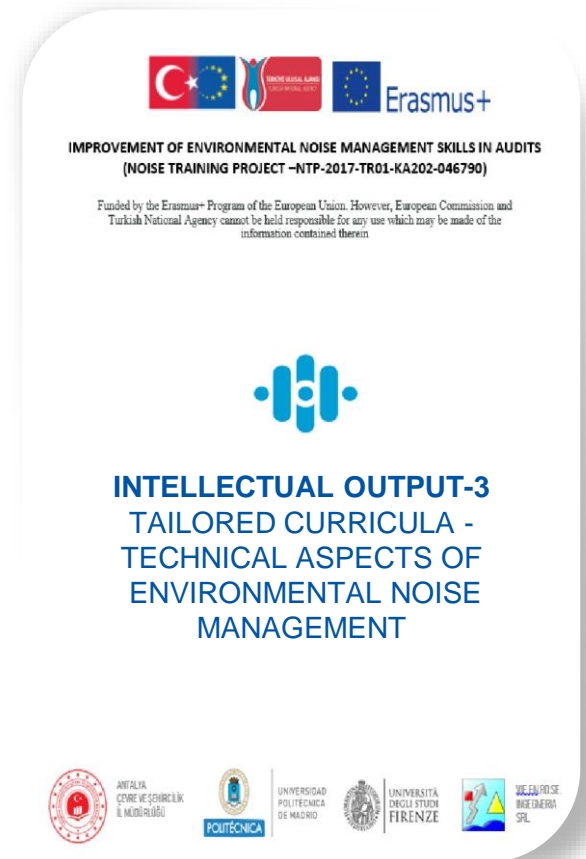
TECHNICAL ASPECTS OF ENVIRONMENTAL NOISE MANAGEMENT

Goal: collect the best practices concerning environmental noise audits to be applied in order to carry out noise measurements from industrial and infrastructural sources or temporary activities.

Main parts of the handbook

For each project partner country:

- Requirements for “expert in acoustics”
- Noise measurement techniques
- Measurement procedures for different noise sources
- Practical guide to perform noise measurements in pilot cases





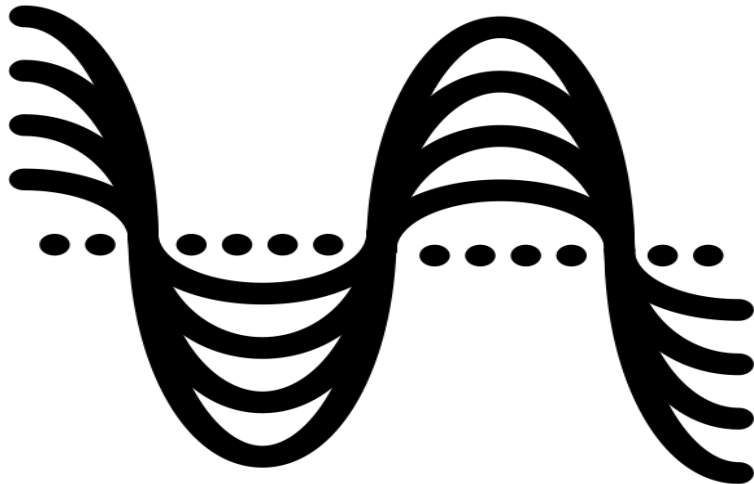
INTELLECTUAL OUTPUT 3

Noise measurement techniques: many differences were found among the three countries

Calibration of sound level meter:

- in Spain it is carried out every year;
- in Italy and Turkey it is carried out every two years;

- the maximum possible deviation in Italy is 0.5 dB;
- the maximum possible deviation in Spain is 0.3 dB;
- the maximum possible deviation in Turkey is 0.6 dB.





INTELLECTUAL OUTPUT 3

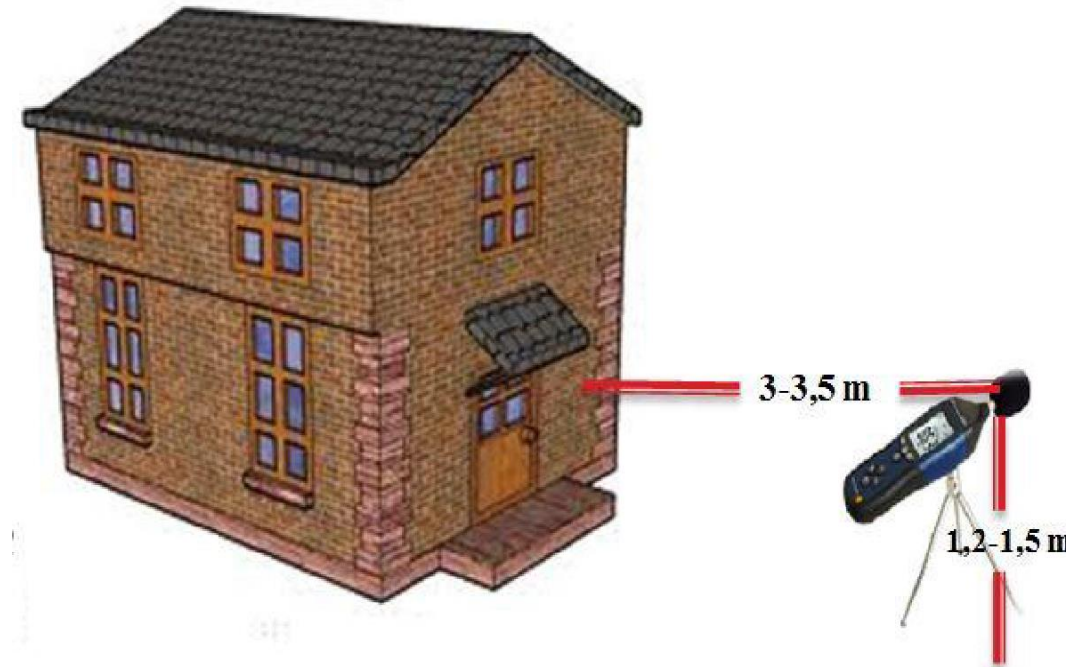
Sound level meter position: measurement outside the building

Minimum height:

- Italy = 4m (suggested);
- Spain = 4m (suggested);
- Turkey = 1.2/ 1.5 m.

Minimum distance from the facade:

- Italy = 1m;
- Spain = 1.2m;
- Turkey = 3 / 3.5 m.





INTELLECTUAL OUTPUT 3



Regulatory reference time:

- in **Italy** two time periods are used, **daytime** (6 am -10 pm) and **nighttime** (10 pm – 6 am)
- in **Spain** and **Turkey** three time periods are used, **daytime** (7am- 7pm), **evening** time (7pm-11pm) and **nighttime** (11pm- 7am).



Correction parameter :

- in **Italy** and **Spain** there are corrections depending on the presence of emerging tonal components, low-frequency components or impulsive noise;
- in **Turkey** there are corrections depending on the presence of emerging tonal components, impulsive components, on the time period and on the noise source typology.



INTELLECTUAL OUTPUT 3



Measurement and assessment of noise immission in a living environment

*Learning and training activity- C3
Antalya, January 2019*

Differences of noise measurements procedures

Italian procedure:

- indoor measurement of background noise;
- indoor measurement of environmental noise with open windows;
- indoor measurement of environmental noise with closed windows.

Turkey procedure:

- indoor measurement of background noise;
- indoor measurement of environmental noise with close windows.

Spain procedure:

- outdoor measurement of background noise;
- outdoor measurement of environmental noise.





INTELLECTUAL OUTPUT 3



The problem of noise annoyance is dealt differently in the three Countries at the legislative level and also at the technical level.

It would be desirable to have common requirements to become technicians in Acoustics, in order to guarantee that all technician could work in all countries without limitations

It could be interesting to verify, in several sample scenarios, the effectiveness of the different methods to carry out measurements throughout the Countries.



INTELLECTUAL OUTPUT 5

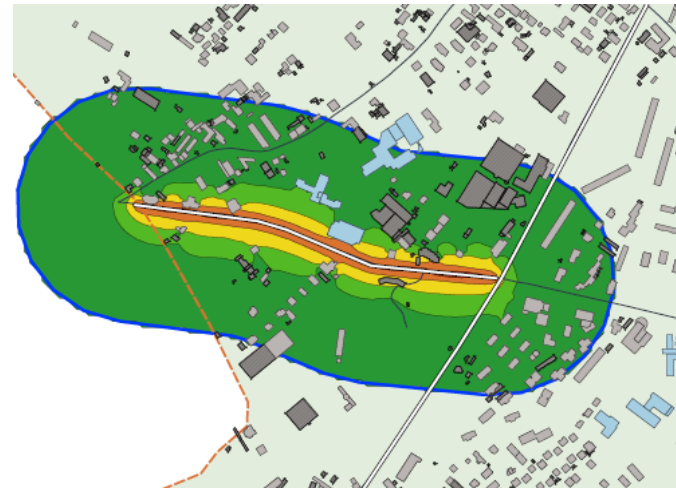
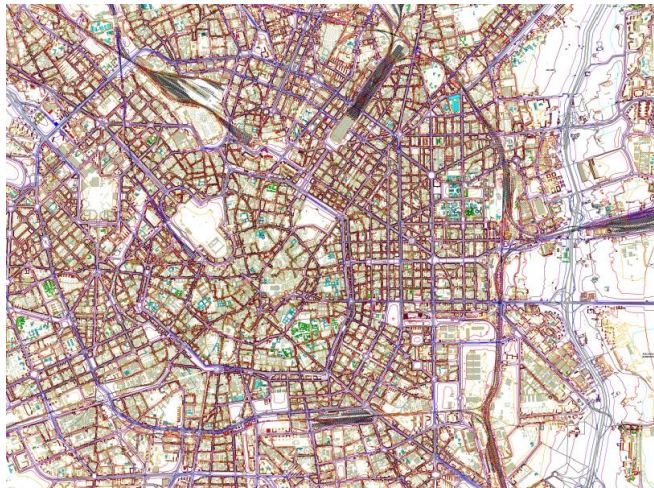


COMPARATIVE ANALYSIS ON ENVIRONMENTAL NOISE MANAGEMENT ACCORDING TO ENVIRONMENTAL NOISE DIRECTIVE 2002/49/EC

Goal: development of a handbook containing the main information needed to manage **noise mapping** and **action planning**, analysing the experiences coming from the three Countries involved in the NTP project.

Main parts of the handbook:

- Disposals of Environmental Noise Directive (END)
- END implementation methods in Italy, Spain and Turkey (Noise mapping; Action Planning; Quiet Areas; Participation of the public)



IMPROVEMENT OF ENVIRONMENTAL NOISE MANAGEMENT SKILLS IN AUDITS
(NOISE TRAINING PROJECT –NTP-2017-TR01-KA202-046790)

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INTELLECTUAL OUTPUT-5
COMMUNICATIVE WAY
SUPPORTED BY TECHNICAL
ASPECTS OF ENVIRONMENTAL
NOISE MANAGEMENT



ANTALYA ÇEVRE VE ŞEHİRCİLİK İL MÜDÜRLÜĞÜ



UNIVERSIDAD POLITÉCNICA DE MADRID



UNIVERSITÀ DEGLI STUDI FIRENZE



WEG/PROSE RISE ENGINEERING S.p.A.



Responsible authorities

In all the considered Countries, noise maps and action plans are in charge of responsible authorities of agglomerations and main road/rail/aircraft infrastructures.

Referring to the agglomerations, they should produce maps for road/rail/aircraft/industrial infrastructures.

About the industrial plants, the responsible of the agglomeration generally collect or directly produce the maps.





INTELLECTUAL OUTPUT 5



- Reference time periods

ITALY: day = 06:00-20:00, evening = 20:00-22:00, night = 22:00-06:00.

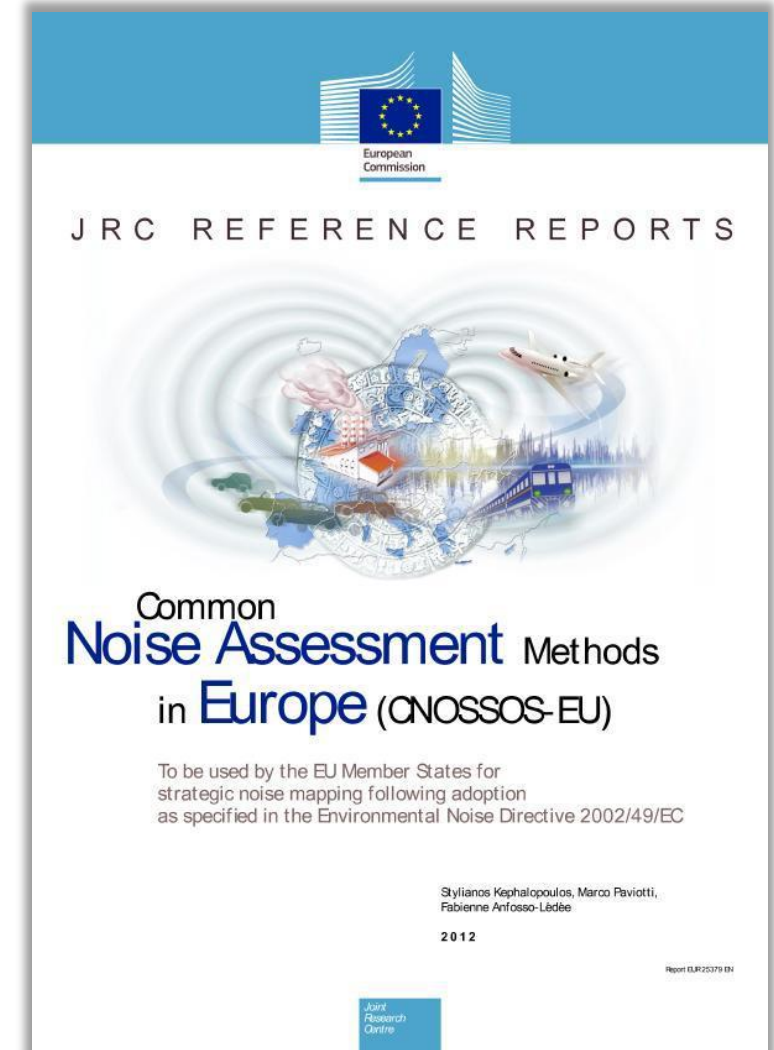
SPAIN and TURKEY: day = 07:00-19:00, evening = 19:00-23:00,
night = 23:00-07:00.

- Limits

No noise limits are present in the END. In all the considered Countries they are defined at national level. The transposition of noise limits to EU parameters is expected in the near future, but it is still missing.

- The new noise assessment method (CNOSSOS-EU)

It is in force since the beginning of 2019 in all the three Countries.





INTELLECTUAL OUTPUT 5



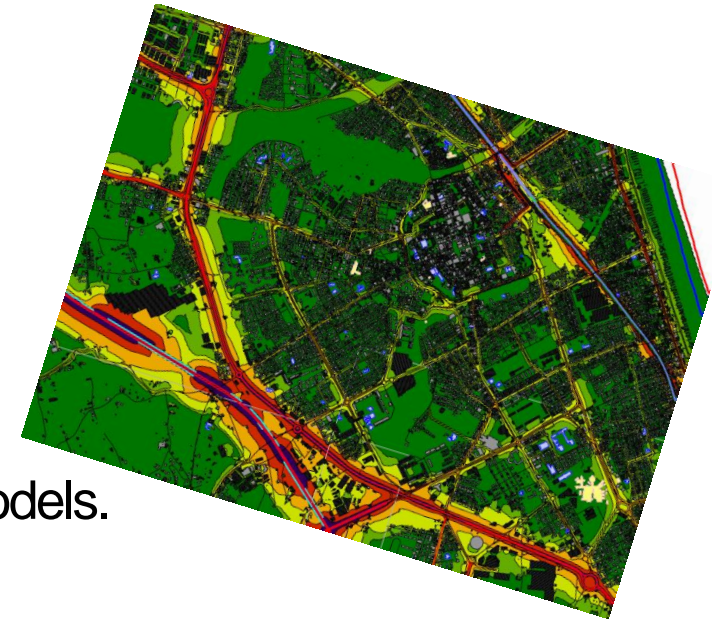
Noise mapping

All countries evidences the lack of :

- economic resources

Spain in particular complains:

- specific and detailed guidelines;
- the inconsistencies to define the agglomerations;
- the inconsistencies to gather the input data to create the simulation models.



Entertainment and recreational areas

These kind of activities are considered in noise maps of some main cities in **Turkey** and **Spain**, even if they aren't included in the official noise maps delivered according to END requirements.





INTELLECTUAL OUTPUT 4



COMMUNICATIVE ASPECTS OF ENVIRONMENTAL NOISE MANAGEMENT

- Informing the public about the sound levels to which they are exposed has always been considered a basic aspect of environmental noise management.
- The Environmental Noise Directive (END, 2002) provides basic guidelines for communicating to the public the information on noise maps and the relevant actions for noise mitigation.
- The Directive 2003/4/EC on public access to environmental information established the obligation to make available to the public all environmental information collected by the management bodies



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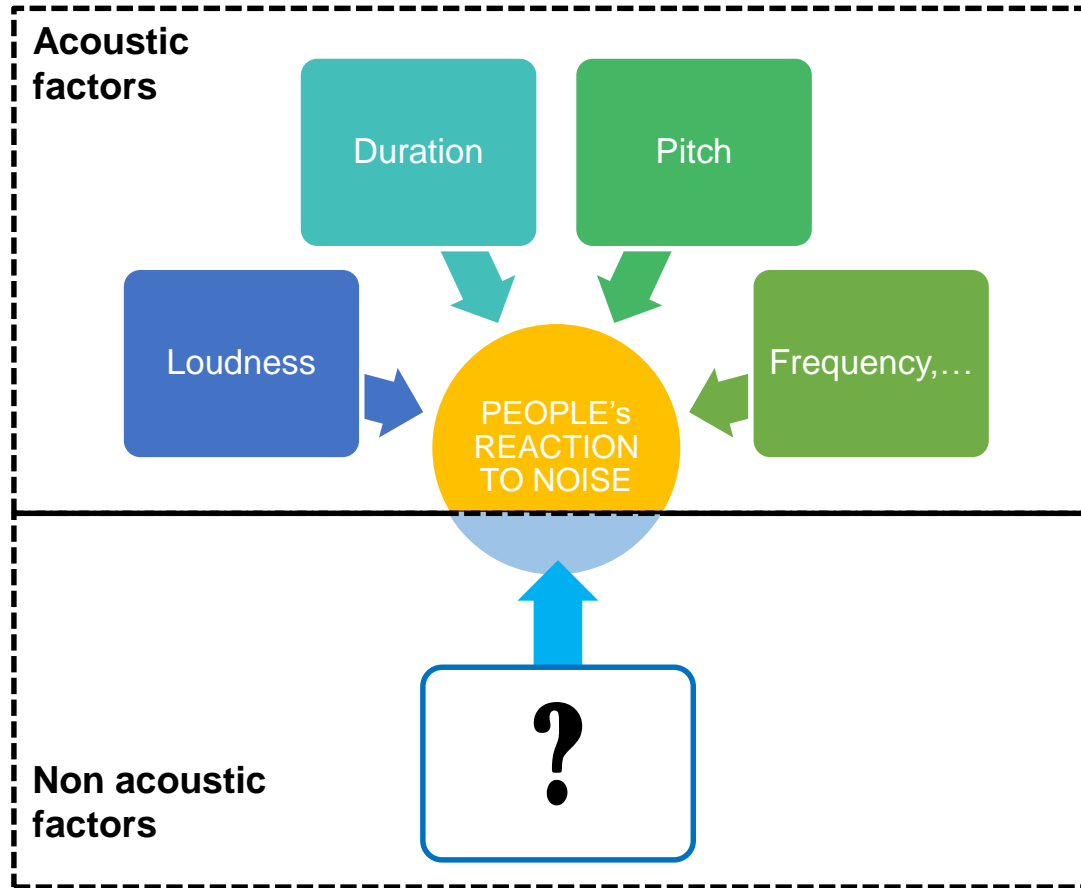
INTELLECTUAL OUTPUT-4
COMMUNICATIVE ASPECTS OF
ENVIRONMENTAL NOISE
MANAGEMENT



INTELLECTUAL OUTPUT 4



Annoyance and citizens response to noise



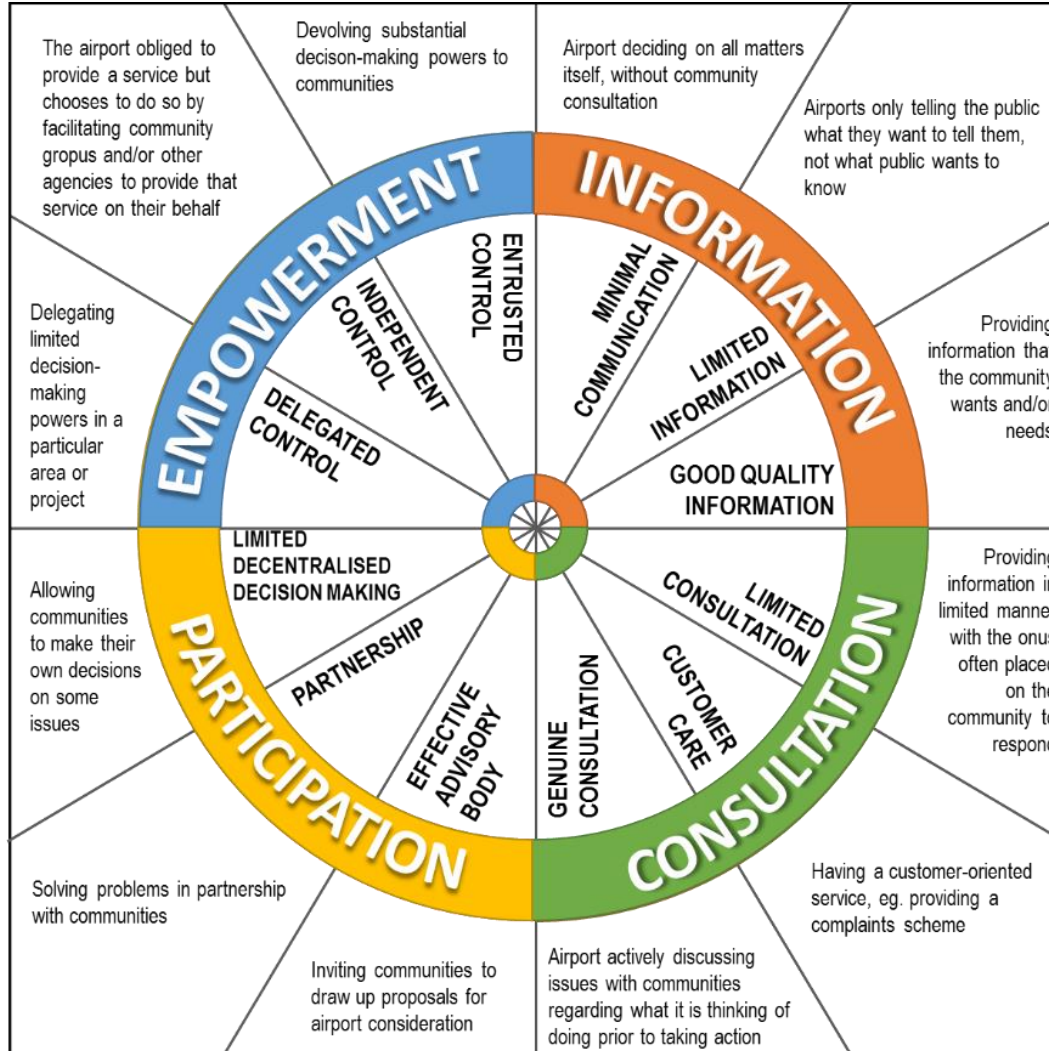
Although quite a part of the citizen's response to noise is related to characteristics of the sound mixture, there is a part that can only be explained by factors that have nothing to do with acoustics.



INTELLECTUAL OUTPUT 4



Community engagement



Wheel of participation - Davidson, 1998

- Information:** To provide the public with clear and objective information that will help them to understand existing problems and solutions.
- Consultation:** Obtain feedback from the public regarding information previously provided
- Participation:** A process that seeks public participation on the one hand, to know and understand the problems and concerns of residents before taking action, and on the other hand seeks their collaboration in decision-making.
- Empowerment:** To leave decision making in the hands of the residents.

During the last decade, the aviation sector is implementing a novel approach called Community Engagement that aims to take advantage of the aspects related to two-way communication with residents, as non-acoustic factors that can influence their response and improve airport acceptance.



INTELLECTUAL OUTPUT 4

Information

Information can improve confidence in authorities:

- Not biased
- Clear
- Reliable
- True

Do not try to educate users at your convenience

Do not hide information

Inform about changes and future impacts

Take advantage of the new technologies (i.e. virtual reality tools, app...)





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INTELLECTUAL OUTPUT 4



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Awareness

Noise is a public health risk, beyond annoyance

Community noise hardly generates complaints, only the most severe aggressions translate into complaints

Noise complaints are only a part of the problem

Local authorities often focus on complaints rather than public health risks

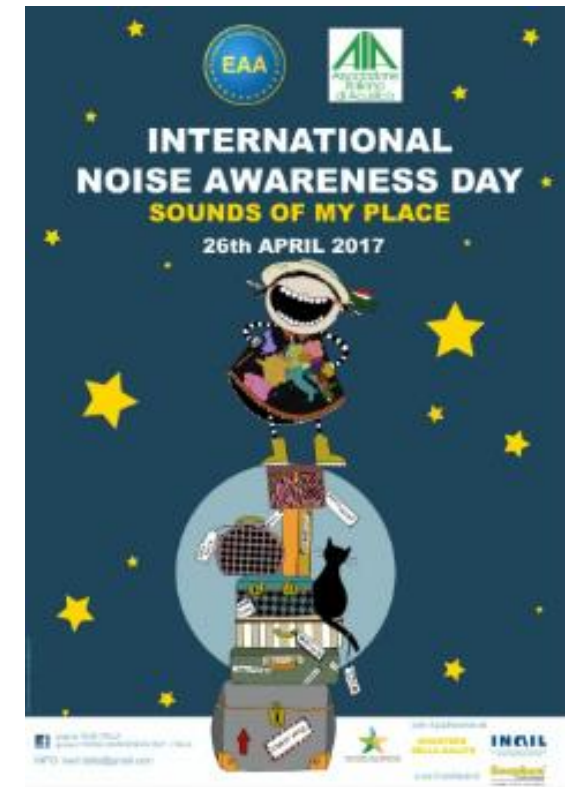
Awareness is essential:

- Among authorities, to focus on the public health risks too
- Among the general public, whose health may be affected
- Among those responsible for sound emissions
(this includes individuals in their daily activities)

The International Noise Awareness Day (INAD) is the more relevant initiative.



International Noise
Awareness Day

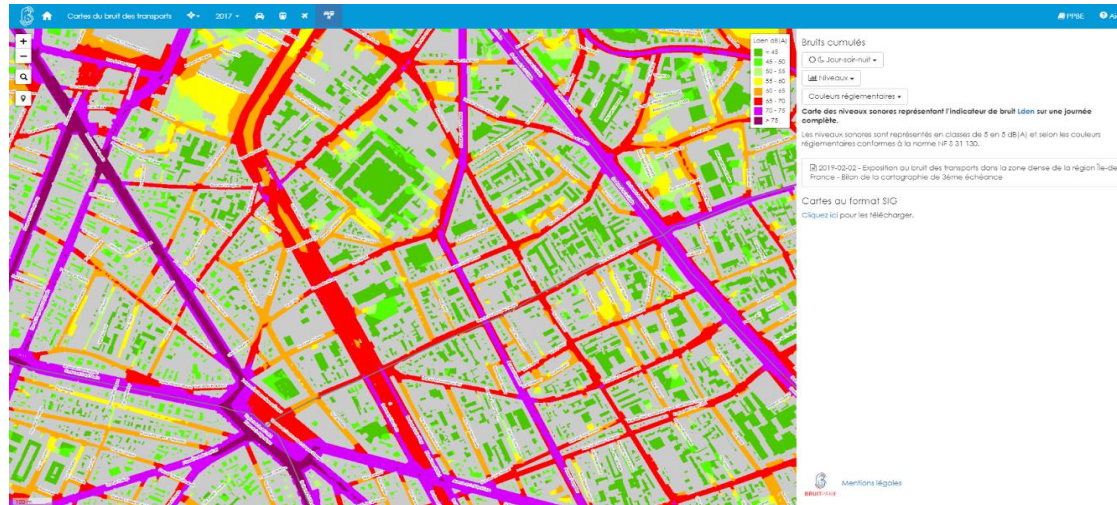
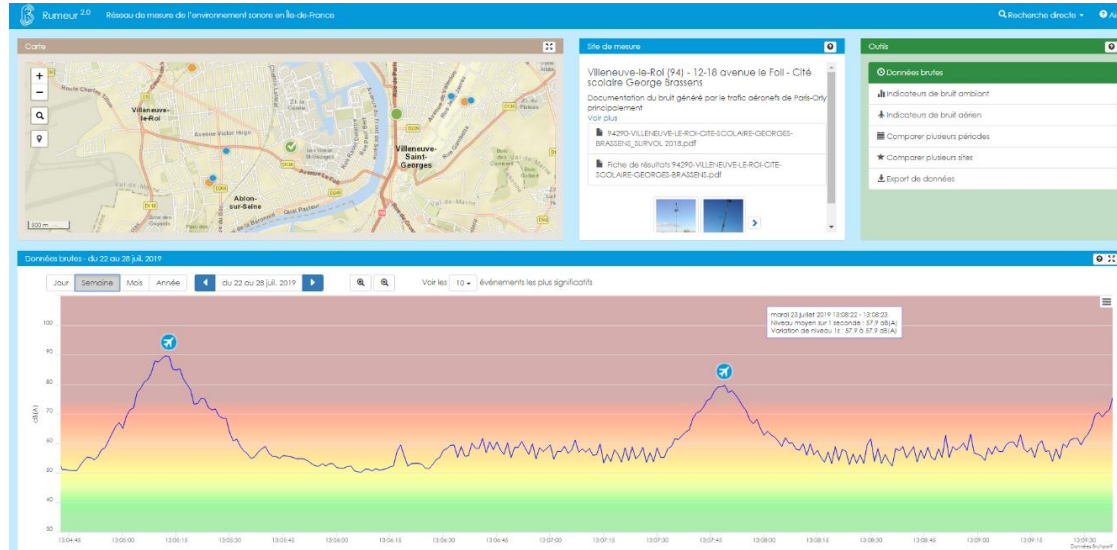




INTELLECTUAL OUTPUT 4



Good practices - BruitParif



Bruitparif is a center for the technical assessment of the acoustic environment in France. It provides support for stakeholders in the Paris region to define, improve and evaluate public policies to prevent and fight noise pollution. With the help of its noise monitoring network, the maps and the studies it produces, Bruitparif provides reliable, independent and transparent information on noise levels in the Île-de-France region and thus meets the needs of residents of Paris Region and environmental protection associations

<https://rumeur.bruitparif.fr>

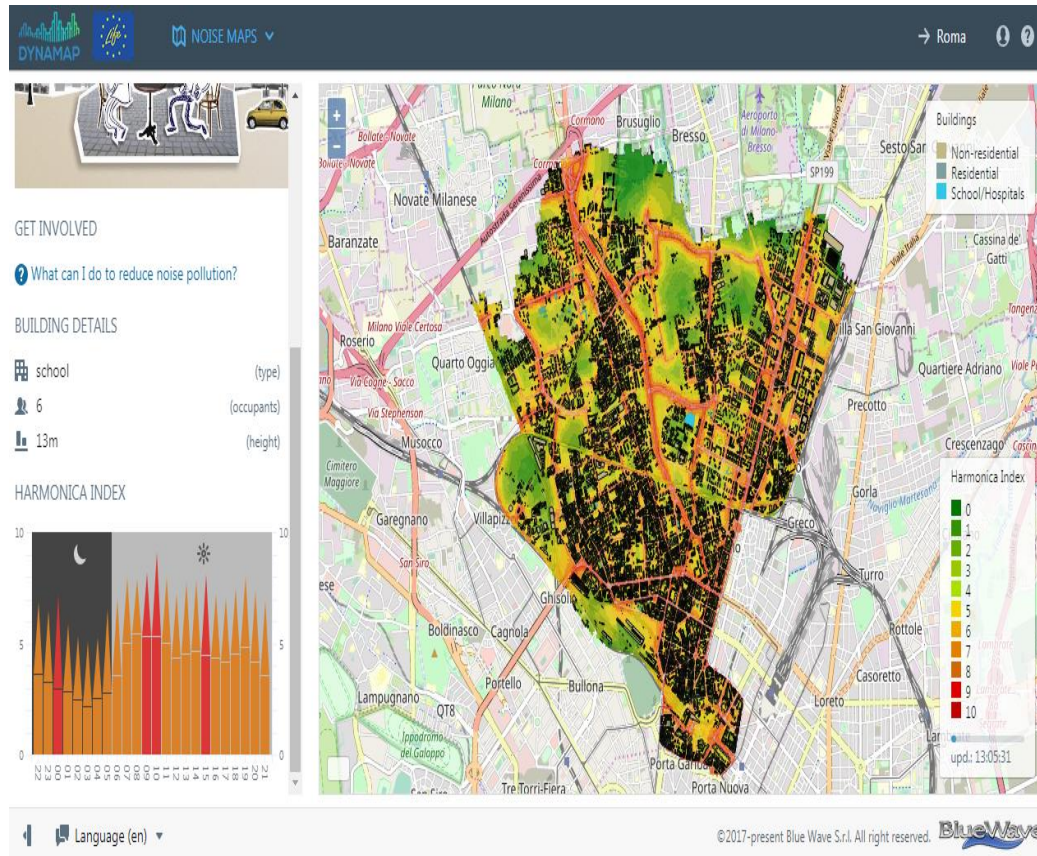
<https://carto.bruitparif.fr>



INTELLECTUAL OUTPUT 4



Good practices - Dynamap



Dynamap is a European project born with the aim of developing a methodology to generate **dynamic noise maps in real time**. The project, funded by the LIFE+ programme, started in 2014. During this period, the partners have developed several actions:

- A prototype of low-cost sensor to measure the noise levels involved in the noisy activities present in urban areas
- A software tool to generate dynamic noise maps that use information from sensors and other data sources
- Implementation of tests to verify that every method designed works properly in a real environment.
- Two pilot experiences, located in Milan and Rome (Italy).

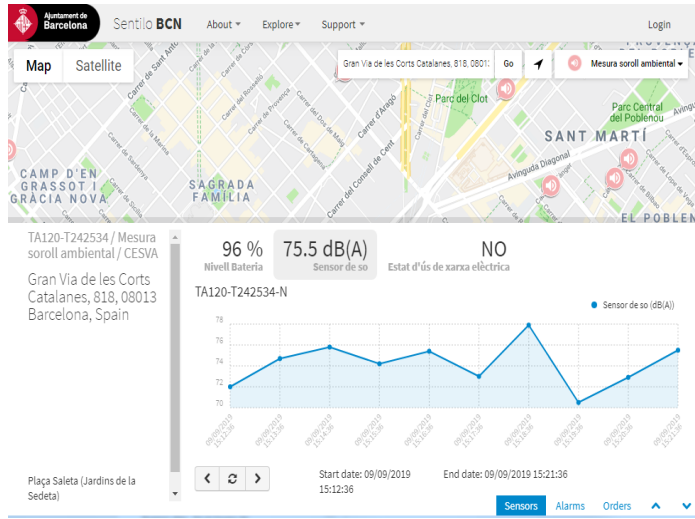
<https://milano.noisemote.com>



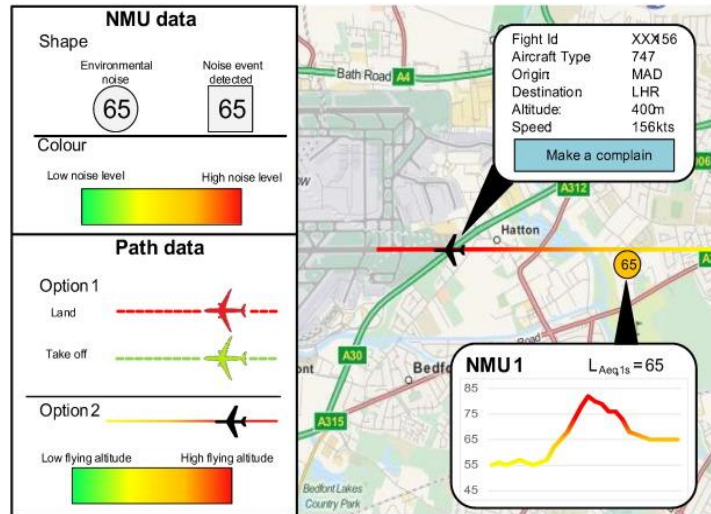
INTELLECTUAL OUTPUT 4

Good practices

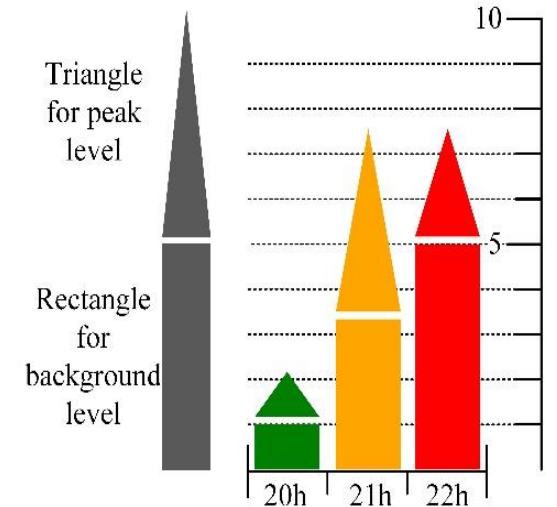
SMART CITIES INITIATIVES



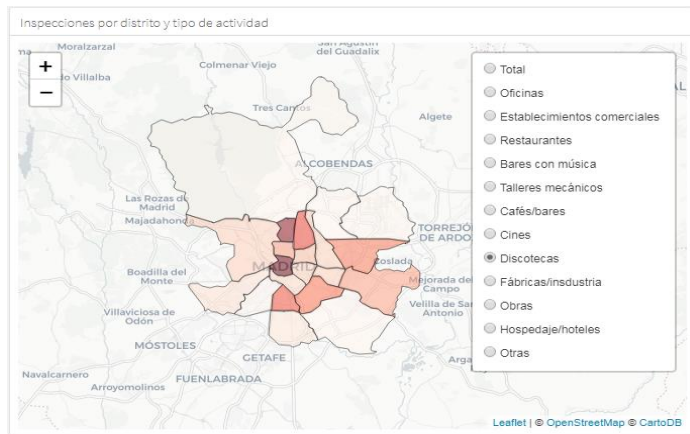
AIRPORT NOISE MONITORING SYSTEMS



HARMONICA INDEX



OPEN DATA INITIATIVES



RECOGNITION AWARDS



Color	Day period 6-22h	Night period 22-6h
Green	0-4	0-3
Yellow	4-8	3-7
Red	>8	>7



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Thank you for your kind attention