

European Legislation on noise pollution: the Directive on environmental noise 200/49 EC

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European Legislation on noise pollution

Community measures concerning noise

The existing set of Community measures concerning noise pollution, developed since 1996 Green Paper, based on shared responsibility between the Member States, at national and local levels, consisting of:

- creation of **Noise Expert Network**, to assist the Commission for the development of noise policy;
- **Directive on environmental noise**, aimed to harmonize the analysis noise methods of the member States;
- follow-up and development of the existing legislation on **noise sources** (road, railway, air)
- make provision of financial support to **noise studies and research projects**

European Legislation on noise pollution

Community measures concerning noise

Environmental noise is dealt with a wide range of instruments, including provisions of harmonization of noise assessment and management, requirement for certain vehicles and equipments, railway interoperability specifications and rules on operating.

Existing directives relating to noise sources are:

■ road traffic noise

- Motor Vehicles - 70/157/EEC
- Motor Cycles – 97/24/EC
- Tyres for motor vehicles and their trailers and their fitting – 2001/43/EC

European Legislation on noise pollution

Community measures concerning noise

Existing directives relating to noise sources are:

■ aircraft noise

- Subsonic Aircraft - 80/51/EEC
- Subsonic Jet Aeroplanes – 89/629/EEC
- Limitation of the Operations of Aeroplanes – 92/14/EEC
- Operating restrictions at Community airports – 2002/30/EC

■ recreational craft

- Recreational craft – 2003/44/EC(follow-up by EC Directorate General Enterprise)

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Community measures concerning noise

Existing directives relating to noise sources are:

■ railway noise

- Interoperability of the Trans-European high-speed rail system – 96/48/EC
- Technical specification for interoperability (TSI) relating to high-speed rolling stock - Commission Decision 2002/735/EC
- Technical specification for interoperability (TSI) relating to high-speed railway infrastructures - Commission Decision 2002/732/EC
- Interoperability of the conventional Trans-European rail system - 2001/16/EC
- Commission Decision 2004/446/EC of 29 April 2004 specifying the basic parameters of the 'Noise', 'Freight Wagons' and 'Telematic applications for freight' Technical Specifications for Interoperability referred to in Directive 2001/16/EC (OJ L 193 p. 1)
- Directive 2004/50/EC of 29 April 2004 amending Council Directive 96/48/EC and Directive 2001/16/EC (OJ L 164, 30.4.2004)
- Commission Decision 2006/66/EC adopted on 23 December 2005 concerning the technical specification for interoperability relating to the subsystem "rolling stock - noise".

source:<http://ec.europa.eu/environment/noise/sources.htm>

The Directive on environmental noise

Analysis of EC situation about noise pollution shows that:

- The objectives of achieving a **high level of protection of the environment and of health** must be reached, complementing the action of the Member States and permitting a common understanding of the noise situation.
- **Data** relating noise levels should be collected and reported.
- This implies the use of **harmonized indicators** and evaluation **model**, and **shared criteria** for the noise mapping.
- It is also necessary to establish common assessment methods for the evaluation of the environmental noise and definition of the **limit values**.

The Directive on environmental noise

Directive 2002/49/EC relating to the assessment and management of environmental noise

principles

The main aim of the directive is to provide a **common basis** to contrast the noise problems in EU. It is necessary to define a common approach devoted to avoid, prevent or reduce the harmful effects due to the exposure to environmental noise

The Directive on environmental noise

Directive 2002/49/EC relating to the assessment and management of environmental noise

principles

The principles of the document are:

- **monitoring** the environmental problem, by requiring to draw up strategic noise mapping;
- **addressing local noise issues**, by requiring to draw up action plans;
- **informing and consulting the public**;
- **developing a long-term noise strategy in EU**

The Directive on environmental noise

objectives

- **monitoring** the environmental problem: determination of exposure through **noise mapping**, for major transport infrastructures and urban agglomerations, using **harmonized noise indicators** L_{den} and L_{night}
- **informing and consulting the public**: ensuring that information on noise, its effects and the measures carried out are made available to the public, therefore the most appropriate information channel must be selected.

The Directive on environmental noise

objectives

- **addressing local noise issues:** drawing up **action plan**, intended to prevent and reduce noise, particularly in areas where exposure levels may induce harmful effects on human health and to protect acoustic quality where necessary.

- **developing a long-term noise strategy in EU:** including objectives to **reduce the number of people exposed to noise** levels, which can induce annoyance, sleep-disturbance, harmful effects, in the longer term

The Directive on environmental noise monitoring

- **noise mapping:** it can be the representation of data on existing or predicted noise situation, using noise indicators and the overcoming of limit values, or the number of people exposed in the area considered, or the number of dwellings exposed to a defined limit values established for the area considered

- **strategic noise map:** a map allowed to represent the **global** assessment of noise exposure, due to the different noise sources present, located in the area considered

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monitoring

strategic noise mapping

strategic noise map is the presentation of data relating to one of the underline aspects:

- an existing, a previous or a predicted noise situation in terms of a noise indicator;
- the exceeding of a limit value;
- the estimated number of dwellings, schools and hospitals in area considered that are exposed to specific values of a noise indicator
- the estimated number of people located in the area considered

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strategic noise mapping

strategic noise map may be presented to the public as graphical plots or by numerical data in tables or in electronic form.

It will be used for the underlying purposes:

- the provision of the data to be sent to the Commission;
- information for the citizens;
- a basis for the development of the action plans

Strategic noise map for national or local application must be made for an assessment height of 4 m and the 5 dB ranges of L_{den} and L_{night}

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strategic noise mapping

With the regard to the **urban agglomeration**, the maps have to put special emphasis on noise emitted by transport infrastructures (road, rail, air, sea) and by industrial activity sites.

For agglomeration separate strategic noise maps must be drawn for road, rail, aircraft traffics and industrial noise. Maps for other sources may be added.

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strategic noise mapping

Good Practice Guide for Strategic Noise Mapping and the production of Associated Data on Noise Exposure (version 2, 13th august 2007) has been produced by the European Commission Working Group – Assessment Exposure to noise, with the purpose to help Member States.

It is a toolkit that provides advices on specific issues that were been erased.

source:<http://ec.europa.eu/environment/noise/pdf/gpg2.pdf>

Toolkit 10: Sound power levels of industrial sources	
Available information	applicable tool
Different sound power levels that apply to the day, evening and night periods	no further action
Different sound power levels that apply to each hour of operation	Use Tool 10.1
Sound power levels that apply to two periods (day and night)	Use Tool 10.2
Sound power levels that apply to a full 24-hour day (or longer period of time)	Use Tool 10.3
Sound power levels known, but applicable hours not known	Use Tool 10.4
Sound power levels unknown	Use Tool 10.5

Tool 10.1: Different sound power levels that apply to each hour of operation			
Method	complexity	accuracy	cost
Calculate logarithmically the average sound power level for the different periods (day, evening and night)			

Tool 10.2: Sound power levels for two periods (day and night)			
Method	complexity	accuracy	cost
Check operating times and use relevant sound power level when facility is in use			
Use the sound power level of daytime for day. Use the sound power level of nighttime for night. If factory operates evenings (or part of the evening), use daytime value			

Tool 10.3: Sound power levels for a full 24-hour day			
Method	complexity	accuracy	cost
Check operating times and use value when facility is in use			
Use the 24-hour sound power level for day, evening and night			

Tool 10.4: Sound power levels known, but applicable hours not known			
Method	complexity	accuracy	cost
Check operating times and use value when facility is in use			
Use the available sound power level for day, evening and night			

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noise indicators

In order to have comparable criteria for the evaluation of the data about environmental noise level, the use of harmonized noise indicators was established by the Commission.

Member States have to apply the **noise indicators L_{den} and L_{night}** , for the preparation and revision of strategic noise mapping.

Until the use of methods for the determination of the noise indicators will be required, the existing national noise indicators may be used, not be more than three years, and they should be converted into the noise indicators mentioned.

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noise indicators

Definition of the day-evening-night equivalent level L_{den} , used to assess the annoyance

$$L_{den} = 10 \lg \frac{1}{24} \left(12 * 10^{\frac{L_{day}}{10}} + 4 * 10^{\frac{L_{evening} + 5}{10}} + 8 * 10^{\frac{L_{night} + 10}{10}} \right)$$

L_{day} is the A-weighted long-term average sound level as defined in ISO 1996-2:1987, determined over all the day period of the year;

$L_{evening}$ is the A-weighted long-term average sound level as defined in ISO 1996-2:1987, determined over all the evening period of the year;

L_{night} is the A-weighted long-term average sound level as defined in ISO 1996-2:1987, determined over all the night period of the year

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monitoring

noise indicators

Definition of the day-evening-night level L_{den}

$$L_{den} = 10 \lg \frac{1}{24} \left(12 * 10^{\frac{L_{day}}{10}} + 4 * 10^{\frac{L_{evening} + 5}{10}} + 8 * 10^{\frac{L_{night} + 10}{10}} \right)$$

Day period: 12 hours; evening period: four hours; night period: eight hours

Default values: 07.00-19.00; 19.00-23.00; 23.00-07.00

Italy: 06.00-20; 20.00-22.00; 22.00-06.00

The Directive on environmental noise

monitoring

noise indicators

Only the **incident sound** is considered. The sound that is reflected at the façade on the dwelling is not taken into account.

The **height** of the measurement point depends on the application. Generally, for the purpose of strategic noise mapping, relating noise exposure near the building, the point must be $4,0 \pm 0,20$ m above the ground at the most exposed façade, that is the external wall facing onto and nearest to the noise source considered. In the other cases other heights may be chosen, but they never be less than 1,5 m

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monitoring

noise indicators

Definition of the night equivalent level L_{night}

Night Time noise indicator will be used to assess sleep-disturbing.

L_{dnight} is the A-weighted long-term average sound level as defined in ISO 1996-2:1987, determined over all the night period of the year, in which:

- the night period is eight hours;
- the year considered is a relevant year relating to the noise emissions;
- the incident sound is considered as mentioned before;
- also the measurement points follow the rules mentioned before

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monitoring

noise indicators

Directive orders the communication to the Commission of the limit values by the Member States, in force on their territories, expressed in terms of L_{den} and L_{night} ,

For the road traffic noise, rail traffic noise, aircraft noise and noise on industrial activity sites should be used L_{day} and $L_{evening}$, explaining the implementation of the limit values.

The Directive on environmental noise monitoring

noise indicators



Pisa, noise mapping, 2007, on left day noise mapping, on right night noise mapping (related to road traffic)

Source: <http://www.comune.pisa.it/ambiente/pdf/Memoli.pdf>

The Directive on environmental noise monitoring addressing local noise issues

Commission requires to the competent authorities to draw up **action plans** to reduce noise where necessary and to protect the acoustic quality where it is a contribution to the quality of the environment and human life.

The Directive does not establish any limit values or measures to be used in action plan. All this particular actions, due to the distinctive characteristics of each Member States, remain at the discretion of the competent authorities.

The Directive on environmental noise monitoring

addressing local noise issues

An **Action Plan** have to **manage**, within the territory considered, **noise issues and effects**, including noise reduction if necessary.

It must include: (*Annex V*)

- a description of the agglomeration, the major roads, railways and airports and other noise sources to taken into account;
- the authority responsible;
- the legal context,
- any limit value in force;
- a summary of the results of the noise mapping;
- an evaluation of the estimated number of people exposed to noise, identification of problems and situations that need to be improved

The Directive on environmental noise monitoring

addressing local noise issues

also, it must include: (*Annex V*)

- a record of the public consultations organized;
- any noise reduction measures already in force and any projects in preparation;
- actions which the competent authorities intend to take in the next five years, including any measures to preserve quiet areas;
- long term strategy;
- financial information;
- provisions envisaged for evaluating the implementation and the results of the plan

The Directive on environmental noise monitoring

addressing local noise issues

In an **Action Plan** the competent authorities may include measures relating: (*Annex V*)

- traffic planning;
- land-use planning;
- technical measures at noise sources;
- selection of quieter sources;
- reduction of sound transmission;
- regulatory or economic measures or incentives

Particularly, the action plan should contain the valuation of the reduction of **number of people** affected (annoyed, sleep disturbed, other)

The Directive on environmental noise monitoring addressing local noise issues

Deadline (July 2008) for the action plans drawn up by agglomerations with more than 250 000 inhabitants, places near the major roads which have more than six million vehicles passage a year, major railways which have more than 60 000 train passages per year and major airports has been established by the Directive.

The Directive on environmental noise monitoring addressing local noise issues

Member States must consult the **public** about proposal for the action plans, giving the effective opportunities to participate during the preparation and reviews of the plan.

The results of the **participation** must to be considered and the public must to be informed about the decisions taken.

The Directive on environmental noise monitoring informing and consulting the public

Member States shall ensure that the measures adopted, (strategic noise maps and action plans drawn up), are **made available** to public, through appropriate dissemination of the results, in accordance with Directive 90/313/EC on the freedom of access to information on the environment.

The information shall be clear, comprehensible and accessible.

The Directive on environmental noise monitoring

collection and publication of the data

Data requested by the Commission are distinct for agglomerations and major roads, railways and airports, but generally they are as follows:

- noise control programmes that have been carried out in the past and noise measures in force;
- the measurement method or computation;
- the estimated number of people living in dwellings that are exposed to determinate ranges of values in dB, measured 4 m above the ground on the most exposed facade, separately for different noise sources (road, rail, air, industrial)

The Directive on environmental noise monitoring

collection and publication of the data

In 2009 the Commission shall submit a report on the implementation of the Directive and, if appropriate, strategies shall be proposed, relating to:

- long-term and medium-term goals for the reduction of the number of people affected by environmental noise, considering the different cultures;
- additional measures for a reduction of the environmental noise emitted by specific sources, as outdoors equipment, transport infrastructures, industrial activities

The Directive on environmental noise monitoring

collection and publication of the data

Italy, by the Decree 194/2005, has acknowledged the Directive 2002/49/EC relating to the assessment and management of environmental noise. The implementation of the decree is still in progress.

Data to be sent to the Commission are collected by the Italian Ministry for the Environment and they will be made available.

Noise strategic mapping and action plans are not put into practice and the limit values expressed in harmonized noise indicators are not carried out.

The Directive on environmental noise

Web sites:

<http://ec.europa.eu/environment/noise/>

http://www.paris.fr/portail/Environnement/Portal.lut?page_id=1285&document_type_id=5&document_id=30546&portlet_id=3068

<http://www.noisemapping.org/>

<http://www.defra.gov.uk/environment/noise/mapping/birmingham/pdf/append12.pdf>

<http://www.london.gov.uk/mayor/strategies/noise/index.jsp>

<http://circa.europa.eu/Public/irc/env/noisedir/library>

<http://www.apat.gov.it/site/it-IT/>

<http://www.minambiente.it/>

<http://www.agentifisici.sinanet.apat.it/>