

Proposal for a Directive of the European Parliament and of the Council relating to the Assessment and Management of Environmental Noise

(2000/C 337 E/41)

(Text with EEA relevance)

COM(2000) 468 final — 2000/0194(COD)

(Submitted by the Commission on 26 July 2000)

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty establishing the European Community, and in particular Article 175(1) thereof,

Having regard to the proposal from the Commission,

Having regard to the opinion of the Economic and Social Committee,

Having regard to the opinion of the Committee of the Regions,

Acting in accordance with the procedure laid down in Article 251 of the Treaty,

Whereas:

- (1) It is part of Community policy to achieve a high level of health and environmental protection, and one of the objectives to be pursued is protection against noise. In the Green Paper on future noise policy ⁽¹⁾, the Commission addressed noise in the environment as one of the main local environmental problems in Europe.
- (2) In its resolution of 10 June 1997 ⁽²⁾ on the Commission Green Paper, the European Parliament expressed its support, urged that specific measures and initiatives should be laid down in a framework Directive on the reduction of environmental noise, and noted the lack of reliable, comparable data regarding the situation of the various noise sources.
- (3) The specific proposal for a common noise indicator and a common methodology for noise calculation and measurement around airports provided for in the communication of 1 December 1999 ⁽³⁾ on Air Transport and the Environment should be fully taken into account in the provisions of this Directive.
- (4) Noise emission from products is already covered by Council Directive 86/188/EEC of 12 May 1986 on the protection of workers from risk related to exposure to noise at work ⁽⁴⁾, as amended by Directive 98/24/EC ⁽⁵⁾,
- and noise insulation between dwellings by Council Directive 89/106/EEC of 21 December 1988 on the approximation of regulations and administrative provisions of the Member States relating to construction products ⁽⁶⁾, as amended by Directive 93/68/EEC ⁽⁷⁾; noise created inside means of transport and noise from domestic activities are not subject to this Directive.
- (5) In accordance with the principles of subsidiarity and proportionality as set out in Article 5 of the Treaty, the objectives of achieving a high level of environmental protection cannot be sufficiently achieved by the Member States because environmental noise levels are not collected, collated or reported according to comparable criteria and can therefore, by way of harmonising indicators and evaluation methods and by aligning noise-mapping criteria, be better achieved by the Community. This Directive confines itself to the minimum required in order to achieve those objectives and does not go beyond what is necessary for that purpose.
- (6) At present, Member States do not have any common definitions of national limit values for road-traffic noise, rail-traffic noise, aircraft noise around airports, and industrial noise. Those limits should be defined in terms of harmonised indicators for the determination of noise levels.
- (7) The indicator should be determined by consistent methods.
- (8) Noise mapping can capture the data needed to provide a representation of the noise levels perceived within the area of interest. Action plans are required, taking into account the principles of prevention, polluter pays, proximity and proportionality; in the light of the Community's commitment to the information society, the most appropriate information channel should be selected.
- (9) Data collection and the consolidation of suitable Community-wide reports are required as a basis for future Community policy and for further information of the citizens.

⁽¹⁾ COM(96) 540 final, 4.11.1996.

⁽²⁾ OJ C 200, 30.6.1997, p. 28.

⁽³⁾ COM(1999) 640.

⁽⁴⁾ OJ L 137, 24.5.1986, p. 28.

⁽⁵⁾ OJ L 131, 5.5.1998, p. 11.

⁽⁶⁾ OJ L 40, 11.2.1989, p. 12.

⁽⁷⁾ OJ L 220, 30.8.1993, p. 1.

(10) Medium and long-term goals for the reduction of the number of citizens affected by the noise from specific sources should be established now; some further research may provide even more compelling results; a time limit should be set; such results need to fit into an affordable cost envelope consistent with other environmental and life-quality aspirations.

(11) The technical provisions governing the assessment methods should be supplemented and adapted as necessary to technical and scientific progress and to progress in European standardisation.

(12) Since the measures necessary for the implementation of this Directive are measures of general scope within the meaning of Article 2 of Council Decision 1999/468/EC of 28 June 1999 laying down the procedures for the exercise of implementing powers conferred on the Commission ⁽¹⁾, they should be adopted by use of the regulatory procedure provided for in Article 5 of that Decision.

(13) An evaluation of the implementation of this Directive should be carried out regularly by the Commission,

HAVE ADOPTED THIS DIRECTIVE:

Article 1

Objectives

1. The aim of this Directive is to define a common approach to avoid, prevent or reduce harmful effects on human health due to exposure to environmental noise, by:

- (a) assessment of environmental noise in Member States, based on common methods;
- (b) ensuring that information on environmental noise and its effects is made available to the public.

2. Action shall be taken to reduce noise where necessary, and to maintain environmental noise quality where it is good.

Article 2

Scope

1. This Directive applies to environmental noise perceived by humans in and near their home, in public parks or other relatively quiet areas in an agglomeration, in relatively quiet areas in the open country, in and near schools in the case of pupils, in and near a hospital in the case of patients and in other noise-sensitive buildings and areas.

2. This Directive shall not apply to noise that is caused by the exposed person himself, noise from domestic activities, noise created by neighbours, noise at work places and noise inside means of transport.

Article 3

Definitions

For the purpose of this Directive:

- (a) 'environmental noise' means unwanted or harmful sound created by human activity outdoors, including noise emitted by means of transport and from industrial sites or industrial buildings;
- (b) 'human health' means 'a state of complete physical, mental and social well-being' as defined by the constitution of the World Health Organisation (WHO);
- (c) 'harmful effects' means negative effects on human health; examples are noise-induced annoyance, sleep disturbance, interference with communication, negative effects on learning, hearing loss, stress and hypertension;
- (d) 'annoyance' means the degree of community noise annoyance as determined by means of field surveys;
- (e) 'noise indicator' means a physical scale for the description of environmental noise, which has a demonstrable relationship with a harmful effect;
- (f) 'assessment' means any method used to measure, calculate, predict or estimate the value of a noise indicator or the related harmful effect(s);
- (g) 'day-evening-night level L_{den} (or LDEN)' means the noise indicator for annoyance, as further defined in Annex I;
- (h) 'night-time noise indicator, L_{night} (or LNIGHT)' means the noise indicator for self-reported sleep disturbance, as further defined in Annex I;
- (i) 'dose-effect relation' means the relationship between the value of a noise indicator and a harmful effect;
- (j) 'agglomeration' means part of a territory, delimited by the Member State, having a population in excess of 100 000 persons and a population density such that the Member State considers it to be an urbanised area;
- (k) 'relatively quiet area in an agglomeration', means an area, delimited by the competent local authority, which is not exposed to a value of L_{den} greater than a certain value, to be declared by the Member State, from any noise source;

⁽¹⁾ OJ L 184, 17.7.1999, p. 23.

- (l) 'relatively quiet area in the open country', means an area, delimited by the national or regional competent authority, that is undisturbed by noise from traffic, industry or recreational activities, and where natural quiet can be experienced;
- (m) 'noise zone' means the Member State's established legal definition for a zone along, or around, noise sources where legal rules apply to control the noise; 'noise zoning' means all the actions related to the implementation of a noise zone and the application of the related rules;
- (n) 'major road' means a regional, national or international road, designated by the Member State, which has more than three million vehicle passages per year;
- (o) 'major railway' means a railway, designated by the Member State, which has more than 30 000 train passages per year;
- (p) 'major airport' means a civil airport, denominated by the Member State, with more than 50 000 take-offs and landings per year;
- (q) 'noise map' means the presentation of data on an existing or predicted noise situation in terms of a noise indicator, breaches of a limit value, the number of people affected in a certain area, the number of dwellings exposed to certain values of a noise indicator in a certain area, or on cost-benefit ratios or other economic data on mitigation methods or scenarios;
- (r) 'strategic noise map' means a noise map designed for the global assessment of the situation in a given area or for overall predictions for such an area;
- (s) 'limit value' means a value of L_{den} or L_{night} , as declared by the Member State, the exceeding of which causes competent authorities to consider or enforce mitigation measures; limit values may be different for different type of noise (road, rail, air traffic noise, industrial noise, etc.), different surroundings, different groups of the population and they may also be different for existing situations and for new situations (where there is a change in the situation regarding the noise source or the use of the surrounding);
- (t) 'action plan for an agglomeration' means the plan designed to reduce the noise in the agglomeration at places where the limit value for L_{den} or L_{night} is exceeded and to protect relatively quiet areas in the agglomeration against an increase in noise;
- (u) 'action plan for a major road, railway or airport' means an activity designed to reduce the noise at places near the major road, railway or airport where the limit value for L_{den} or L_{night} is exceeded;
- (v) 'acoustical planning' means controlling future noise by planned measures; it includes land use planning, systems engineering for traffic, traffic planning, abatement by sound insulation measures and noise control of sources;
- (w) 'special insulation against noise' means special insulation of a building against one or more types of environmental noise, combined with such ventilation or air conditioning facilities that high values of insulation against environmental noise can be maintained;
- (x) 'a relatively quiet façade' means a façade of a dwelling at which the value of L_{den} at 4 m above the ground and 2 m in front of the façade, for the noise emitted from a specific source, is more than 20 dB lower than at the façade having the highest value of L_{den} .

Article 4

Implementation and responsibilities

1. The Member States shall designate at the appropriate levels the competent authorities and bodies responsible for implementation of this Directive, including the authorities responsible for:

- (a) the making and approval of noise maps and action plans for agglomerations, major roads, major railways and major airports;
- (b) the collection of noise maps and action plans.

2. The Member States shall ensure the accuracy of assessment methods, in coordination with Community-wide quality assurance programmes.

3. The Member State shall make the information referred to in paragraph 1 available to the Commission and to the public not later than 30 June 2003.

Article 5

Noise indicators and their application

1. The noise indicators to be used for strategic noise mapping, acoustical planning and noise zoning shall be L_{den} and L_{night} . Member States shall apply these indicators:

- (a) for noise maps according to Article 7;
- (b) in new legislation on strategic noise mapping, acoustical planning or noise zoning;
- (c) in any revision of existing legislation on strategic noise mapping, acoustical planning or noise zoning.

2. Member States may use additional noise indicators for special cases as listed in Annex I(3).

3. Not later than 30 June 2003, Member States shall inform the Commission of the limit values currently in force or under preparation, in terms of L_{den} and L_{night} for road traffic noise, rail traffic noise, aircraft noise around airports and industrial noise. This shall be accompanied by a declaration on the consequences of a breach of the limit values.

Article 6

Assessment methods

1. The values of L_{den} and L_{night} shall be assessed with the computation or measurement methods as defined in Annex II.

2. Health effects shall be assessed with the dose-effect relations as defined in Annex II.

Article 7

Noise maps

1. Member States shall ensure that no later than 31 December 2004 noise maps showing the situation in the preceding calendar year have been made and approved by the competent authorities, for all agglomerations with more than 250 000 inhabitants and for all major roads, major railways and major airports within their territory.

Not later than 30 June 2003, Member States shall inform the Commission about the major roads, major railways, major airports and the agglomerations with more than 250 000 inhabitants within their territory that are covered by the definitions under Article 3.

2. Member States shall ensure that no later than 31 December 2009 noise maps showing the situation in the preceding calendar year have been made and approved by the competent authorities for all agglomerations with more than 100 000 inhabitants within their territory.

Not later than 31 December 2008 Member States shall inform the Commission about all the agglomerations within their territory that are covered by the definitions under Article 3.

3. The noise maps shall satisfy the minimum requirements of Annex IV.

4. Neighbouring Member States shall cooperate on the noise-mapping near borders.

5. The noise maps shall be remade every five years after the date of their preparation.

Article 8

Action plans

1. Member States shall ensure that not later than 31 December 2005 action plans for the major roads, major railways, major airports and agglomerations with more than 250 000 inhabitants within their territory are completed and approved by the competent authorities.

2. Member States shall ensure that not later than 31 December 2010 action plans for the agglomerations with more than 100 000 inhabitants within their territory are completed and approved by the competent authorities.

3. The action plans shall satisfy the minimum requirements of Annex V.

4. The action plans shall be remade every five years after the date of their preparation.

Article 9

Information for the citizen

1. Member States shall ensure that the noise maps are published on the Internet or any other on-line facility, or are published in some other suitable way, within two months after their approval by the competent authority.

2. Member States shall ensure that, before the action plans are approved, the responsible authority organises a public consultation and takes the results into account.

3. The action plans shall be published on the Internet or any other on-line facility within two months after their approval by the competent authority.

Article 10

Collection and publication of data by Member States and the Commission

1. Member States shall collect the noise maps and action plans.

2. Member States shall ensure that the information from noise maps and summaries of the action plans as referred to in Annex VI to this Directive are sent to the Commission not later than three months after the dates as referred to in Articles 7 and 8 respectively.

3. The Commission shall set up a data bank of information on noise maps.

4. Every five years, the Commission shall publish a summary report of data from noise maps and action plans. The first report shall be presented within one year after the respective dates as referred to in paragraph 2.

Article 11

Review and reporting

1. Not later than 31 December 2007, the Commission shall submit to the European Parliament and the Council a report based on experience of the application of this Directive.

2. The report shall include a review of the need for Community quality objectives related to environmental noise and, if appropriate, propose such objectives and propose implementing strategies to ensure achievement of the objectives. The strategy shall consider:

- (a) long-term and medium-term goals for the reduction of the number of persons that is affected by the noise from specific sources; these specific sources shall include road traffic, rail traffic, civil air traffic and industry;
- (b) any measures that are necessary to reach the goals; these measures could include the Community policy on noise sources and all other relevant measures;
- (c) relatively quiet areas in the open country.

3. The report shall be based on the data as referred to in Article 10, on scientific and technical progress and on other relevant information. The reduction of harmful effects on human health and cost-effectiveness criteria shall be the main criteria for the selection of proposed strategies and measures.

4. The report shall be reviewed every five years or as appropriate.

5. The report shall be accompanied as appropriate by proposals to amend this Directive.

Article 12

Adaptation

The Commission shall, in accordance with the procedure referred to in Article 13(2), adapt the Annexes to technical and scientific progress.

Article 13

Committee

1. The Commission shall be assisted by the Committee instituted by Article 18 of Directive 2000/14/EC of the European Parliament and of the Council ⁽¹⁾.

2. Where reference is made to this paragraph, the regulatory procedure laid down in Article 5 of Decision 1999/468/EC shall apply, in compliance with Article 7 and Article 8 thereof.

3. The period provided for in Article 5(6) of Decision 1999/468/EC shall be set at three months.

4. The Committee shall:

- (a) exchange information and experiences concerning the implementation and practical application of this Directive;
- (b) assist the Commission with the development of guidelines that support the application of the Directive.

Article 14

Evaluation

Every five years, starting not later than 1 January 2009, the Commission shall present an evaluation report on the implementation of this Directive to the European Parliament and the Council.

Article 15

Transposition

1. Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive not later than 30 June 2003. They shall inform the Commission thereof.

When Member States adopt those provisions, they shall contain a reference to this Directive or shall be accompanied by such a reference on the occasion of their official publication. Member States shall determine how such reference is to be made.

2. Member States shall communicate to the Commission the text of the provisions of national law that they adopt in the field covered by this Directive.

Article 16

Entry into force

This Directive shall enter into force on the twentieth day following that of its publication in the *Official Journal of the European Communities*.

Article 17

Addressees

This Directive is addressed to the Member States.

⁽¹⁾ OJ L 162, 3.7.2000, p. 1.

ANNEX I

NOISE INDICATORS

1. Day-evening-night level

1.1 Definition

The day-evening-night level L_{den} (or LDEN) in decibels (dB), is defined by the following formula:

$$L_{den} = 101g \frac{1}{24} \left(12 \times 10^{\frac{L_{day}}{10}} + 4 \times 10^{\frac{L_{evening}+5}{10}} + 8 \times 10^{\frac{L_{night}+10}{10}} \right)$$

in which

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

in which

- the day is 12 hours, the evening 4 hours and the night 8 hours; Member States may consider a general resting period in the afternoon as a part of the 'evening' and shorten the real evening period accordingly (such a choice shall be identical for noise from all types of sources);
- the start of the day (and consequently the start of the evening and the night) shall be chosen by the Member State (this choice shall be identical for noise from all types of sources); the default values are 7.00—19.00 hours, 19.00—23.00 hours and 23.00—7.00 hours local time;
- a year is the relevant year regarding the emission of sound and an average year regarding the meteorological circumstances, an average meteorological year being defined as a year having the average meteorological conditions over 10 or more recent years;

and in which

- the incident sound is considered, which means that the sound that is reflected at the façade of a dwelling or another building under consideration is neglected.

The height of the assessment point of L_{den} is dependent on the application:

- for the purpose of strategic noise mapping in relation to noise exposure in and near buildings, the assessment points are at a height $4,0 \pm 0,2$ m (3,8 m — 4,2 m) above the ground, at $2,0 \pm 0,2$ m in front of the most exposed façade; for the purpose of noise mapping as defined in Article 7 of this Directive, the most exposed façade will be the external wall facing onto and nearest to the specific noise source; for other purposes other choices may be made;
- for the purpose of strategic noise mapping of public parks and relatively quiet areas in the open country the assessment points are at $4,0 \pm 0,2$ m above the ground;
- it is recommended to base zone contours on the value of L_{den} at 4 m height, if appropriate;
- for other purposes other heights may be chosen, but they shall never be below 1,5 m above the ground; examples are the following:
 - the design of local measures meant to reduce the noise impact of specific dwellings;
 - detailed noise map of a limited area, showing the noise exposure of individual dwellings.

1.2 Application of LDEN for the assessment and reduction of adverse noise effects

For long-term noise exposure, LDEN has a proven relation with the degree of community noise annoyance and particularly with the percentage of highly annoyed respondents (% HA).

LDEN, in combination with special dose-effect relations, is also applicable in the following cases:

- annoyance due to noise with strong tonal components;
- annoyance due to noise with an impulsive character;
- adverse effects on learning by children.

Reduction of the value of LDEN will also reduce the number of people that suffer from specific health effects, such as sleep disturbance, stress, hypertension or interference with communication. For an optimum assessment and reduction of such specific effects the use of an additional noise indicator may be necessary, however.

2. Night-time noise indicator

2.1 Definition

The night-time noise indicator L_{night} (or LNIGHT) is the A-weighted long-term average sound level as defined in ISO 1996-2: 1987, determined over all the day periods of a year;

in which

- the night is 8 hours as defined in paragraph 1.1 of this Annex;
- a year is a relevant year regarding the emission of sound and an average year regarding the meteorological circumstances, as defined in paragraph 1.1 of this Annex;
- the incident sound is considered, as described in paragraph 1.1 of this Annex;
- the assessment point is the same as for LDEN.

Note that the definition of L_{night} does not include an addition of 10 dB.

2.2 Application of LNIGHT

For long-term noise exposure LNIGHT has a proven relation with self-reported sleep disturbance, for example expressed in terms of the percentage of people that report to be highly sleep disturbed (% HS).

LNIGHT may be also a suitable indicator for specific medical or social effects related to noise exposure during the night (quality of the sleep, awakenings, problems to fall asleep, etc.). Thus, reduction of the value of LNIGHT will certainly reduce all adverse health effects of night-time noise exposure. For some specific effects and some specific noises, the application of additional indicators may improve the effectiveness of measures, however.

3. Additional noise indicators for special cases

Additional to LDEN and LNIGHT it may be advantageous to use special noise indicators and related limit values. Examples are the following:

- the noise source under consideration only operates a small part of the time (for example less than 20 % of the time of the total of the day periods over a year, the total of the evening periods over a year, or the total of the night periods over a year);
- there is, in one or more of the periods, as an average, a very low number of events (for example less than one noise event per hour, a noise event being defined as a noise that lasts less than five minutes; examples are the noise from a passing train or a passing aircraft);
- the low-frequency content of the noise is strong;
- extra protection of the weekend or a specific part of the year;
- extra protection of the evening period;
- combination of noise from different sources;
- relatively quiet areas in the open country.

The following special cases may either be treated with LDEN combined with special dose-effect relations, or with a special noise indicator consisting of LDEN which is adjusted for the difference in the dose-effect relations as compared with normal cases:

- the noise contains strong tonal components;
- the noise has an impulsive character.

When the latter choice is made, the adjusted indicator shall have a symbol other than 'LDEN' or 'L_{den}'.

ANNEX II

ASSESSMENT METHODS

1. Introduction

The values of L_{den} and L_{night} can be determined either by measurement (at the assessment position) or by computation. For predictions only computation is applicable.

Interim computation and measurement methods are presented in paragraphs 2 and 3 of this Annex.

Paragraph 4 of this Annex describes the interim situation for dose-effect relations.

2. Temporary measurement methods for L_{den} and L_{night}

If the Member State has an existing legally founded measurement method, that method shall be adapted according to the definition of the indicators as presented in Annex I and according to the principles for long-term average measurements as presented in ISO 1996-2: 1987 and ISO 1996-1: 1982.

If the Member State has no existing measurement method, or prefers to shift to another method, a method can be defined on the basis of the definition of the indicator and the principles presented in ISO 1996-2: 1987 and ISO 1996-1: 1982.

3. Interim computation methods for L_{den} and L_{night}

3.1. Adaptation of existing national methods

If the Member State has existing national methods for the determination of long-term indicators these methods may be applied, provided that they are adapted to the definition of the indicators as presented in Annex I. For most national methods this implies the introduction of the evening as a separate period to be considered and the introduction of the average over a year. Some existing methods should also be adapted concerning the exclusion of the façade reflection, the incorporation of the night and/or the assessment position. This adaptation should not affect the continuation of existing legally founded noise abatement programmes nor the financial compensation and mitigation schemes that are integral parts of such programmes.

The averaging over a year requires special attention. Contributions to the fluctuations over a year are introduced by fluctuations of the emission and by fluctuations of the transmission.

3.2. Temporary computation methods

For Member States that have no existing national methods or Member States that wish to shift to another method, the following methods are recommended.

For INDUSTRIAL NOISE: ISO 9613-2: 'Acoustics — Attenuation of sound propagation outdoors, Part 2: General method of calculation'.

Suitable noise emission data (input data) for this method can be obtained from measurements according to one of the following methods:

- ISO 8297: 1994 'Acoustics — Determination of sound power levels of multisource industrial plants for evaluation of sound pressure levels in the environment — Engineering method';
- EN ISO 3744: 1995 'Acoustics — Determination of sound power levels of noise using sound pressure — Engineering method in an essentially free field over a reflecting plane';
- EN ISO 3746: 1995 'Acoustics — Determination of sound power levels of noise sources using an enveloping measurement surface over a reflecting plane'.

For AIRCRAFT NOISE AROUND AIRPORTS: ECAC.CEAC Doc. 29 'Report on Standard Method of Computing Noise Contours around Civil Airports', 1997. From the different approaches for the modelling of flight tracks, the segmentation technique as mentioned in section 7.5 of ECAC.CEAC Doc. 29 shall be used.

For ROAD TRAFFIC NOISE: The French national computation method 'NMPB', as published in 'Arrêté du 5 mai 1995 relatif au bruit des infrastructures routières, Journal officiel du 10 mai 1995, Article 6' and in the French standard 'XPS 31-133'. For input data concerning the emission, these documents refer to the 'Guide du bruit des transports terrestres, fascicule prévision des niveaux sonores, CETUR 1980'.

For RAILWAY NOISE: The national computation method 'Standaard-Rekenmethode II' of the Netherlands, as published in 'Reken- en Meetvoorschrift Railverkeerslawaaï '96, Ministerie Volkshuisvesting, Ruimtelijke Ordening en Milieubeheer, 20 November 1996'.

All the above methods shall be adapted to the definition of LDEN and LNIGHT. Not later than 1 July 2003 the Commission will publish guidelines on the revised methods and provide emission data for aircraft noise, road traffic noise and railway noise on the basis of existing data.

If Member States want to use a method other than described in paragraph 3.1 or 3.2 of this Annex, they shall demonstrate that the method proposed gives equivalent results to those set out above.

4. Dose-effect relations for the interim period

In order to assess the effect of noise on populations dose-effect relations are required. These will be introduced in future revisions of this Annex. For the interim period relations from position papers of Commission Working Group 2 'Dose/Effect' on the present knowledge on dose-effect relations, relations from literature, or relations as defined by the Member State could be used.

ANNEX III

MINIMUM REQUIREMENTS FOR MAPPING SOFTWARE

Noise mapping software used to implement Article 7 of this Directive shall satisfy the following minimum requirements:

- Be based on the computation methods as defined in Article 6 and Annex II;
 - Contain a site modelling facility;
 - Contain source emission models; geometrical information on the noise sources would be obtained from the site modelling facility;
 - Contain noise propagation calculation facilities;
 - Contain facilities for the presentation of mapping information relating to outdoor noise levels;
 - Data export interface to EC databases: export of data according to Annex VI in a unified data format, to be defined in a Commission guideline.
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ANNEX IV

MINIMUM REQUIREMENTS FOR NOISE MAPS

1. A noise map is the presentation of data on one of the following aspects:
 - An existing, a previous or a predicted noise situation in terms of a noise indicator;
 - the exceeding of a limit value ('conflict map');
 - the number of dwellings in a certain area that are exposed to specific values of a noise indicator;
 - the number of people that are affected (annoyed, sleep disturbed or otherwise) in a certain area;
 - cost-benefit ratios or other economic data on mitigation measures or scenarios.

 2. Noise maps may be presented as:
 - graphical plots;
 - numerical data in tables;
 - numerical data in electronic form.

 3. The noise maps shall serve the following goals:
 - Provide a basis for the data to be sent to the Commission according to Article 10(2) and Annex VI of this Directive;
 - Provide a source of information for the citizen according to Article 9 of this Directive;
 - Provide a basis for action plans according to Article 8 of this Directive.

Each of these goals requires different types of noise maps.

 4. Minimum requirements for the noise maps related to the data to be sent to the Commission are given in the paragraphs 1.5, 1.6, 1.7, 2.5, 2.6 and 2.7 of Annex VI of this Directive.

 5. For the information of the citizen according to Article 9 of this Directive and for the development of action plans according to Article 8 of this Directive, additional and more detailed information is required such as:
 - Graphical presentation;
 - Conflict maps, in which the exceeding of a limit value is presented;
 - Difference maps, in which the existing situation is compared with options for future situations;
 - Maps in which the value of a noise indicator in front of individual dwellings (at different heights) is presented.

Member States may provide rules on the type and format of these noise maps.

 6. Strategic noise maps for local or national application shall be made for an assessment height of 4 m and the 5 dB ranges of LDEN and LNIGHT as defined in Annex VI of this Directive.

 7. For agglomerations separate strategic noise maps shall be made for road traffic noise, rail traffic noise, aircraft noise and industrial noise. Maps for other sources may be added.

 8. The Commission may develop guidelines providing further guidance on noise maps and noise mapping.
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ANNEX V

MINIMUM REQUIREMENTS FOR ACTION PLANS

1. The action plans shall at least contain the following elements:

- A description of the agglomeration (size, location, number of inhabitants, land use, main noise sources, type of buildings and their use), the major road, the major railway or the major airport (location, size, data on the traffic, surroundings);
- Responsible authority;
- The legal context;
- Limit values according to Article 5;
- A summary of the results of the noise mapping;
- An analysis of the health situation, based on the noise maps and the dose-effect relations;
- Identification of problems;
- Any noise measures already in place and actions that are underway;
- Situations to be improved;
- Actions which the competent authorities intend to take for the next five years, including actions to maintain relatively quiet areas;
- Budgets for the actions;
- Long-term strategy;
- A record of the public consultations according to Article 9(2);
- Any cost/effectiveness or cost/benefit assessment.

The actions, which the authorities intend to take within their competence, may include:

- Traffic planning, including the redirection of traffic, the introduction and enforcing of speed limits, the promotion of public transport and modal shift (such as a change from road to rail transport), etc.;
- Land use planning;
- Technical measures at sources, including road surfaces and railway tracks.
- Selection of quieter sources;
- Reduction of sound transmission (noise barriers, tunnels, insulation of dwellings, etc.);
- Licences;
- Public campaigns;
- Noise monitoring (measurement of noise at one or more positions in order to check whether or not received or emitted noise satisfies a pre-set requirement);
- Financial measures such as charges and penalties.

The actions shall have a suitable budget that is approved by the competent authorities.

Intended actions for which a budget has not been approved yet shall be mentioned separately, with an indication of the timeframe in which financing is expected.

The action plans shall indicate the expected effects in terms of the reduction of the number of affected people (annoyed, sleep disturbed, or other).

2. The Commission may develop guidelines providing further guidance on the action plans.

ANNEX VI

DATA TO BE SENT TO THE COMMISSION

The data to be sent to the Commission is the following:

1. **For agglomerations**

- 1.1. A concise description of the agglomeration: location, size, number of inhabitants.
- 1.2. The responsible authority.
- 1.3. Noise-control programmes that have been carried out in the past and noise measures in place.
- 1.4. The computation or measurement methods that have been applied.
- 1.5. When the interim computation methods according to Annex II are applied: the total number of people that are living in dwellings that are exposed to each of the following ranges of values of LDEN in dB at 4 m height at the most exposed façade: < 55, 55-59, 60-64, 65-69, 70-74, 75-79, > 79, separately for noise from road, rail and air traffic, and from industrial sources. The figures shall be given to the nearest hundred people (example: 5 200 = between 5 150 and 5 249; 100 = between 50 and 149; 0 = less than 50).

Additionally, it shall be stated how many persons in the above categories are living in dwellings that have:

- Special insulation against the particular noise;
- A relatively quiet façade.

Additionally, it shall be stated how many schools and hospitals are exposed to each of the above ranges of LDEN and how many pupils and patients are related to these figures.

Additionally, the total area of parks (in km²) within each of the above ranges of LDEN.

It shall also be indicated how major roads, major railways and major airports, as defined in Article 3 of this Directive, contribute to the above.

When the common methods according to Article 6(2) and Annex II are applied, the above range is extended with < 50, 50-54, replacing < 55 dB.

- 1.6. When the interim methods according to Annex II are applied: the total number of people (in hundreds) living in dwellings that are exposed to each of the following ranges of values of LNIGHT in dB at 4 m height at the most exposed façade: < 45, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, > 74, separately for road, rail and air traffic and for industrial sources.

Additionally, it shall be stated how many persons in the above categories are living in dwellings that have:

- Special insulation against the particular noise;
- A relatively quiet façade.

It shall also be indicated how major roads, major railways and major airports contribute to the above.

When the common methods according to Article 6(2) and Annex II are applied the above range shall be extended with < 40, 40-44, replacing < 45 dB.

- 1.7. The size (in km²) and relative size (in % of the total area of the agglomeration) of public parks and other public relaxation areas with values of LDEN below 55 dB, as caused by any noise source.
- 1.8. A summary of the action plan, covering the relevant aspects as referred to in Annex V, not exceeding 10 pages.

2. For major roads, major railways and major airports

- 2.1. A general description of the road, railway or airport: location, size, and data on the traffic.
- 2.2. A characterisation of its surroundings: agglomerations, villages, countryside or otherwise, information on land use, type of buildings and their use, other noise sources.
- 2.3. Noise-control programmes that have been carried out in the past and noise measures in place.
- 2.4. The computation or measurement method that has been applied.
- 2.5. When the interim methods according to Annex II are applied: the total number of people (in hundreds) outside agglomerations that are living in dwellings exposed to each of the following ranges of values of LDEN in dB at 4 m above the ground and at $2,0 \pm 0,2$ m in front of the most exposed façade: 55-59, 60-64, 65-69, 70-74, 75-79, > 79.

Additionally, it shall be stated how many persons in the above categories are living in dwellings that have:

- Special insulation against the particular noise;
- A relatively quiet façade.

Additionally, it shall be stated how many schools and hospitals are exposed to each of the above ranges of LDEN and how many pupils and patients are related to these figures.

When the common methods according to Article 6(2) and Annex II are applied, the above range is extended with 50-54 dB.

- 2.6. When the interim methods according to Annex II are applied: the total number of people (in hundreds) outside agglomerations that are living in dwellings exposed to each of the following ranges of values of LNIGHT in dB at the most exposed façade: 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, > 74.

Additionally, it shall be stated how many of the above persons are living in dwellings that have:

- Special insulation against the particular noise;
- A relatively quiet façade.

When the common methods according to Article 6(2) and Annex II are applied the above range shall be extended with 40-44 dB.

- 2.7. The total area (in km²) exposed to values of LDEN higher than 55, 65 and 75 dB, respectively. Additionally, the total number of dwellings (in hundreds) and the total number of people (in hundreds) living in each of these areas shall be given. These figures shall include agglomerations.

The 55 and 65 dB contours shall also be shown on one or more maps, which shall include information on the location of villages, towns and agglomerations within the contours.

- 2.8. A summary of the action plan, covering the relevant aspects as referred to in Annex V, not exceeding 10 pages.

3. Guidance

The Commission will develop guidelines providing further guidance on the delivery of the above data.
