

# Monitoring, mapping and reducing noise pollution

## In a nutshell

SUMMARY
It is best practice to map noise in the territory of the municipality and to inform the public about the effects of noise pollution and the results of the mapping through an effective communication campaign. Based on the results of the noise mapping, the local authorities need to create noise action plans to reduce local noise levels and maintain environmental noise quality in areas where it is good.
Target group
Public administrations responsible for tackling noise pollution
Applicability
This best practice is applicable to all public administrations responsible for tackling noise pollution
Environmental performance indicators
<ul style="list-style-type: none"><li>• Percentage of noise level measurements exceeding local limit values out of the total number of measurements (%)</li><li>• Residents exposed to noise levels exceeding local limit values out of the total population (%)</li><li>• Residents exposed to night-time noise levels affecting health according to World Health Organisation limits out of the total population (%)</li></ul>
Benchmarks of excellence
N/A

## Description

It is best practice to map noise in the territory of the municipality and to inform the public about the effects of noise pollution and the results of the mapping through an effective communication campaign. These maps present in detail noise levels in the different sectors throughout the urban area. Noise maps show the noise on an average day in an average year. Based on the results of the noise mapping, the local authorities need to create noise action plans to reduce local noise levels and maintain environmental noise quality in areas where it is good.

More in detail, for instance, Environmental Protection UK summarises the purpose of strategic noise maps as (Environmental Protection UK, 2012):

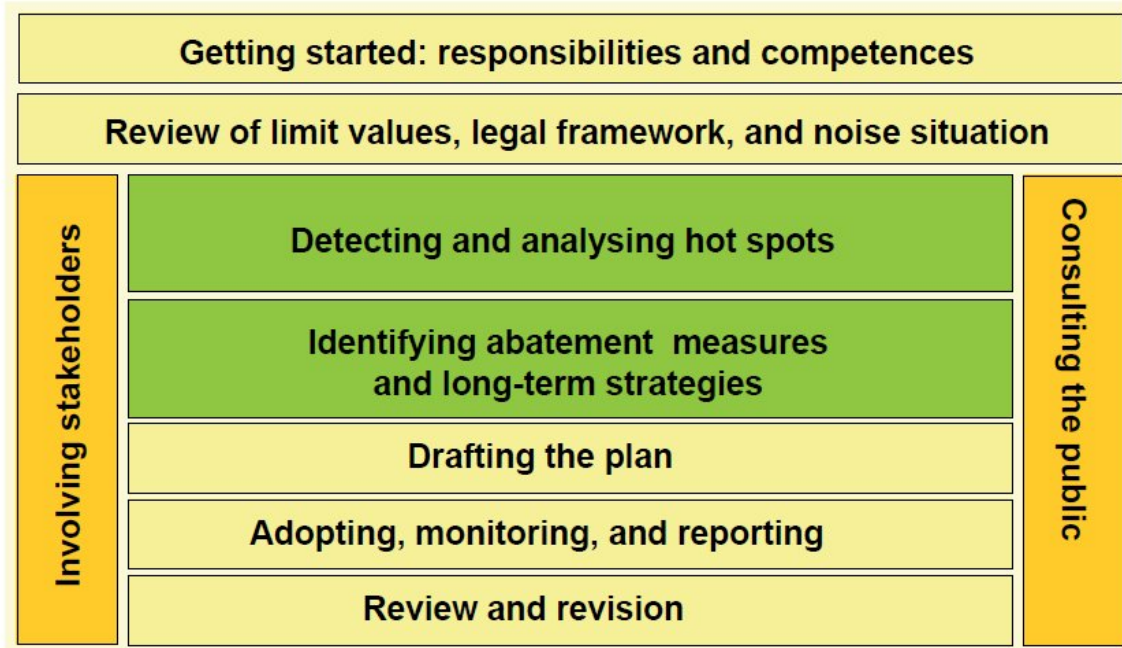
- To enable the assessment of the exposure of population to noise – by linking population data to the noise levels on the maps;
- To assist in the identification of areas that have good environmental noise quality ('quiet areas');
- To inform the development of action plans to manage the exposure of populations to noise; including reduction if necessary, and, in urban areas, prevent locations of existing quiet from becoming noisy;

- To raise public awareness and engage everyone affected in the development of noise action plans.

The main indicator used to describe the noise levels on the maps is  $L_{den}$ , expressed in A-weighted decibels - dB(A).

The second step is that public administrations inform the public about the effects of noise pollution through an effective communications campaign.

The final step is that public administrations create noise action plans to reduce local noise levels and maintain environmental noise quality where it is good, based on the results of the noise map. Noise action plans create a blueprint for the management of environmental noise and its effects. Figure 1 from the SILENCE project outlines the steps involved in creating an effective noise plan:



*Action planning step by step*

**Figure 1: Noise planning, step by step. Source: Kloth et. al, n.d..**

Effective measures to reduce noise in cities are the following (Kloth et al., n.d.):

- Noise screens and tunnels
- Low noise road surfaces
- Building insulation
- Low-noise trams
- Renewal of public transport fleet
- Low-noise waste collection vehicles
- Redesign of street space
- Reducing traffic volume
- Bans on trucks

## Environmental benefits

Reducing noise in cities has mainly benefits on human well-being. However, biodiversity is also affected by noise pollution and it alters their natural behaviours. Animals that evolved with hearing sensitive enough for the quietest conditions are now having their usual habitats disrupted by man made noise. Animals such as bats are refusing to hunt in noisy areas, whilst frogs and bird species are unable to communicate for reproductive means due to noise (WHO, 2012).

## **Side effects**

No side effects identified for this best practice.

## **Applicability**

This best practice is applicable to all public administrations responsible for tackling noise pollution. Depending on the local situation, Public Administrations can choose the most appropriate and effective range of measures in order to decrease noise. However, firstly there is always a need of monitoring noise in order to take better decisions. Construction, industrial activities and transportation systems play a large role in noise pollution in Europe.

## **Economics**

It has been demonstrated that noise abatement measures perform well in cost-benefit measures. A study carried out by FEHRL using the rate €25 EUR per decibel per household per year found that quieter tyres could produce benefits to the public of between €48 and €123 billion in the period 2010– 2022 (EEA, 2010). The European Commission Working Group Health and Socio-Economic Aspects (WG-HSEA) in the position paper 'Valuation of noise' recommends the use of a benefit of €25 per household per decibel per year above noise levels of  $L_{den} = 50\text{--}55\text{ dB}$  (EEA, 2010).

Excess noise can lower property prices. According to the EEA "it has been found that properties exposed to higher noise levels will have a lower value on the market than a similar building exposed to a lower noise level. This is valid for residential houses (for which there is extensive literature) but probably also for office buildings. The best estimate is that house prices lose 0.5 % of their value per decibel over 50–55  $L_{den}$ . (EEA, 2010)

## **Driving forces for implementation**

As well as health, curbing noise pollution has financial benefits. Economically noise pollution reduces property prices in affected areas and can structurally damage buildings through increased vibrations (OECD, 1997). Health conditions associated with noise pollution also add to infrastructural strain on health services, and increase expenditure on pharmaceutical goods, such as sleeping tablets. European Commission estimates of noise pollution's cost to Europe's GDP range between 0.2% and 2%.

## **Reference organisations**

- City of Westminster
- City of Oslo
- City of Stockholm
- Leeds

## Literature

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