

## **Odour policy in the Netherlands and consequences for spatial planning**

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In 1995, Dutch odour annoyance policy formulated the objective that by the year 2000 no more than 12% of the Dutch population would be subjected to odour annoyance caused by industry, agricultural activity and road traffic. In addition, by 2010 no one should be subjected by serious odour annoyance. To achieve this objective, an odour policy was developed in 1995 for industrial activities. The implementation of this objective was mainly a responsibility of provinces and municipalities. For agricultural activities, the judgment on situations of odour annoyance is mainly regulated by law. Although odour annoyance decreased as a consequence of several measures, the objective of having no more than 12% of the population experiencing odour annoyance by 2000, was not realised. By 2008, this level was still not realised, nor is it expected to be achieved in 2010. As a consequence of odour annoyance and other environmental problems spatial planning is restricted in the Netherlands – a country with a high population density. About 4% of urban areas in the Netherlands cannot be used for spatial planning as a consequence of high exposure to odour from industries. For the province of South Holland, the size of this area is 8%, because of the large industrial areas in the region of Rotterdam. In next decades, spatial restrictions on spatial planning caused by odour exposure may become a problem in densely populated areas. Technical developments and several measures will lead to more possibilities for spatial planning, but probably not to less odour annoyance.

Keywords: odour, annoyance, The Netherlands, industry, traffic, open fire

### **1. Introduction**

#### **1.1 Odour policy in the Netherlands**

The Dutch objectives for odour annoyance which were formulated in 1995, stated that by the year 2000, no more than 12% of the Dutch population would experience odour

annoyance and in 2010 Dutch people are no longer subject to ‘serious annoyance’ of odour. These objectives relate to odour annoyance from industry, agriculture and road

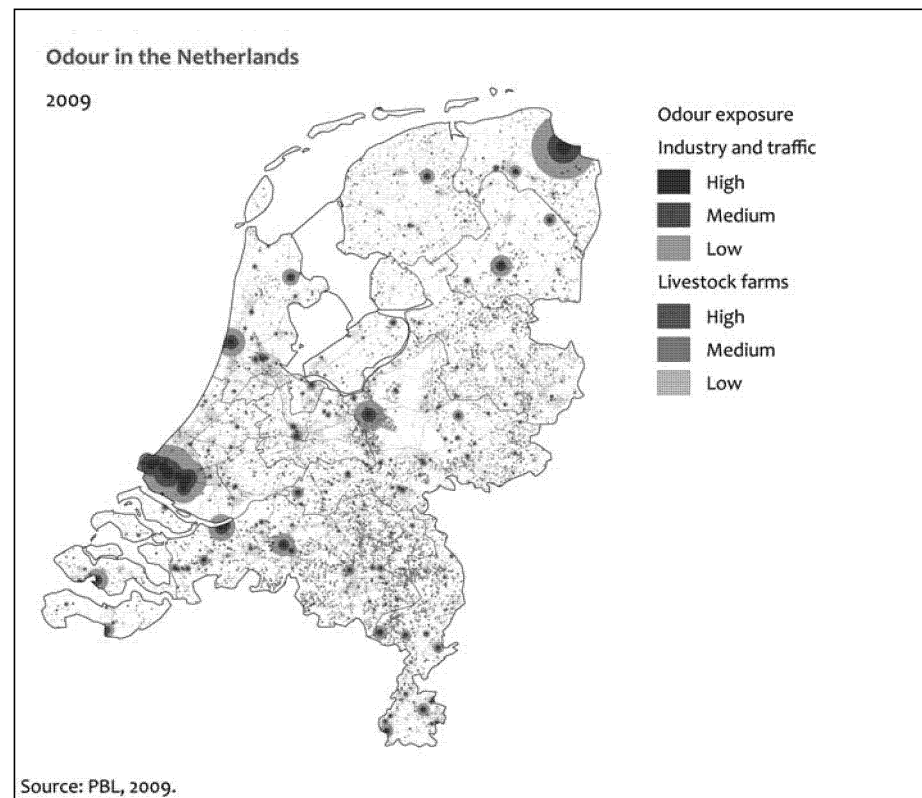


Figure 1. Odour exposure from industry, traffic and livestock farms in the Netherlands, 2009.

traffic. To achieve these objectives, odour policy was developed. The odour policies for industry and the agricultural sector differ in implementation. For the national industrial sector, only guidelines are available, and for agriculture there is a law on odour abatement in livestock farming. Besides these policies, spatial planning is an important tool to avoid odour annoyance.

Central to this policy for industrial odour is that additional odour annoyance, caused by new development, should be avoided. Existing annoyance must be reduced. The implementation of this policy is the responsibility of provinces and municipalities (VROM 1995). They have to decide on the so called ‘acceptable level of annoyance’, on a local scale.

For companies in specific industrial sectors special measures to reduce odour have been taken, similar to the Best Available Technology approach. In this ‘systematic approach’ instruments are described for determining an ‘acceptable level’ of odour annoyance. Some provinces and municipalities have developed their own odour policy, to determine which level of odour would be acceptable. These methods were designed specifically for a particular province or municipality which can be an advantage.

However, the disadvantage is that there is no standard method for determining acceptable annoyance levels, on a national level.

For agricultural odours, the law on livestock odours (stankwet) was introduced in 2007. Odour-concentration standards are set for agricultural areas and for other areas. However, local authorities may deviate from these legal standards within certain limits.

### **1.2 Odour annoyance in the Netherlands**

Figure 1 shows the areas with odour annoyance. Annoyance from industry, especially from oil and chemical industries, is high in the mid-western part of the Netherlands (Lagas, Belois et al. 2008). In the south-eastern regions, odour annoyance from agricultural activities is high.

Since 1990, a national survey has been carried out to determine the prevalence of odour annoyance (Figure 2). Odour annoyance from industry has reduced from 17 to 6% as a consequence of several measures taken by municipalities and provinces. Municipalities reduced odour annoyance through licensing policy. Odour annoyance from traffic has reduced from 10 to 5% as a consequence of air pollution policy measures. Odour annoyance from open fires did not decrease in the period from 1994 to 2008. For this kind of annoyance no policy has been formulated. Odour annoyance from agriculture has been diminished as a result of manure measures and other measures.

## **2. Results And Discussion**

### **2.1 Evaluation of odour policy**

The objective for 2000 was probably not realised, although the total of odour annoyance caused by industry, traffic and agriculture was not measured. Annoyance from industry or traffic was 15% in 2000 and 10% in 2008, and annoyance from agriculture was 11% in 2000 and 9% in 2008.

With the assessment of the target for 2010 was formulated that the goal will be achieved when percentages of 3% or less have been reported in the CBS survey (CBS, 2009). Regarding the data of this survey (fig 2) it will be expected that in 2010 still percentages of 5-10% will be reported for all kinds of odour annoyance. It can be concluded that the target for 2010 will not be realised.

### **2.2 Environmental impact of odour annoyance**

High exposure to odours from industry was calculated for 2% of the houses in the Netherlands. It is expected that over 10% of residents in these houses are experiencing severe odour annoyance (Miedema et al., 2000). In the province of South Holland, where most industrial companies are located, more than 6% of the houses experience high exposure (Fig. 3). In the region of Rotterdam about 60% of the people experience odour annoyance (van Belois et al., 2008). Exposure to odours from traffic impacts almost 20% of all Dutch homes, but the level of this exposure is low (Fig. 4). In North Holland, the province with the most traffic, 2% of the houses experience medium levels of exposure. The exposure to odours from livestock farms was rather low, with 0.7 % for the Netherlands as a whole, while in the province of Limburg 1.7% of houses have at least a low exposure to odour.

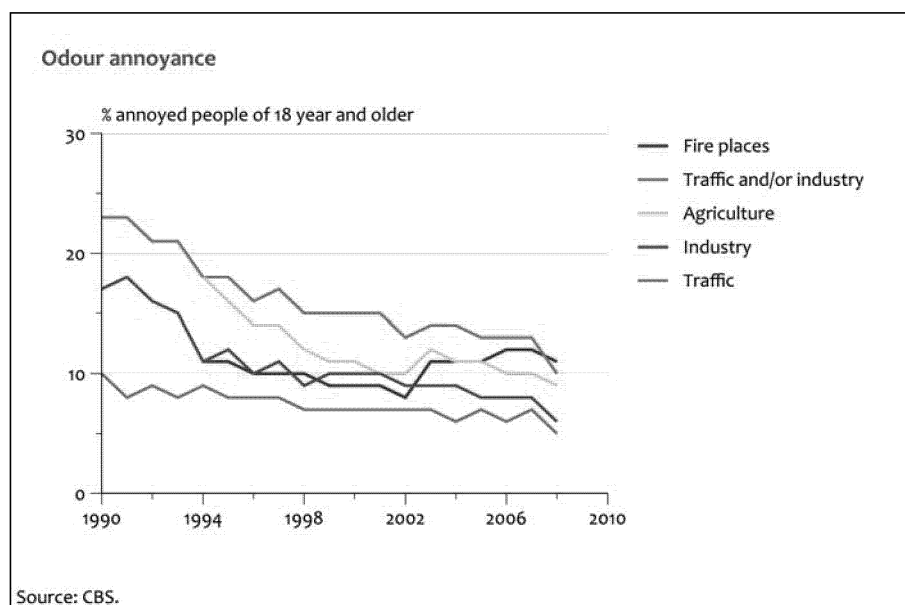


Figure 2. Results from a national survey on odour annoyance from several sources, 1990 – 2008 . (CBS 2009)

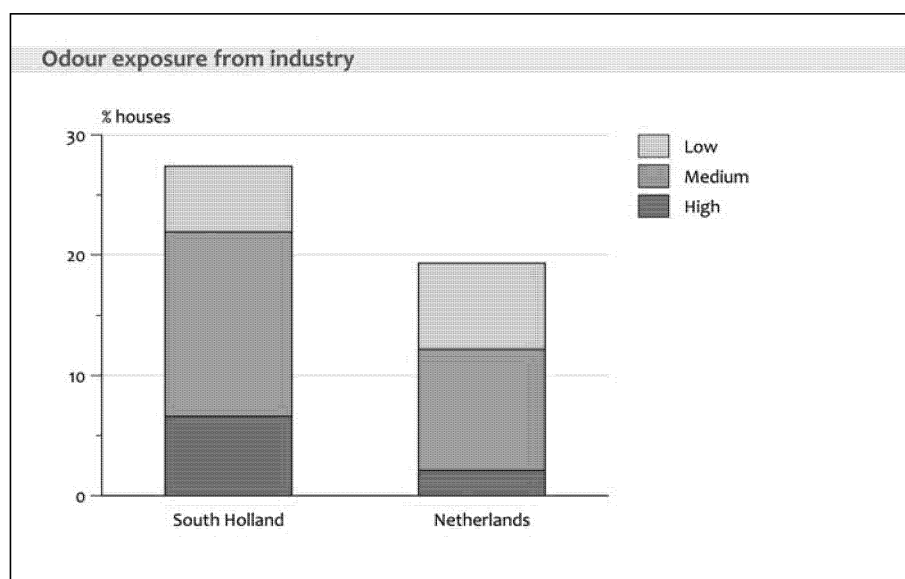


Figure 3. Odour exposure from industry in the Netherlands, and in the province with the highest density of industrial companies.

### 2.3 Environmental restrictions as a consequence of odour annoyance

About 4% of urban areas in the Netherlands cannot be used for spatial planning as a consequence of high exposure to odour from industries, traffic and agriculture. In the

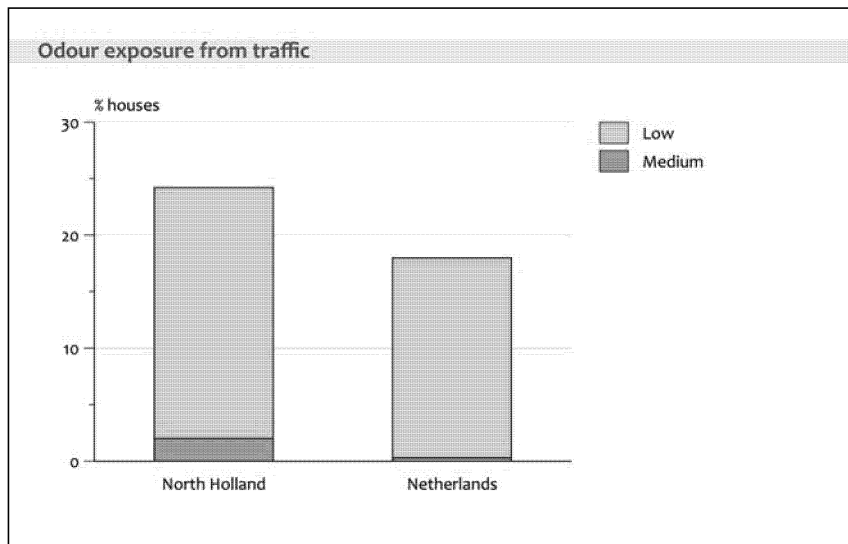


Figure 4. Odour exposure from road traffic in the Netherlands, and in the province with the highest traffic density.

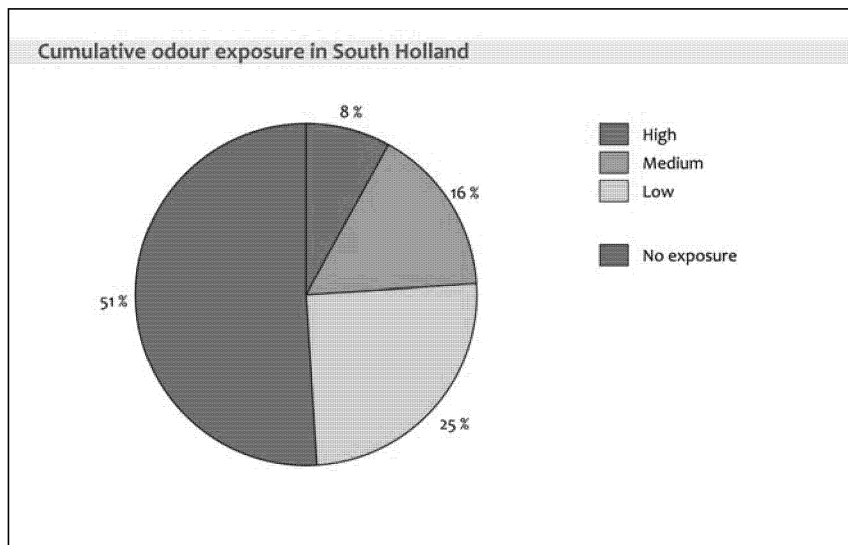


Figure 5. Areas inside the urban areas in the province of South Holland with cumulative odour exposure from industry, traffic and agriculture. Housing development is not possible in 8% of the areas.

province of South Holland, this area is 8% (Figure 5), as a consequence of large industrial areas, such as those in the region of Rotterdam. In the Amsterdam region, there are also large spatial restrictions caused by odour emissions.

#### **2.4 Spatial development**

In next decades, spatial restrictions on spatial planning as a consequence of odour exposure may become a problem in densely populated areas within the Netherlands (Lagas and Buijs, 2010). In the Netherlands, several new changes in spatial planning regulations have been introduced or will be introduced. One new regulation is that small companies will no longer need a license, but are obliged to implement some odour decreasing measures. Furthermore, as a consequence of the law on livestock odours, it appears that municipalities are reducing the physical distance between agricultural companies and houses. That means that exposure to odour will increase. Technical developments which reduce odour emissions do not lead to less odour annoyance but to more spatial possibilities for the building of houses.

### **3. Conclusions**

The trend in the percentages of people who experience odour annoyance is decreasing, due to implementation of several measures taken at policy levels of provinces and municipalities.

The national policy objectives for the Netherlands of having ‘no serious odour annoyance in 2010’ and having less than 12% of people who experience odour annoyance, will not be realised.

In next decades, spatial restrictions on spatial planning as a consequence of odour exposure may become a problem in densely populated areas in the Netherlands. Technical developments and the implementation of several measures will lead to more possibilities for spatial planning and probably not to less odour annoyance.

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