

The European Air Quality Directive and the new chances for Mobility Management

Workshop: 2a) Links between policy fields; the role of Mobility Management within the planning process for sustainable development and transport

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1. Introduction

Traffic-related air pollution and the health of the European citizens are growing issues in the European Community. The recent years many studies have conducted a strong relation between traffic, air pollution and the health of people living close to big arteries. In June 2001 the European air quality directive 1999/30/EG has been implemented in the Netherlands by the publication of the Dutch air quality decree. This decree forces the municipalities to measure and calculate their air pollution. The municipalities have to report the regional and national government about locations with air quality problems. Neighbourhoods, schools, playground and hospitals, close to freeways and big arteries in the cities are the most risky areas to suffer air-pollution problems. At these problem locations the air-pollution exceeds the limits, fixed by the European Council, of chemicals like nitrogen dioxide (NO₂), particulate matter (PM₁₀), sulphur dioxide (SO₂), carbon monoxide (CO) or benzene.

The first results of this decree show a lot of municipalities in the Netherlands will have problems with traffic-related air pollution. In practice it means these municipalities have to solve these problem locations before the year 2010. They have to make an air quality action plan. They also have to prevent creating new problem sites.

It's obvious this decree will have an important impact on existing locations as well as new building areas. If municipalities don't take up their duty, if they don't make action plans to solve these problem sites, they will have big problems. The reason why is that any European citizen has the possibility to go to the European Court and, on behalf of this European legislation and the Dutch air quality decree, challenge new building plans and new or more road infrastructure. If municipalities don't take action this new legislation will hold up the nation wide planning process and economic development of areas. So this decree is important for the public as well as the private sector. The positive side of this new legislation is the positive effects on the public's health and the savings of the environment.

In this paper we will address the growing impact of Mobility Management and the role it can play in solving the traffic-related air pollution problems. We will focus on the Quick Scan method: "Selecting solutions for traffic-related air pollution" and the way this method will help the municipalities in the Netherlands to find the right solution for their specific air quality problems. We will explain three types of solution to be taken:

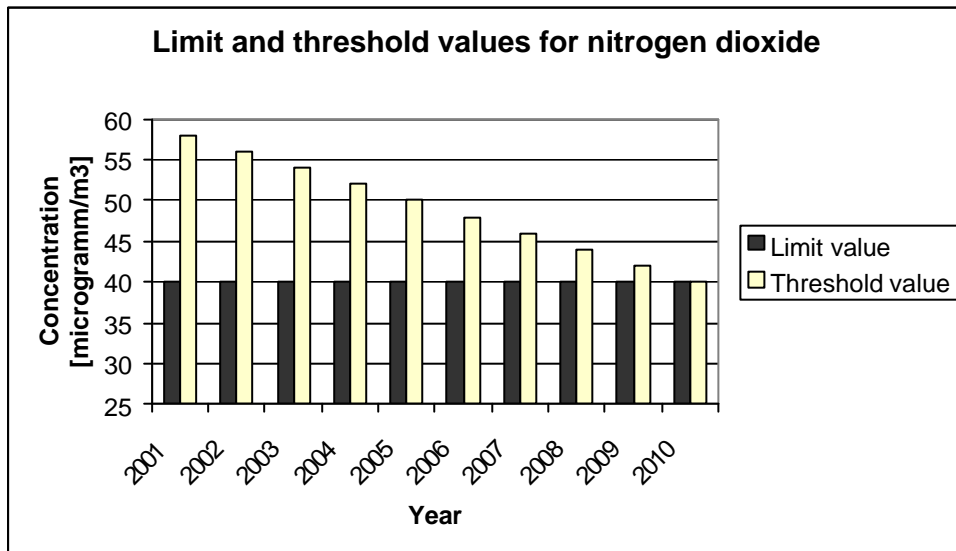
- Source solutions = measures focussed on reducing the volume and type of pollution from traffic;
- Transfer solutions = measures focussed on reducing of the transfer of pollution to the threatened areas
- Destination solutions = measures focussed on protecting the houses and their citizens.

Of course we will also explain, more in detail the European air quality. At the end we will discuss the new chances for Mobility Management to show their possibilities and power to solve these kind of problems and to discuss the role the ECOMM and the EPOMM network can play by finding new ways to tackle the traffic-related air pollution problems.

2. European Air Quality Directive

In June 2001 the European air quality directive 1999/30/EG has been implemented by the publication of the Dutch air quality decree. The air quality directive sets limits for concentrations of sulphur dioxide, nitrogen dioxide and oxides, particulate matter and lead in ambient air. A second daughter directive also sets limits for carbon monoxide and benzene. In Holland the most important limit values are for nitrogen dioxide and particulate matter because only these annual limit values are exceeded.

The goal of this directive is to protect man and the environment against the negative effects of air pollution. The directive focuses primarily on preventing health effects. To that purpose strict limit values are set for 2010. But what to do in the mean time? Expectations are that because of technological development (cleaner car technology for instance) the air quality will improve the next seven years. Therefore if you want to check if your plans are not in conflict with air legislation and limit values for 2010, you can use so called threshold values. Threshold values may not be exceeded and are less strict then limit values. The thresholds take into account that air quality will 'autonomously' will improve. But beware, there is no guarantee it actually will improve and air quality still has to be below the limit values in 2010.



3. Dutch Air Quality Decree

As said, in June 2001 the Dutch air quality decree was published. It's effect on decision making in Holland is big and widespread. The decree states that air quality should be taken into account with every decision a local, provincial or national government makes. So it also has effects on spatial planning, transport etceteras.

In Holland the roles for the different layers of government are as follows:

- national government: makes an Actionplan for reducing particulate matter, makes the yearly national air report that is being send to the EU;
- provincial government: they act as intermediar between the national government and municipalities. They also gather the local air quality report made by the municipalities;
- municipalities: they measure and calculate air quality and make an air quality report. If the concentration of air pollutants exceeds the limit, they also have to make an air quality plan which holds measures to improve the air quality.

In general sulphur dioxide, carbon monoxide, benzene and lead are not a problem in Holland, although on specific locations it can exceed limits. In Holland the focus of research is on nitrogen dioxide and particulate matter (PM10). Both are expected to exceed limits in all of Holland, especially close to very busy motorways. Because of this, the focus of most municipalities is on reducing nitrogen dioxide (NO₂) in ambient air. The main source of nitrogen dioxide is traffic. Therefore most measures taken by municipalities are transport related.

The Dutch air decree forces the government and municipalities to measure or calculate their air pollution. Because PM10 is such a big problem, and municipalities have little control over it, the national government will make plans and take measures to reduce it. But it is not a very easy task, so it will remain a big problem for a long time.

The National Institute of Public Health and the Environment (RIVM) measures the concentration of nitrogen dioxide and particulate matter in ambient air in Holland. The European air quality directive sets a minimum number of sampling points a country should have to assess compliance with limit values. Based on measurements taken by the National Air Quality Monitoring Network a map is compiled of the air quality in Holland.

In 2001 the average annual concentration of nitrogen dioxide in the Netherlands was about 20 µg/m³. The highest concentrations were measured in the 'Randstad' urban agglomeration, the lowest in the North East of the country. Exceeding of the standard (40 µg/m³) for nitrogen dioxide occurred in and around a number of large cities. According to these measurements no limits were exceeded. Holland has reported this to the EU in Brussels in 2002.

In 2001 municipalities for the first time had to make an inventory of the air quality based on the Dutch air decree. 130 Municipalities were obligated to make an air report. Eighty percent actually made an air report. Besides that, a hundred non-obligatory municipalities made an air-report. In total, about fourthy percent of all Dutch municipalities made an air-report. They based their reports on calculation made. The Directorate-General for Public Works and Water management, manager of motorways, provided calculation on areas close to motorways. Municipalities made their own calculations of major trunk roads and arterial routes but also narrow, congested streets and shopping streets. To make calculation the national government has made an instrument for calculating air quality, the so called CAR II-model (Calculation of Air pollution from Road traffic). It is an easy tool for calculating air quality. Only the number of cars and the road type has to be known. Other parameters like meteorology and the background concentration of air pollutants is already known. According to these calculations, about forty municipalities have problem with nitrogen dioxide levels in air exceeding limits. In 2003 only the municipalities where limits are exceeded have to make a new air quality report. Through these reports changes in air quality can be followed.

4a. Air quality plan

Infomil was commissioned by the Ministry of Housing, Spatial Planning and the Environment to make several guidance's for local authorities. Theses guidance's describe how authorities should interpret the new air decree, how to make a air quality report and describe how authorities should interpret the new air decree, how to make a air quality report and what kind of content an air quality plan (action plan) should have. An air quality plan describes what kind of measures municipalities want to take, when measures will be finished, what kind of effect the will expect from these measures and what the costs will be.

In air quality plans, the following elements should be considered:

- What is the problem? What goal of your plan?
- Where can I get the information I need for calculating air pollution?
- In what way will air quality develop in the next ten years?
- Which measures can be taken to reduce air pollution?
- How can I put all this information in a readable air quality report?

The guidance gives answers to these questions and gives hint and tips on measures that can be taken. It also gives tips how to get commitment within your own organisation.

There are several measures on transport that can be taken, for instance traffic calming, parking controls or speed limits. Up to now only a few municipalities have actually taken any measures to improve air quality.

4.b Quick Scan "Selecting solutions and solutions for traffic-related air pollution"

The Dutch municipalities have the responsibility to solve their Air Quality problems. While traffic and transportation are the most important sources of these problem locations, the solutions have to be found in the traffic and transportation sector too. To help the municipalities to find these solutions Infomil has developed a Quick Scan method to find the right solution for the diagnosed air quality problems. **What kind of problem situations** we will find in these municipalities the most?

1. A freeway, close to the municipality. The air-pollution exceeds the limits at a few locations;
2. A freeway is crossing a municipality, The air-pollution exceeds the limits at a lot of places, like houses, schools, playgrounds and hospitals;
3. Only in the surroundings of one or two main arterials the air-pollution exceeds the limits;
4. The air-pollution problem site is one location like an intersection or central bus station;
5. Municipality wide traffic-congestion is the cause of the air pollution exceeds the limits in big parts of the municipality;

For these kind of problems we distinguish 10 different **Directions for Solution**: They will be separated in:

- Source solutions = measures focussed on reducing the volume and type of pollution from traffic (**A till H**);
- Transfer solutions = measures focussed on reducing of the transfer of pollution to the threatened areas (**I**)
- Destination solutions = measures focussed on protecting the houses and their citizens(**J**)

The Directions for Solution

- A. Decreasing the need for transport: the effect will be less and shorter transport movements;
- B. Influencing the modal split: the effect will be a choice for cleaner and less pollutant transport modes;
- C. Influencing the choice of travel route: the effect will be an optimal use of the different routes and the avoiding of "weak areas"
- D. Influencing the part of freight traffic: the effect will be less freight traffic and less trucks.
- E. Influencing the way of driving: eco-driving will decreasing pollution and fuel use
- F. Decreasing Car emission: traffic homogenising, speed reduction using alternative fuels and car emission reduction
- G. Exclude different means of transport: it will be possible to create zero emission zones for the "Weak areas" (schools, hospitals, playgrounds and..)
- H. Communication as a part of all the directions of solution
- I. Influencing the transfer of pollution to the threatened, the "Weak areas"
- J. Protecting the houses and their citizens "the Weak"

The first step in the Quick Scan method is to indicate the most important Directions for Solutions for the main kind of problem situations with air pollution.

In this case the main problem is by example:

1. A freeway, close to the municipality, the air-pollution exceeds the limits at a few locations

The directions of solution will be:

C. Influencing the choice of travel route: the effect will be an optimal use of the different routes and the avoiding of "weak areas"

D/G. Influencing the part of freight traffic: the effect will be less freight traffic and less polluted trucks and / Exclude different means of transport: it will be possible to create zero emission zones for the "Weak areas" (schools, hospitals, playgrounds and..)

F. Decreasing Car emission: traffic homogenising, speed reduction using alternative fuels and car emission reduction

I. Influencing the transfer of pollution to the threatened, the "Weak areas";

J. Protecting the houses and their citizens "the Weak"

In an other case the main problem could be:

2. Only in the surroundings of one or two main arterials the air-pollution exceeds the limits

The directions of solution will be:

B. Influencing the modal split: the effect will be a choice for cleaner and less pollutant transport modes;

D. Influencing the part of freight traffic: the effect will be less freight traffic and less polluted trucks

E. Influencing the way of driving: eco-driving will decreasing pollution and fuel use

F. Decreasing Car emission: traffic homogenising, speed reduction using alternative fuels and car emission reduction

G. Exclude different means of transport: it will be possible to create zero emission zones for the "Weak areas" (schools, hospitals, playgrounds and

The second step will be to diagnose which kind of measures can be taken. There for we look to the advised directions of solution. In the table below we will find an overview of the measures per direction of solution. For each measure a factsheet, with detail information about the characters see annex 1, has been developed.

Table 1. Measures (factsheets) per Direction of Solution

		A. Decrease need for Transport	B. Influencing the modal split	C. Influencing the choice of travel route	E. Influencing the way of driving - eco	F. Decreasing car emission	G. Exclude different means of transport	I. Influencing transfer of air pollution	i. Protecting the "weak areas"
Source Measures									
FS. 1	<u>Local Traffic Performance Method</u>	X							
FS. 2	<u>Car sharing – Autodate</u>	X	X						
FS. 3	<u>Green Commuter Plans TDM</u>	X	X						
FS. 4	<u>Parking policy</u>	X	X	X					
FS. 5	<u>Park+Ride en Transferia</u>		X						
FS. 6	<u>Travel information</u>		X	X					
FS. 7	<u>Seamless Mobility</u>		X	X					
FS. 8	<u>"Eco Driving"</u>				X				
FS. 9	<u>Slow Driving Goes Faster" (LARGAS)</u>				X	X			
FS. 10	<u>Speed reduction</u>				X	X			
FS. 11	<u>Clean vehicles: Soot filter on city bus and freight trucks</u>					X			
FS. 12	<u>Clean vehicles: Electric vehicles</u>					X			
FS. 13	<u>Clean vehicles: Car on Natural Gas (CNG)</u>					X			
Transfer Measures									
FS. 14	<u>Tunnels</u>							X	
FS. 15	<u>Heighten and lower/deepen roads</u>							X	
FS. 16	<u>Barrier/wall constructions</u>							X	
Destination Measures									
FS. 17	<u>Low Emission zones</u>						X		X
FS. 18	<u>Take down buildings and/or Infrastructure</u>								X

5. The new Chances for Mobility Management

Mobility Management, as an integrated approach to solve traffic and transport problems, will be a most important instrument to solve the air quality problems in the municipalities. The challenge for the future is to get a more effective and more efficient traffic and transportation system that also takes care of the environment, the air quality and the health of the citizens of our cities.

Till just now it cost a lot of energy to convince the government, the municipalities and the industry to such an integrated approach. Why should they do it? Such an integrated approach takes time and money and the problems were not high enough. Also the knowledge of the

effects on accessibility, environment and costs are not known enough. Should the resistance to apply Mobility Management be too high?

For Years we have tried to stimulate the companies, and the municipalities by pilot projects, by facilitating them with knowledge, by fiscal rules, by inventing new way of transports, by PR campaigns and so on. Of course we made progress. A lot of initiatives were successfully, but overall Mobility Management stays in the shadow of building new Infrastructure to solve the problems with congestion.

.....But

The effects of the European Air Quality Directive and the Dutch Air Quality Decree are becoming visible. Some judges have already dismissed new spatial plans while these plans didn't answer the air quality conditions of this decree. Or the plans create new problem locations or the air quality of the area themselves would be to high. New and better chances for Mobility Management? The answer has to be YES. Mobility Management will be a solution the questions the Air Quality Decree is calling for, because

- Mobility Management is goal orientated - the air quality ask for limits
- Mobility Management is an integrated - more effective and efficient results
- Mobility Management involved all the actors -
- Mobility Management is a management approach for the short and the long term

Different municipalities are looking for answers for solutions for the air quality problems. So one of the measures is tested by the city of Rotterdam. Rotterdam, well known for its ports, is one of the biggest cities in Holland and a lot of traffic is on motorways very close to houses. In Overschie houses are about 15 metres from the motorway, with 150.000 vehicles, twelve percent of which are trucks. Because of complaints of citizens the Directorate-General for Public Works and Water management has implemented speed limits (from 120/100 to 80 kilometres per hour) on this motorway to calm traffic (less breaking and accelerating) and so reducing air pollution and noise. Provisional results show a ten- percent drop in the issue of air pollutants. In the future more of these kind of experiments will be started.

6. Conclusions and Acknowledgements

- In the Year 2010 everywhere in Europe the air quality have to be OK. If it isn't so or if there are new plans for road infrastructure or new plans for areas for living or commercial sites, these plans will be dismissed. The authorities have to take action to solve these problems because every European citizen has the possibility to go to the European Court to appeal to a plan;
- The municipalities have to find solutions to tackle these problems. If they don't, there will be a problem for building new roads and making new spatial plans. So all the actors will be involved, also the companies;
- New chances for Mobility Management while the municipalities are looking for solutions to answer the questions the air quality decree is calling for;
- The Quick scan "Selecting solutions and solutions for traffic-related air pollution" is a method to find the right measure for the right problem;
- The European Cities and countries can learn a lot from each other to tackle the problems and take up the chances inspired by the European Air Quality Directive;
- ECOMM should become the place to exchange information about the European Air Quality problems an measures to be taken;
- The EPOMM - network should become the European Platform to discuss these Air Quality issues with the European countries and the Network should take up their task in awareness raising about this Air Quality Directive

7. References

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ANNEX 1. The characters of the different factsheets

MEASURE: The Name of the Measure of the Air Quality Plan		CODE:
Subject	Description	
Goals on Air Quality	Description on the goal of air quality. The kind of solution Source , transfer or destination	
Expected Effects	Not only the effect on air quality. Also the side effects possitive and negative will be explained	
Background of the measure/ the Principle	Description of the measure and the situation it can be taken	
Actors/ stakeholders	An analyses of the stakeholders who are effecting the realisation of the measure and the effects of it	
Responsibility	Which (public) actor will be responsible for the realisation	
Applicable characters	The critical characters for applying this measure (location and social situation	
Implementation	Who to implement	
Cost-effectiveness	Cost in relation to the realisation of the measure and in relation to effect on the air quality	
Time period for realisation	Time it will cost from idea to using it	
Feasibility Practical and political	The factors for success	
Practical examples	Where we can see it; Municipalities, locations	
Cost of the measure	Indication of costs and which actor have to pay for it	
Possibilities for subsidising and support	Where can You get money for it	
Reverences/ Literature	Information from studies and Internet sites.	