



# Air quality around airports

## Air travel is growing, air quality is getting worse

Civil aviation is a high-growth market. Over the last two decades air travel has been the fastest growing mode of transport and this is expected to continue. Aviation in the CEE does not fall aside from this global growth trend. Airports in the EU are progressively expanding their number of runways, carriers and passengers. Air transport is growing by 6–9 % per year in the new but also in the old member states [HYPERLINK](#). At the same time the market shares of modes such as rail and buses are increasing only marginally, if at all. (EEA, 2004).

Unlike road transport, air pollution emissions from planes have remained stable over the last years due to a lack of strict or mandatory emission standards. At present Nitrogen oxides (NO<sub>x</sub>) emissions and particulate matter (PM) are to be deemed the principal aircraft pollutants for local air quality (CE Delft, 2000). Surprising as it might be though, aircraft emissions are not the major contributor to air quality problems around big airports. The sources of pollution in order of significance appear to be:

- road traffic at and around airports is the most important source of pollution;
- aircraft exhaust fumes (10% of air pollution around Amsterdam Airport Schiphol (urban region) (Noord-Holland, 2001), 20% east of Roissy Charles de Gaulle (rural region), (Airparif, 2004)
- emissions from ground service equipment and auxiliary power units;

### Concentration highest around airports

Most emissions taking place during aircraft flight do not directly expose humans to pollutants as the planes move in the higher parts of the atmosphere. However there is pollution at ground level during take off and landing, and ground running resulting in high concentrations of harmful gases and fine particles around airports.

Additionally not only the people living close to airports are affected - everybody is to some extent exposed to air traffic related secondary pollution. This is because some emissions are transported over long distances and transformed into secondary pollutants in the atmosphere.

This is the case with NO<sub>x</sub> emissions and the formation of secondary PM that affect places far away from the areas with major traffic sources of air deterioration (ISDE, 2002).

### Health Impacts

Air pollution continues to be a significant threat to human health and the environment in Europe, especially in airport adjacent regions. NO<sub>2</sub> exerts most of its effects on the human body locally, in the airways and lungs. High NO<sub>2</sub> levels cause breathlessness and coughing, and long term exposure results in chronic cough and infections such as bronchitis. Ozone (O<sub>3</sub>) is an important secondary pollutant that is formed out of NO<sub>2</sub>.

With regards to PM, overwhelming evidence has been compiled in recent years, demonstrating its mortality and morbidity impacts (WHO 2003, 2004). According to the latest assessment of air quality by the European Commission from January 2005, the high concentrations of PM lead to approximately 288 000 premature deaths in the year 2000 in the EU 25.

In addition the high PM levels also cause morbidity impacts of 83 000 serious cases of hospital admissions (in the year 2000), some 25 million respiratory medication use days, and several hundred million restricted activity days (AEA Technology Environment, 2005). Even in the year 2020, after the implementation of existing legislation, unacceptably high health damage will result from air pollution in Europe (Amman et al. 2004).

## Local solutions

In all likelihood technological and operational efficiency improvements will not be sufficient to offset the growth of NO<sub>2</sub> emissions from civil aviation. These emissions depend on the quality of fuel burned and the specific emission index (EI) of the engine under the given circumstances. Despite introduction and progressive tightening of engine emissions standards and the existence of potentially promising options to reduce the EI of new engines, there is still little sign of the latter being implemented. On the other hand road transport around airports is constantly growing and no programmes for curbing this growth have been pursued so far. Alternative solutions should be sought, encouraged and implemented. There should be targets to reduce the consumer demand for short haul flights, to encourage the use of rail transport for holiday and business travels, to terminate the expansion of airports, to improve public transport services from and to the airports, etc.

## Policy Implications on EU level

Local air pollution is regulated by several legislative documents on EU level. With regard to emissions from aviation, the most important of these are:

- the National Emission Ceiling (NEC) directive, covering aircraft emissions in the landing-take-off cycle in the national emission ceiling plan for each country.
- the First Daughter Directive setting up limit values controlling the concentration of NO<sub>2</sub> and PM in the air.

The commission is working on a strategy of reducing the harmful environmental impacts from aviation by focusing on the possible use of financial and market instruments. Although the main target of such a strategy is the inclusion of aircraft emissions into the EU industrial greenhouse gas emission trading scheme, it should also consider the possible ways of reducing air pollution around airports.

## How citizens can use existing regulations

In most countries, national authorities carry out monitoring of air quality. Regional and local authorities on the other hand have an important task in taking measures, implementing plans and programmes to reach the air quality standards and informing the public. When concentrations are higher than the limits set by the EU (First Daughter Directive), it is possible to start a court case. These regulations provide an opportunity for NGO's and citizens to demand a sustainable transport and aviation policy from their local governance – such that does not damage local air quality and is a powerful tool for securing cleaner air for all European citizens.

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