

## European Observatory on Airport Capacity and Quality Task Force 1

# COST OF THE NEGATIVE IMPACTS OF AIR TRANSPORT

# STRUCTURAL IMBALANCE

Aviation lobbies are super strong and powerful

Economic impacts of air transport are magnified to seduce politicians

One argument is hammered : jobs, jobs, jobs

Studies are available from IATA / Oxford Economics – one button to press to deliver a standard study promoting air transport

**Costs and negative impacts are never taken into consideration when assessing an economic impact of air transport for a specific airport or generally**

In most countries there are no efforts to evaluate the costs of those negative impacts

# STRUCTURAL IMBALANCE

Expectations of the overflown population

Politicians to confirm and apply a fair balance between the various stakeholders

Acknowledgement that millions of people suffer from noise and emissions from airplanes

**Adoption of mitigation measures to protect the population**

# THE DOWN-SIDE OF AIR TRANSPORT

## PUBLIC FINANCING

- State aids and subsidies
- Exemption of energy tax and of the European Emission Trading System
- Exemption of VAT on air tickets
- Air transport contributes to global warming which will result in the necessary adaptation of the member states

## SOCIAL IMPACTS

The value of residential housing has a strong inverse relationship with the number of decibel suffered

Impoverishment in the vicinity of airports is the result of the noise suffered and the loss of value of the residential housing

Sleep disturbance, annoyance and stress

- Impairment of concentration adults/children
- work related accidents
- Effect on children's cognitive development
- Unequal treatment for children / students when sitting tests and exams

## NOISE HAS A DIRECT IMPACT ON HEALTH

Beyond the mere annoyance factor, **aircrafts noise has long been proven to have a direct effect on high blood pressure**. This is even increased at night.

High blood pressure is a direct cause of myocardial infarction and stroke

Example of the study by Germany's Federal Environment Agency, Berlin 2009 :

The risk of going to hospital for cardiovascular diseases are strongly increased for the population under flight paths

Men +69%

Women +93% (+172% if  $L_{den} > 60\text{dB}$ )

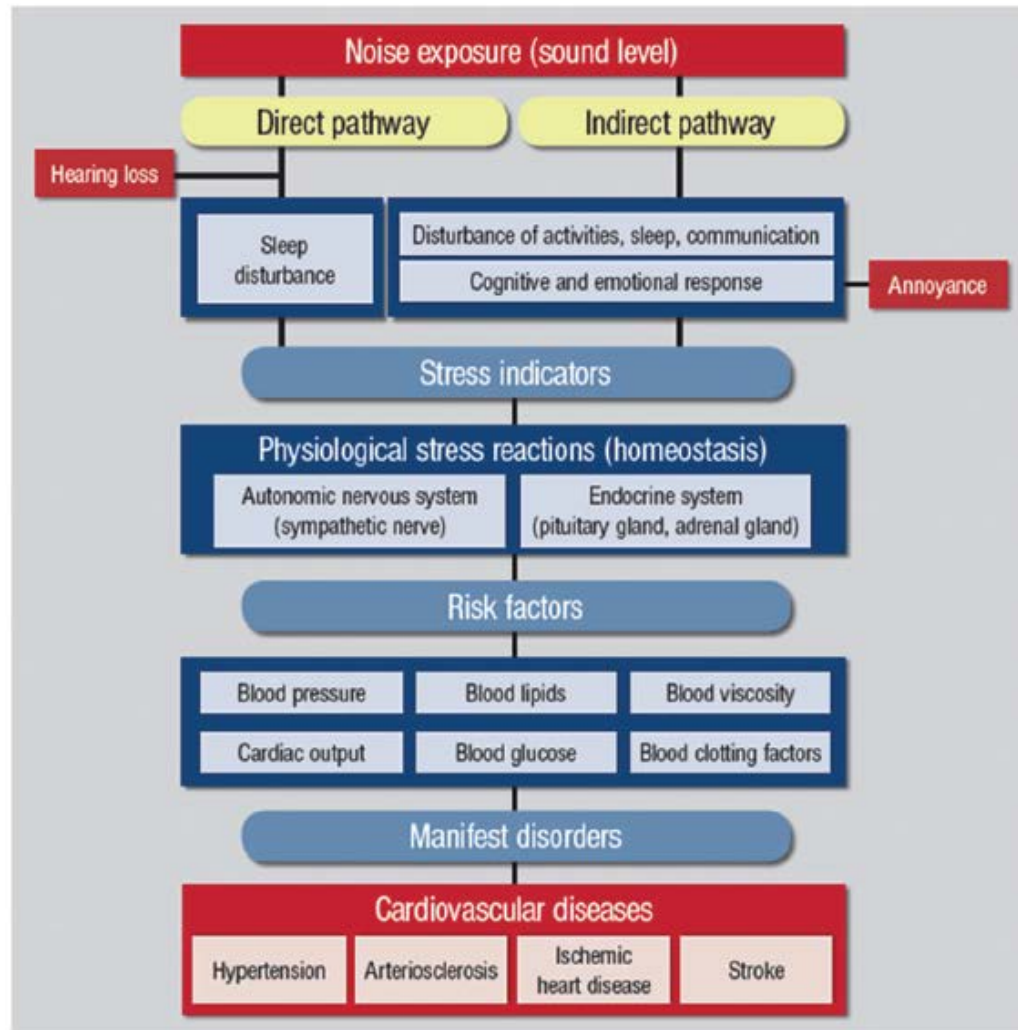


Figure 2 Noise effects reaction scheme. Adapted from Babisch.<sup>71,94</sup>

## NOISE AND CARDIOVASCULAR DISEASES

Repeated noise is the cause of high blood pressure ([HYENA](#) study 2008)

Correlation between noise (including in particular at night) and myocardial infarction and stroke was proven to be significant by cohort studies (Berne 2010 and Denmark 2011)

This is again confirmed by two recent studies :

- 6 millions persons aged over 65 in the vicinity of 89 US airports (Harvard University)

It shows an increase of 3.5% of hospital admissions for cardiovascular problems per 10 dB (starting at 45 dB)

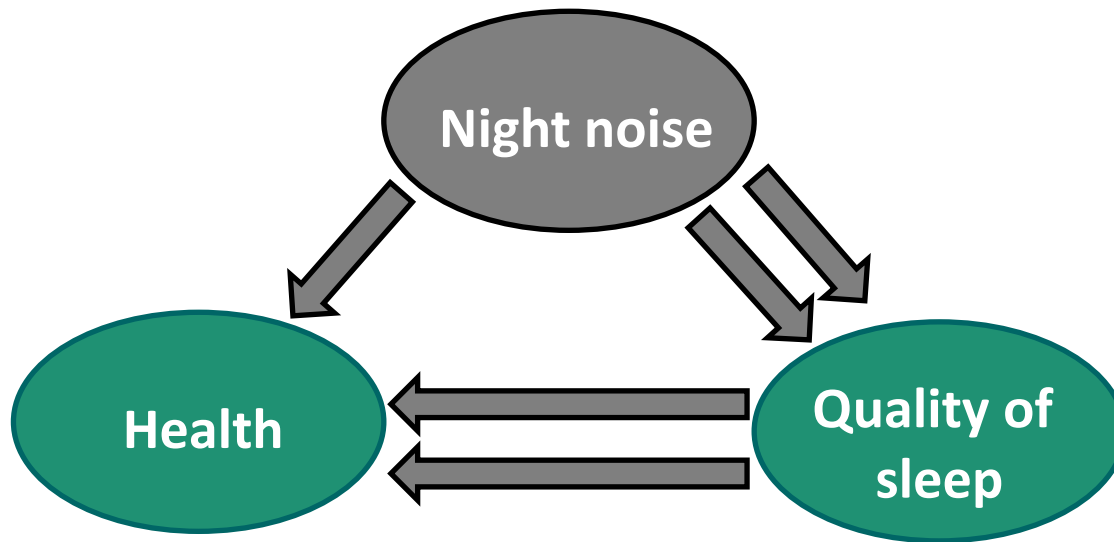
- 3.6 millions persons in the vicinity of London Heathrow airport (British Medical Journal 2013)

Another study in Ile-de-France region (published in 2007 Open Rome Dr Cohen) shows that men, living under flight paths less than 1,000m high, have a consumption of medicine against high blood pressure 5.6 times higher and;

Women aged 15 to 39, living under flight paths less than 2,000m high, are hospitalised 5 times more often



## NIGHT NOISE AND HEALTH



Not only noise has a direct impact on health  
But is amplified when spoiling the quality of sleep – unconscious effect  
Which in turn impacts on health

Noise at night increases blood pressure, even when the person is asleep  
This may induce premature disease and lead to the death of the person

Noise and sleeping disturbance are at their most adverse effects  
upon falling asleep and morning awakening

## EMISSIONS

**Kerosene = diesel fuel means that aviation = diesel in terms of risks**

Emissions from air transport include mainly NO<sub>x</sub> (nitrogen oxides), ultra-fine particles (PM 2.5 and PM 1) but also VOC (volatile organic compounds) including benzene ...

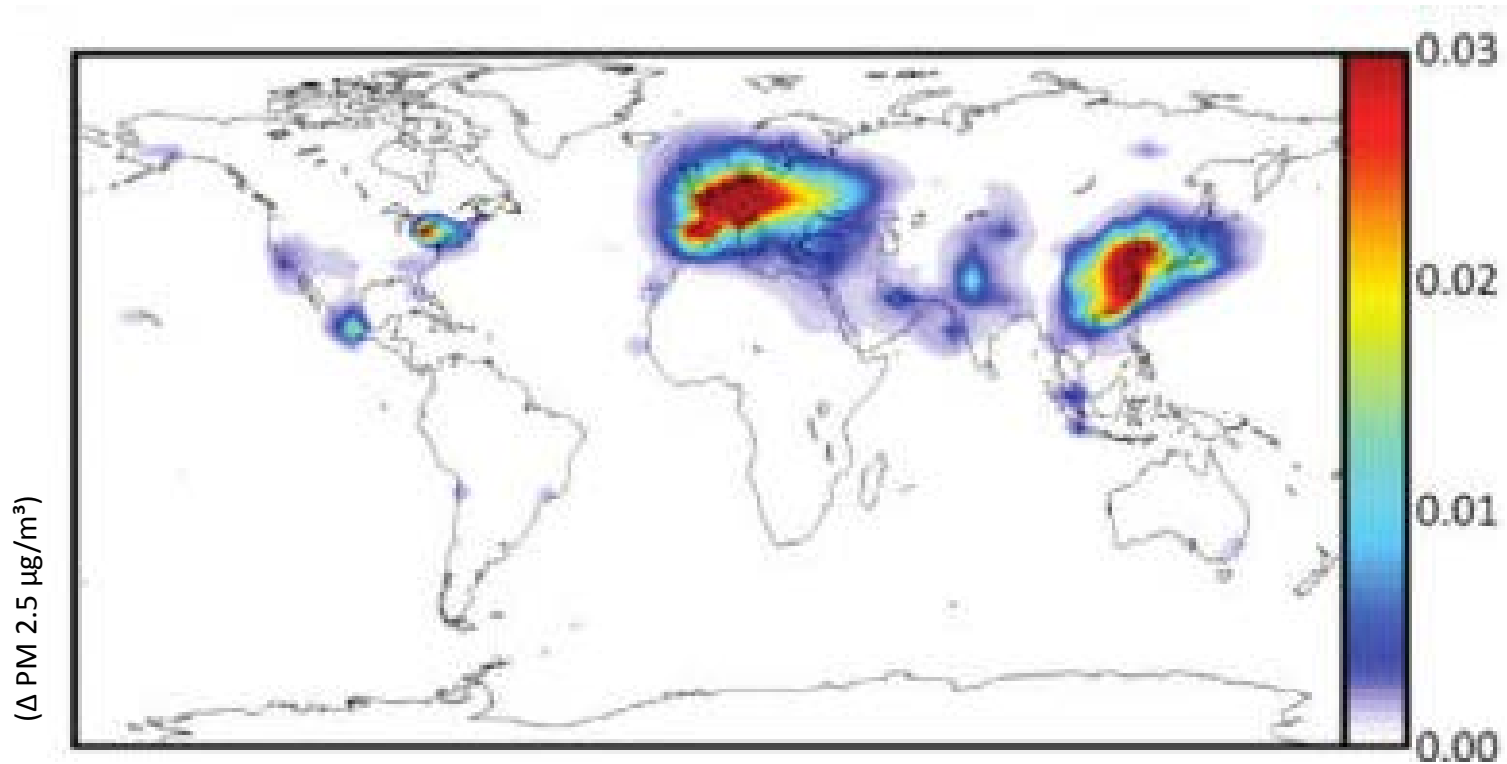
For an LTO cycle a plane emits as many NO<sub>x</sub> as 15 lorries each traveling a distance of 100 km

**When considering diesel, no one thinks planes!**

Evidence of the emission by planes of ultra fine particles – the more dangerous for health - in the neighbourhood of airports was established by various studies around Copenhagen and Los Angeles ([UCLA studies](#) for the latter)

All industrial sectors have put in place catalytic NO<sub>x</sub> abatement systems in Europe. In the transport industry, lorries have been equipped since 2006, since 2010 in the US. Diesel cars will be equipped as from 2016

**NO<sub>x</sub> abatement and particles : there is no economical and viable solution to suppress or even limit their emission for aircrafts so far**



## PM 2.5 emitted during LTO cycle

([Steven R. H. Barrett](#) - Department of engineering, University of Cambridge, Trumping Street CB2 1PZ, U.K., and Department of Aeronautics and Astronautics, Massachusetts Institute of Technology, Cambridge Massachusetts)

## EMISSIONS AND HEALTH

NOx and particles (the finest the more dangerous) are very irritating for bronchi

**no protection against them  
an invisible enemy**

Effect on Health: increase of lung / bronchi diseases in the vicinity of airports

- Infant bronchiolitis
- Asthma – the number of persons suffering from asthma has doubled in the last 20 years
- Cardiovascular diseases
- Cancer (WHO claims that diesel has proven with certainty to cause cancer)
- Death

Among the residents in the vicinity of airports, infants, children and elderly are the more affected

# ECONOMIC NEGATIVE IMPACTS

Although numerous studies show the direct impact of air transport on the environment (pollution and living conditions) and on health, there are very few studies on the cost of this impact in Europe

Some member states may appear more concerned or transparent (UK, Netherlands)  
Others keep the information to themselves / no public documents (e.g. France)

## PUBLIC FINANCING

The amount of state aids and subsidies are often disguised and thus difficult to assess. However, air carriers have been condemned, the commission has pointed out irregularities.

France, Germany, Italy, even the US and other states have supported the aviation industry injecting billions of euros over the last decades to save air carriers

Exemption of energy tax, ETS and VAT could easily be quantified

Contribution to global warming (5%) – Some studies exist (Lord Nicolas Stern – the Global Commission on the Economy and Climate)

## SOCIAL IMPACTS

- The loss of real property and rental values have been quantified in the neighbourhood of many airports since the early sixties
- Impoverishment in the vicinity of airports results in a lesser capacity of the population to spend locally

**Would it not be logical that polluters compensate ?**

## HEALTH

There is an evident correlation between air transport and impaired health for the populations

But only very few studies assessing the costs for society of health impacts specific to air transport

Each individual disease has a cost. All states have local studies assessing this cost.

Two days ago, the presentation in France of “Pour un plan Coeur” (For a heart strategy) mentioned that 25 billions euros were spent every year in France to fight heart and blood vessels diseases. How many of these 25 billions are due to air transport noise and pollutants? (Le Monde n°21697 dated 21 October 2014)



# CONCLUSION

The negative impacts of air transport have long been recognised and pointed out but the work will remain unachieved until the costs of these impacts will not be assessed

As long as the negative impacts of air transport will not be quantified in a fair and accurate cost study, the economic studies delivered to states and local authorities to justify the creation of new airports and the expansion and development of existing airports will contain disinformation

How can politicians make their minds and take decisions on the basis of such inaccurate information? Their aim is to protect overflown population and health as well

In 2007 Eurocontrol already mentioned the lack of valuation of the adverse impacts of aviation ([EEC Note No. 09/07](#)) but no further steps were taken. When will the actors decide that it is time to actually do something?

**The expectations of the overflown population must be taken into account**

**Public authorities must assume their responsibilities**

**The polluter-pays principle must apply**

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Open Rome Dr Cohen voir site [www.idf.fr](http://www.idf.fr)

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Aircraft noise and cardiovascular disease near Heathrow airport in London: small area study. Anna L Hansell *assistant director 1 honorary consultant 2*, Marta Blangiardo *non-clinical lecturer in biostatistics1*, Lea Fortunato *research associate1*, Sarah Floud *PhD student1*, Kees de Hoogh *senior research officer1*, Daniela Fecht *research associate1*, Rebecca E Ghosh *research associate1*, Helga E Laszlo *acoustician 1*, Clare Pearson *research assistant 1*, Linda Beale *honorary research fellow*, Sean Beevers *senior lecturer in air quality modelling 3*, John Gulliver *lecturer in environmental science1*, Nicky Best *professor in statistics and epidemiology1*, Sylvia Richardson *visiting professor in biostatistics 1 director 4*, Paul Elliott *director 1*

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Residential exposure to aircraft noise and hospital admissions for cardiovascular diseases: multi-airport retrospective study. Andrew W Correia *quantitative analyst 1*, Junenette L Peters *assistant professor 2*, Jonathan I Levy *professor2*, Steven Melly *geographic information systems specialist3*, Francesca Dominici *professor, associate dean of information technology 4*

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