



# CEDR Project Group Noise Value for Money in Noise Abatement

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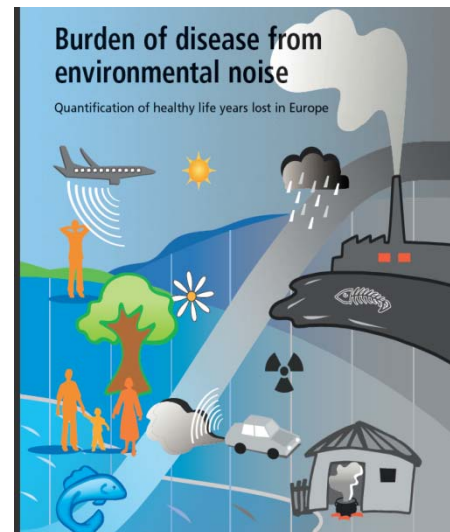
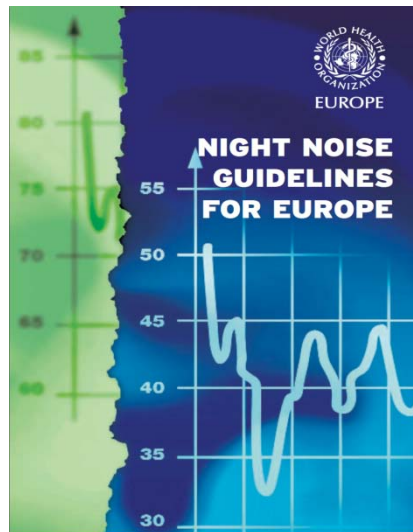
CEDR = Conference of European Directors of Roads

# Background

- ✓ CEDR is a non-profit organisation with 24 member countries in Europe.
- ✓ 17 nations participates in the CEDR Project Group Noise
- ✓ Goals for CEDR (Thematic Domain Construction)
  - Develop and share knowledge on a sustainable infrastructure
  - Take appropriate action on EU directives
  - Monitor European lawmaking
  - Establish and update modern standars in line with the objectives of the National Road Authorities

# Noise and health effects

- CEDR Project Group Noise acknowledge the fact that road traffic noise is an increasing problem, and that noise leads to severe health effects.



# Comparison of noise abatement measures

- ▶ Traditional measures like noise barriers, façade insulation and low noise road surfaces are compared to reduction in vehicle noise
- ▶ As road authorities, the Noise group has in this work not tried to go into details concerning vehicles and their noise behavior, but strictly stick to information available in the TNO-report, assigned by the EU Commission, DG Enterprise and Industry.

# Approach

- ✦ Invest the same amount of money
  - 6 billion Euros, this is the cost for the option 5 in the TNO report
- ✦ See every measure in 20 years perspective
  - Some noise measures can have all money invested at once
  - Some need investment + maintenance
- ✦ Analyse the effect: the reduction in noise annoyance
  - Out of the 514 million people in Europe in 2010 (EU27 + CH + NO) there are 98 million annoyed by road traffic noise

# Initial investment and volume of abatement measure

	Initial investment in billion €	Cost per unit	Volume of abatement measure	People affected per unit
Noise barrier	3,627	€1 600 per m	2 584 km	1000 per km
Facade	6	€3000 per dwelling	2 mill dwellings	2,2 per dwelling
Porous asphalt single layer	2,2072	€2,14 per m <sup>2</sup>	40 232 km	1000 per km
Porous asphalt double layer	1,667	€10,45 per m <sup>2</sup>	6 380 km	1000 per km
Thin layer	4,799	€1,5 per m <sup>2</sup>	177 740 km	500 per km
Vehicle op. 5	5,993		All vehicles	All people exposed to traffic noise (> 40 dB)

# CEDR Project Group Noise - results

Measure	Noise reduction	Reduction in annoyance score	Limitations on use	Cost per reduction in annoyance (per year)
Vehicle noise reduction	3 dB	19,7 mill	None	€15
Thin Layer asphalt	2 dB	2,4 mill	Not motorways (with high speed and density)	€125
Porous asphalt single layer	2 dB	1,1 mill	Only motorways (high speed)	€280
Façade insulation (2 windows)	8 dB	0,8 mill	None, but indoor effect only	€400
Porous asphalt double layer	4 dB	0,3 mill	Only motorways (high speed)	€900
Noise barrier	8-1 dB	0,2 mill	Not in city center	€1 800

# Conclusions

- ✦ The road authorities are doing noise abatement measures all over Europe
- ✦ There will always be a need for local measures with a high noise reducing effect
- ✦ In general, handling noise at the source is the most cost effective measure to reduce noise annoyance



- ✦ To reduce the noise annoyance problem in Europe, new and stricter noise limits for vehicles are very important