

International approaches to monetising the health impacts of transport noise

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Introduction

- Why monetise noise
- Approaches to monetization
- A health based approach (Damage costs)
- WHO (2018)
- Europe 2020
- Comparison with MCBM / EEM

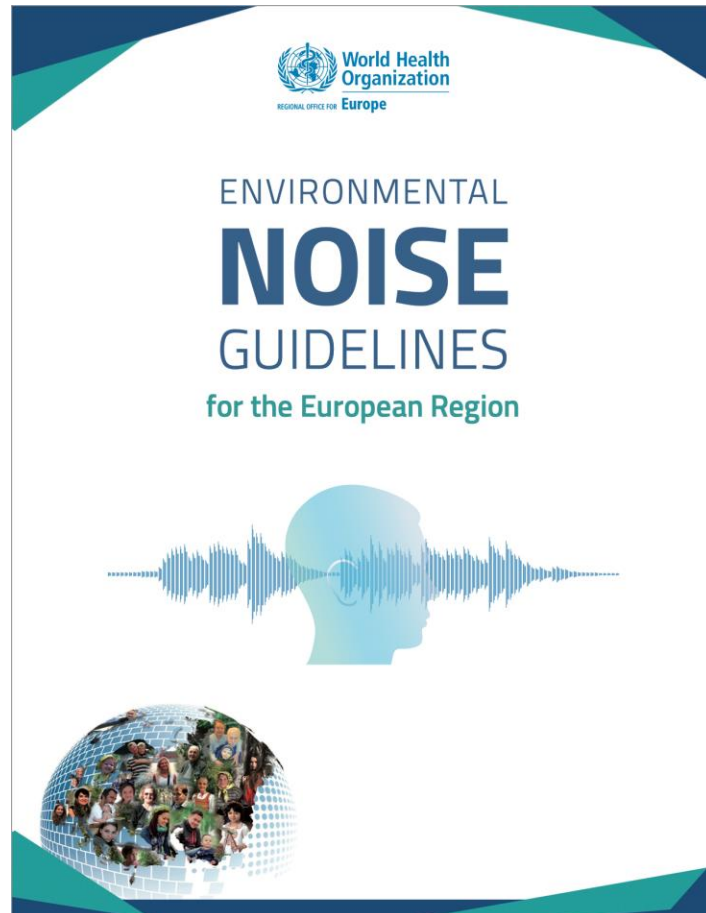
Why monetise health impacts?

- Enables comparison between other factors (eg. emissions)
- Aid policy on mode shifts / investment
- Evaluation of routes / mitigation on specific projects

Approaches to monetisation

- Stated preference based on willingness to pay surveys
- Revealed preference as observed in changes in house prices (ie. hedonic)
- Health-based damage-cost assessment

WHO (2018)



Road traffic noise

Recommendation

For average noise exposure, the GDG strongly recommends reducing noise levels produced by road traffic below **53 decibels (dB) L_{den}** , as road traffic noise above this level is associated with adverse health effects.

For night noise exposure, the GDG strongly recommends reducing noise levels produced by road traffic during night time below **45 dB L_{night}** , as night-time road traffic noise above this level is associated with adverse effects on sleep.

To reduce health effects, the GDG strongly recommends that policy-makers implement suitable measures to reduce noise exposure from road traffic in the population exposed to levels above the guideline values for average and night noise exposure. For specific interventions, the GDG recommends reducing noise both at the source and on the route between the source and the affected population by changes in infrastructure.

Strength

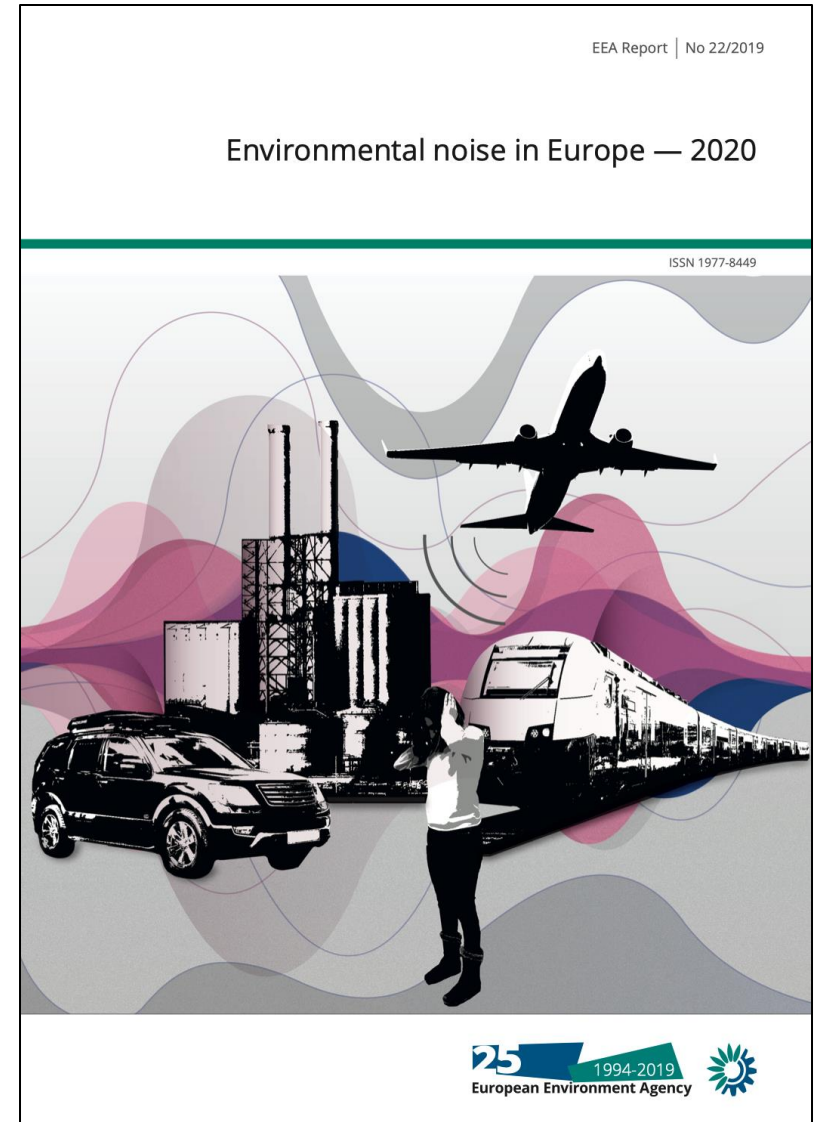
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Strong

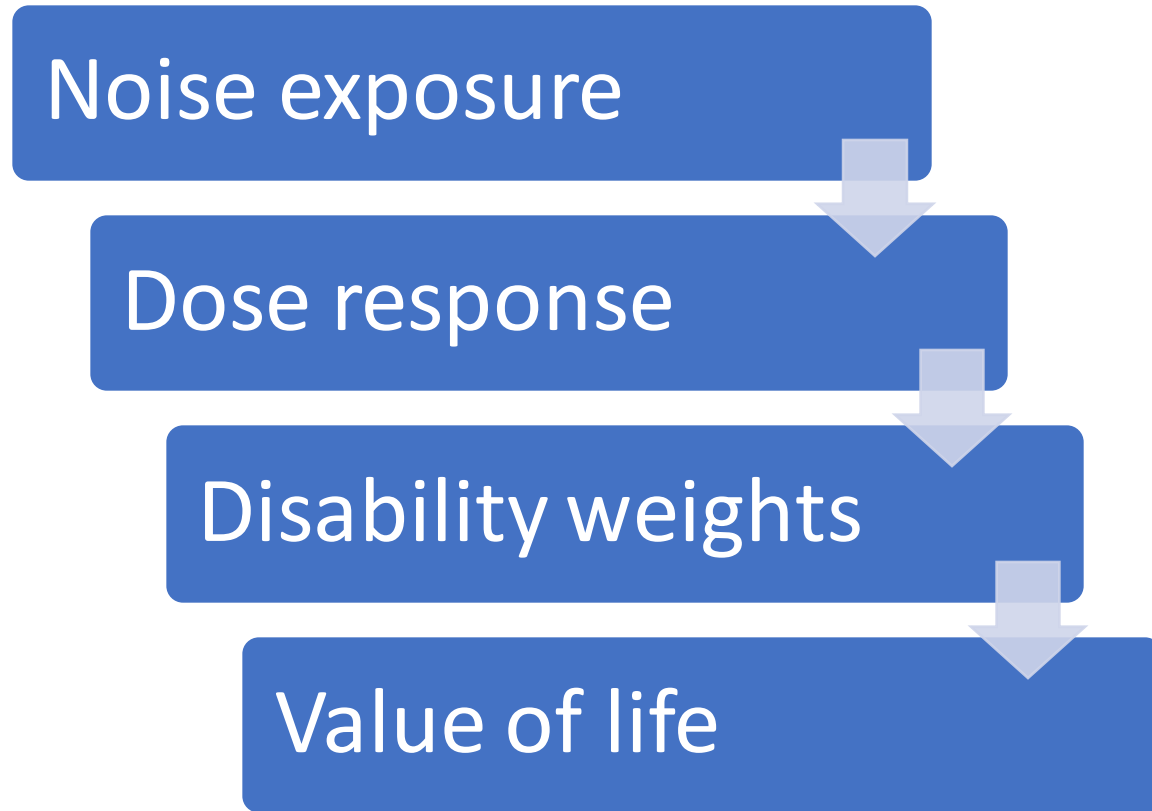
Strong

Europe 2020

- Current noise situation via END
- Estimation of health effects including a method
- Inequalities and vulnerability



Process for assessing health costs

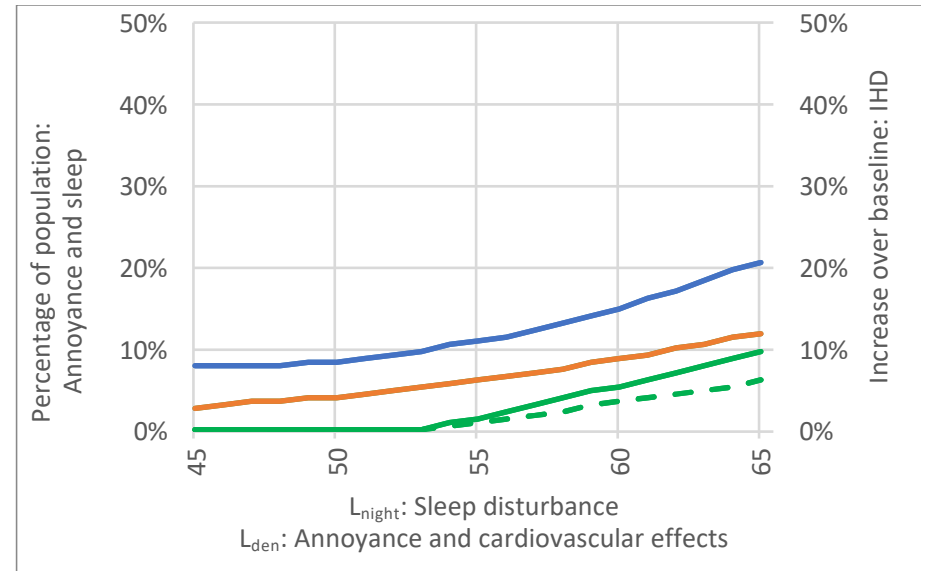


Health effects

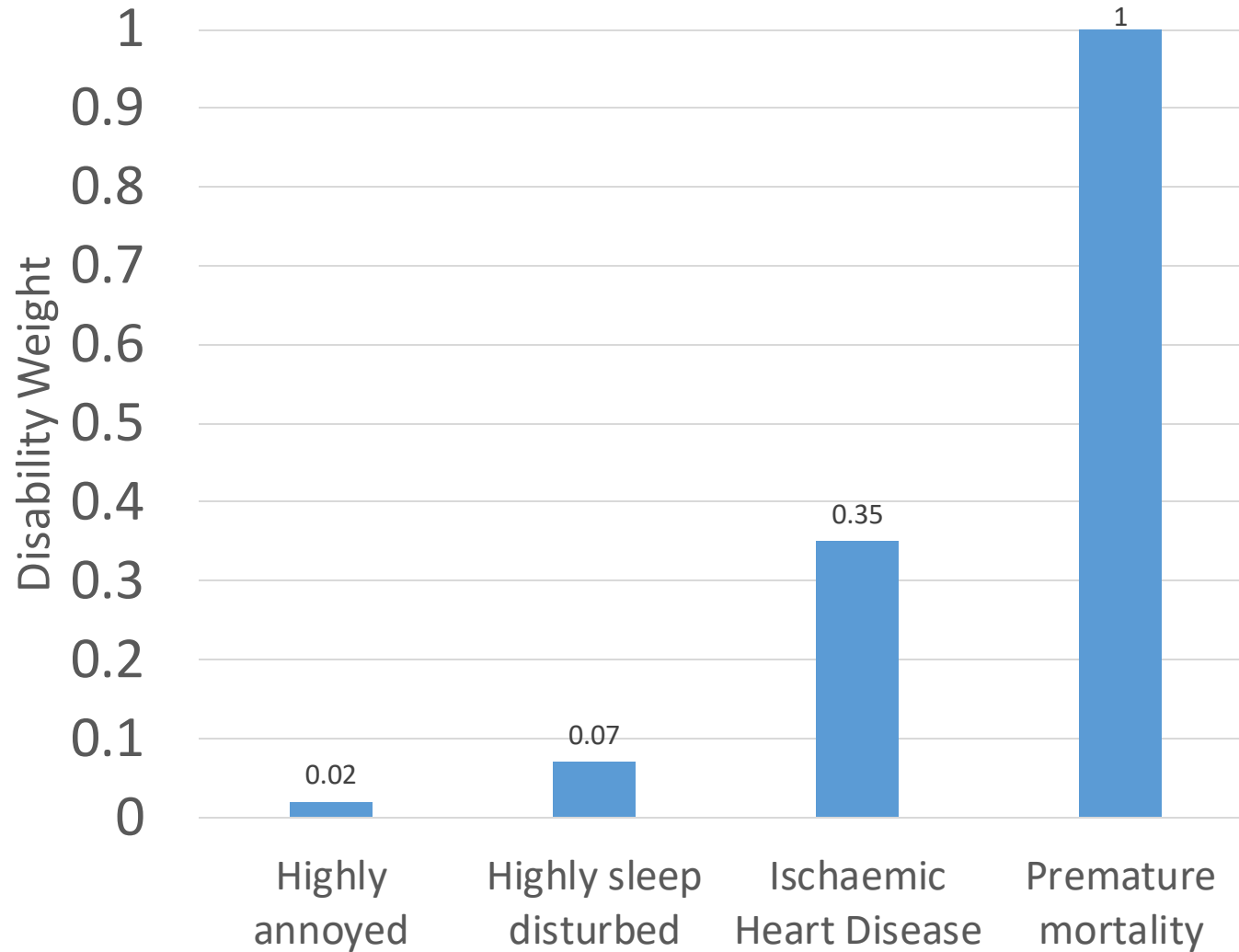
- Annoyance
- Sleep disturbance
- Heart disease
- Death from heart disease

Dose response

- Identifies percentage of population affected by each condition
- Determined by longitudinal health studies and surveys



Disability Weight

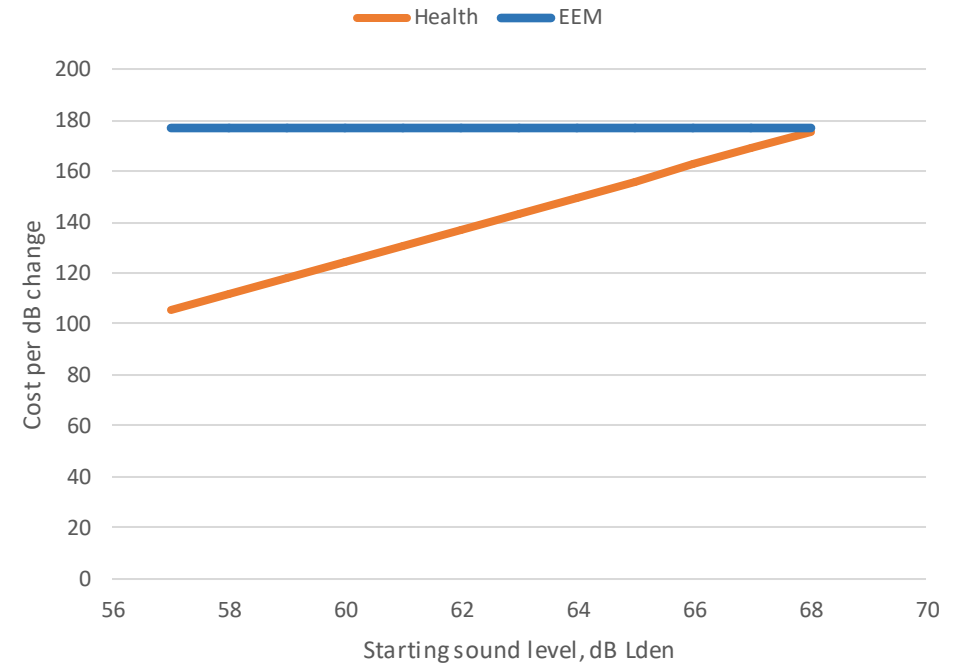


Example calculation

External sound level	Effect	Per 1000 people		Total cost
		Population	DALYs	
57 dB Lden	Highly annoyed	124	2.5	\$1266 per person per year
	Highly sleep disturbed	50	3.5	
	IHD	1.53	0.536	
	PM	0.01	0.010	

Comparison with EEM

- Does not calculate absolute cost
- Marginal cost (per dB change)
- EEM appropriate for higher noise exposures



Summary

- Strong evidence of health effects from noise
- Health effects can be calculated readily based on noise exposure
- EEM comparable at higher exposures, but does not provide a total cost