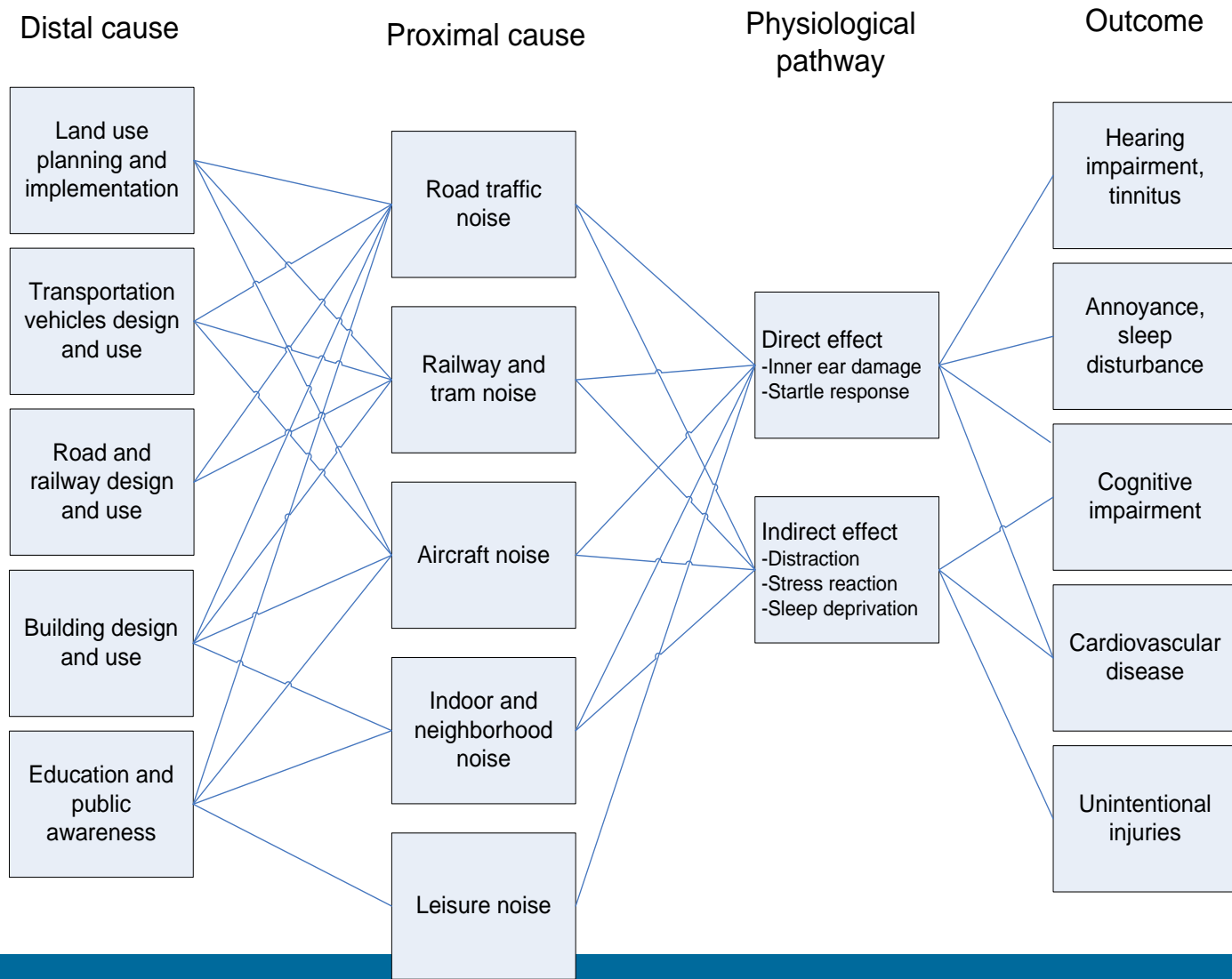


Burden of Disease from Environmental Noise

Dr Rokho Kim

WHO Regional Office for Europe
European Centre for Environment and Health
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Relationship between noise and health



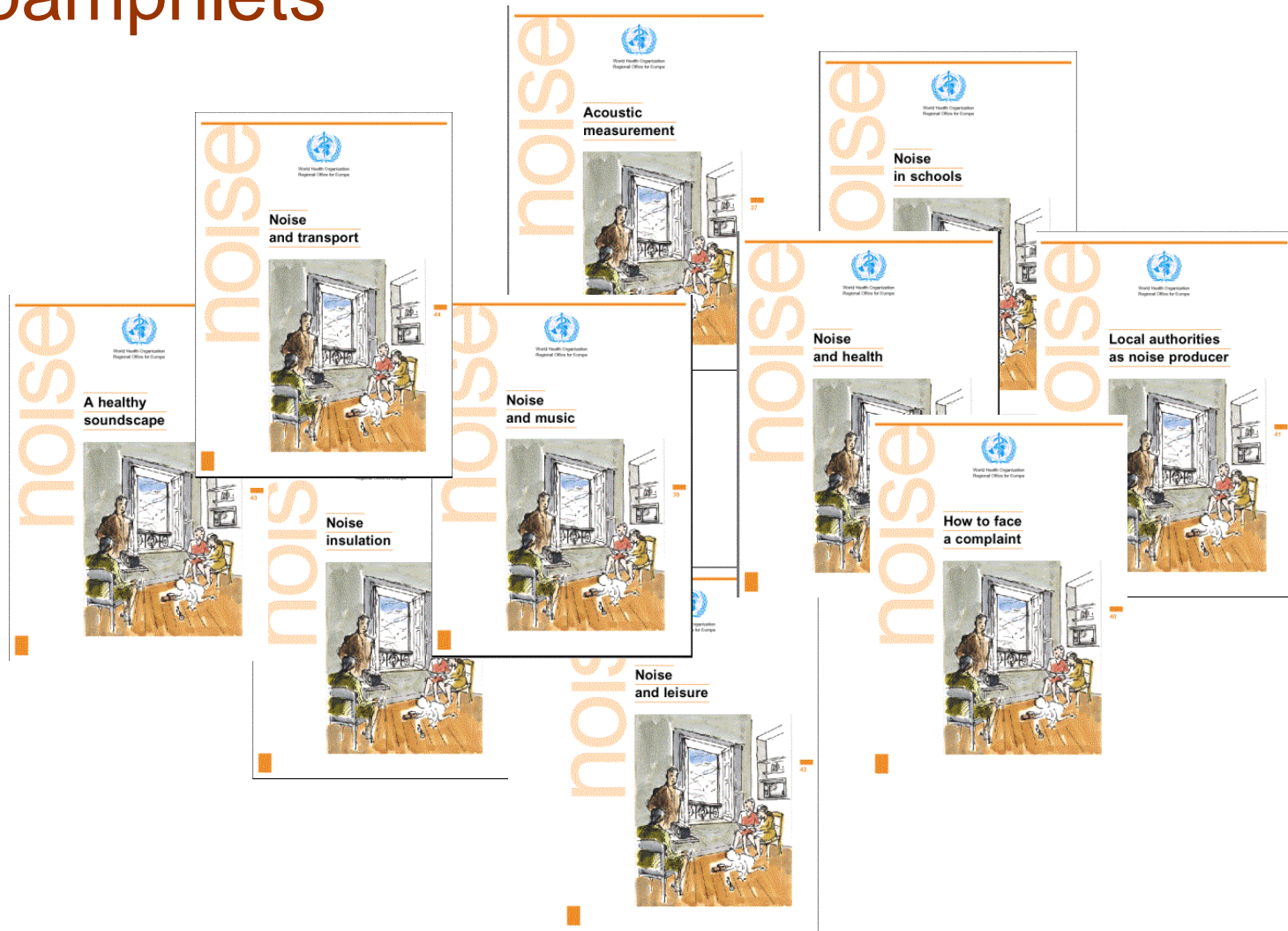
WHO's work on noise and health

- Briefing pamphlets for local authorities
- Evidence-based policy guidance with limit values
 - Guidelines for Community Noise (CNG)
 - Night Noise Guidelines for Europe (NNG)
- Evidence review and health impact assessment
 - Burden of disease from environmental noise
 - Aircraft noise and health

WHO and EC collaborations on noise

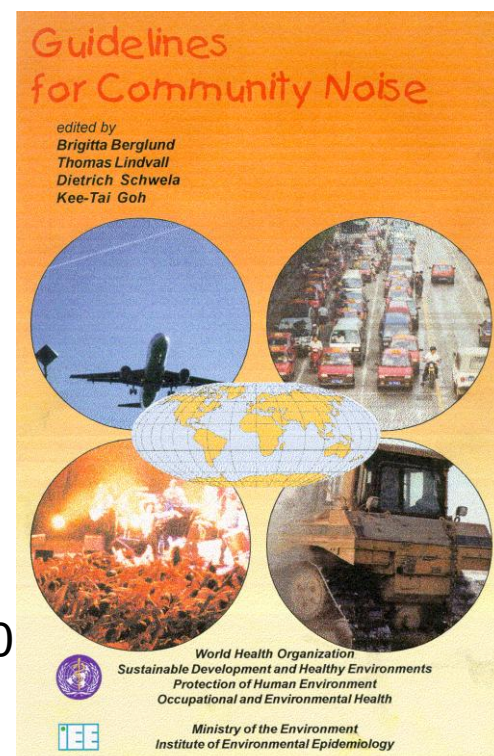
- DG SANCO supported WHO for NNG development
- Joint ventures between WHO and JRC:
 - Burden of diseases from environmental noise
 - Aircraft noise and health
 - Training of noise experts in the EU, accession countries and newly independent states
 - Standardization of methods to estimate burden of disease within the framework of CNOSSOS-EU
- Joint workplan of WHO, DG ENV, JRC, and EEA

Briefing pamphlets



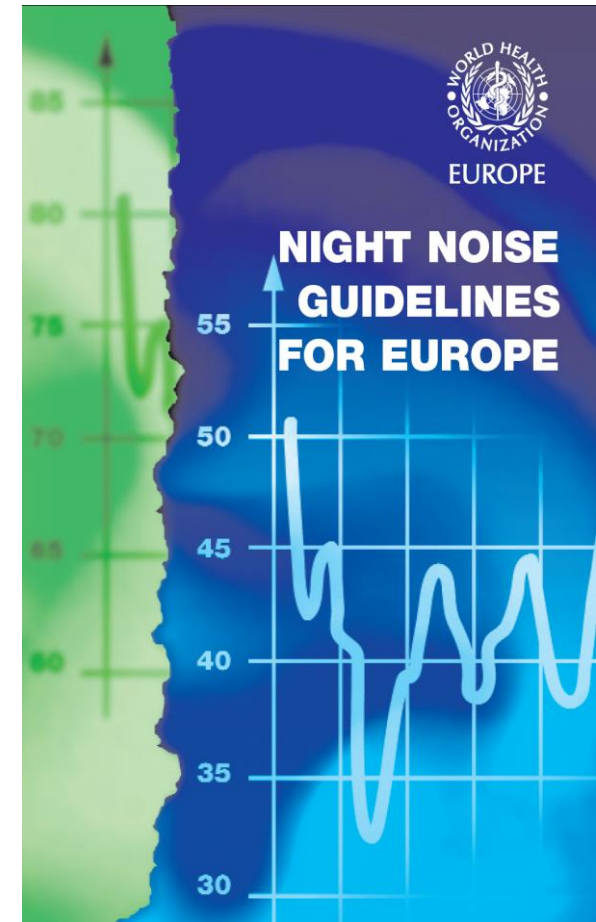
WHO Guidelines for Community Noise

Environment	Critical health effect	Recommended maximum sound level dB(A) L_{eq}
Outdoor living areas	Annoyance	50 - 55
Indoor dwellings	Speech intelligibility	35
Bedrooms	Sleep disturbance	30
School classrooms	Disturbance of communication	35
Industrial, commercial and traffic areas	Hearing impairment	70
Music through earphones	Hearing impairment	85
Ceremonies and entertainment	Hearing impairment	100
Occupational environment	Hearing impairment	85



WHO Night Noise Guidelines for Europe

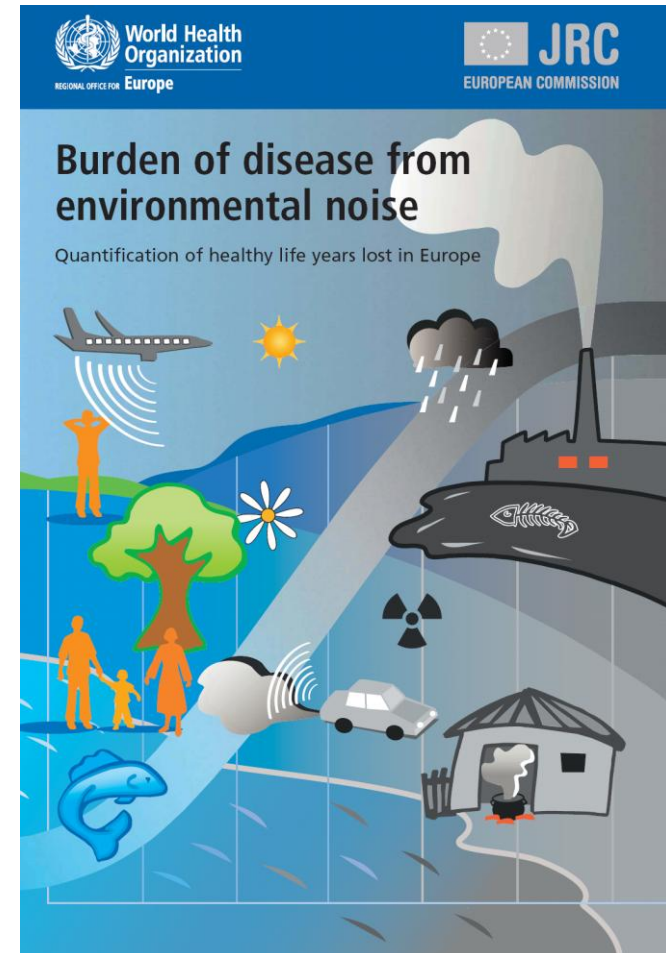
- No substantial biological effects up to 30 dB L_{night}
- Night Noise Guideline (NNGL) 40 dB L_{night}
- Interim Target (IT) 55 dB L_{night}
 - Public health concern due to increased risk of cardiovascular diseases



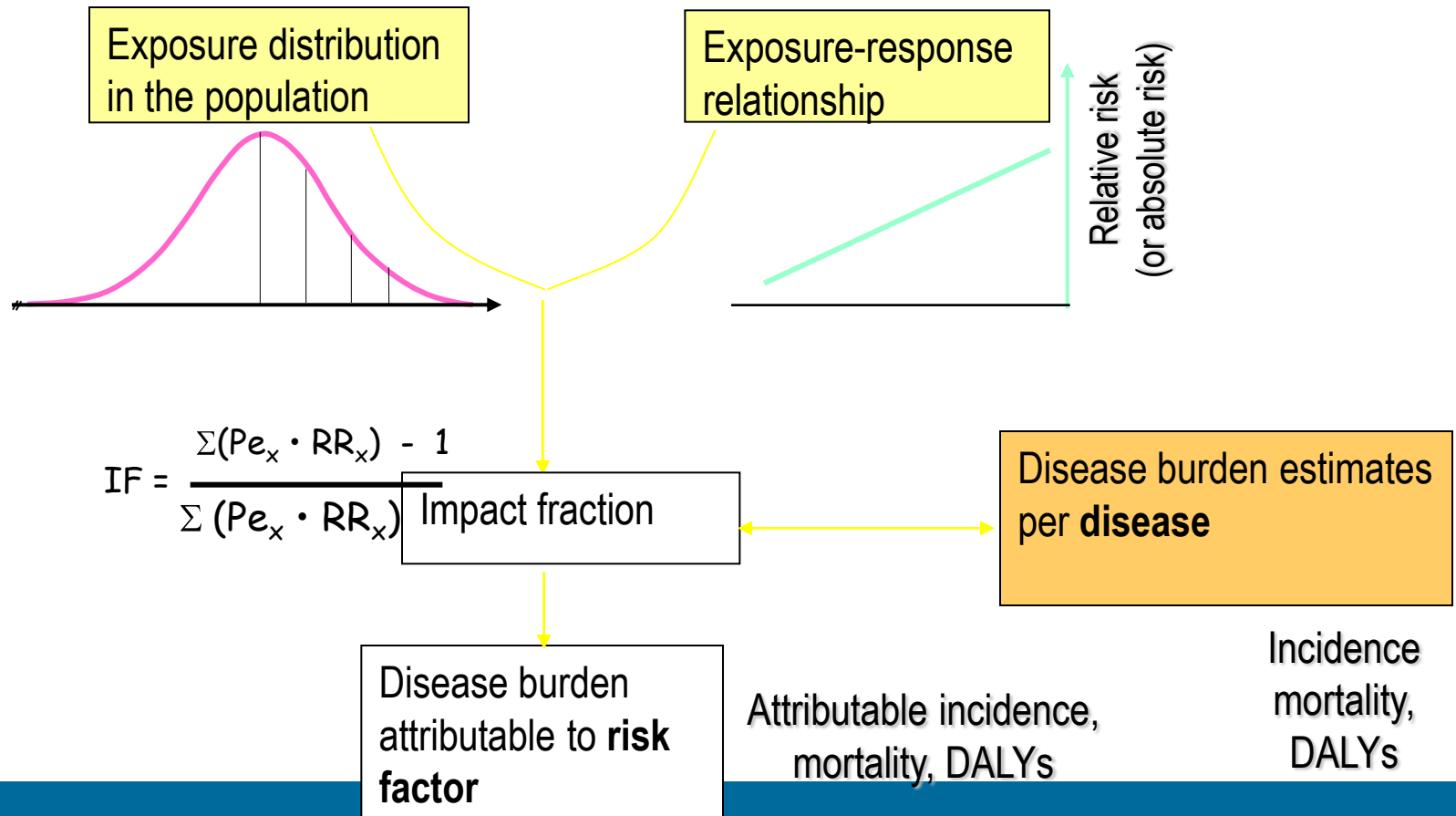
Burden of disease from environmental noise

Health outcomes considered

- Cardiovascular disease
- Cognitive impairment
- Sleep disturbance
- Tinnitus
- Annoyance



Method of calculating burden of disease



DALYs (Disability-Adjusted Life Years)

The sum of years of life lost due to ill-health, disability or early death

$$\text{DALYs} = \text{YLD} + \text{YLL}$$

Years Lived with Disability + Years of Life Lost

One DALY is equivalent to one year of healthy life lost.

Results

Every year in the EU cities, at least:

- 61 000 DALYs for ischaemic heart disease
- 45 000 DALYs for cognitive impairment
- 903 000 DALYs for sleep disturbance
- 22 000 DALYs for tinnitus
- 654 000 DALYs for annoyance

1~1.6 million healthy life years are lost every year from traffic noise in the EU cities.

Sleep disturbance and annoyance related to road traffic noise comprise the main burden.



Conclusion

- Noise pollution is a major environmental and public health burden, second only to the air pollution.
- Quantification of disease burden provides health arguments for further improvement of the EU Noise Policy.
- Existing WHO guidelines are useful for policy-makers, but:
 - *WHO Night Noise Guidelines (2009)* is only for night noise;
 - *WHO Guidelines for Community Noise (1999)* needs update;
 - No guidelines address new issues like wind turbine noise.
- Upcoming revisions of the EU directives on noise can provide opportunities to base the EU Noise Policy on updated limit values using harmonized noise indicators (L_{den} and L_{night}).
- WHO will work with the EU and the Member States to develop suitable guidelines on noise following up the Parma Declaration.

For further information

The Parma Declaration on Environment and Health:

“We call upon all stakeholders to work together to reduce children’s exposure to noise, including that from personal electronic devices, recreation and traffic, especially in residential areas, at child care centres, kindergartens, schools and public recreational settings. We urge and offer our assistance to WHO to develop suitable guidelines on noise.”

<http://www.euro.who.int/en/who-we-are/policy-documents/parma-declaration-on-environment-and-health>

WHO/Europe Noise and Health Programme

<http://www.euro.who.int/en/what-we-do/health-topics/environmental-health/noise>

Burden of disease from environmental noise

http://www.euro.who.int/data/assets/pdf_file/0008/136466/e94888.pdf

Night noise guidelines for Europe

<http://www.euro.who.int/noise>

Guidelines for community noise

<http://whqlibdoc.who.int/hq/1999/a68672.pdf>



Thank you very much!