Night Noise Guidelines for Europe

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The Process

- EU-grant 2003 for WHO (DG-SANCO)
  - Provide expertise and scientific advice to the Commission and to its Member States for supporting them when developing future legislation in the area of night noise exposure control and surveillance.
- Experts group reviewed available evidence:
  - sleep behaviour, sleep disorders, acoustics, psychology, epidemiology, risk assessment...

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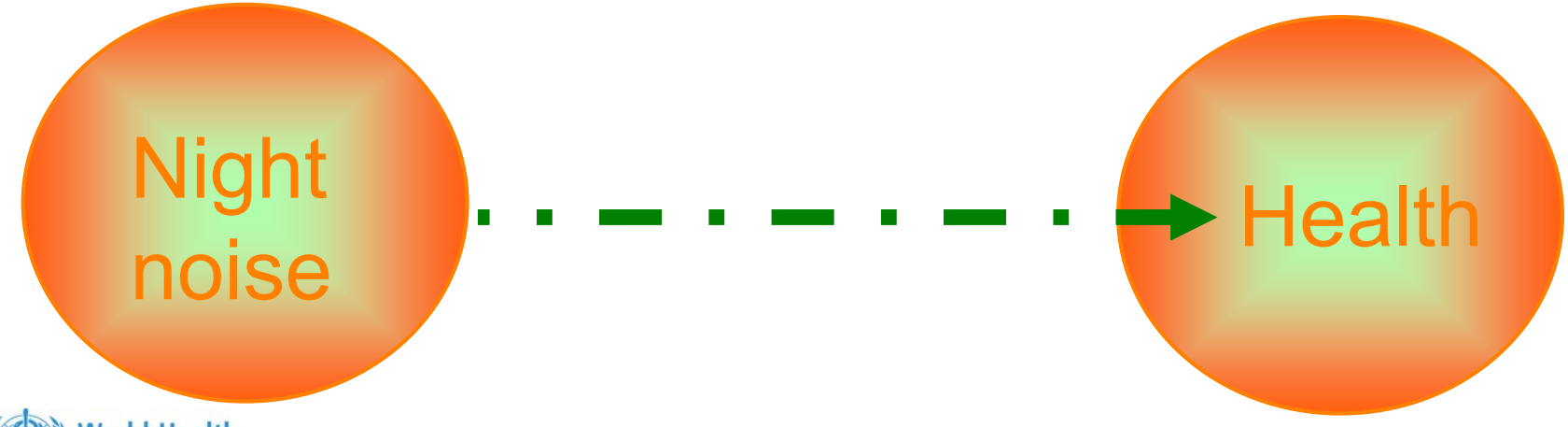
Basic Concept



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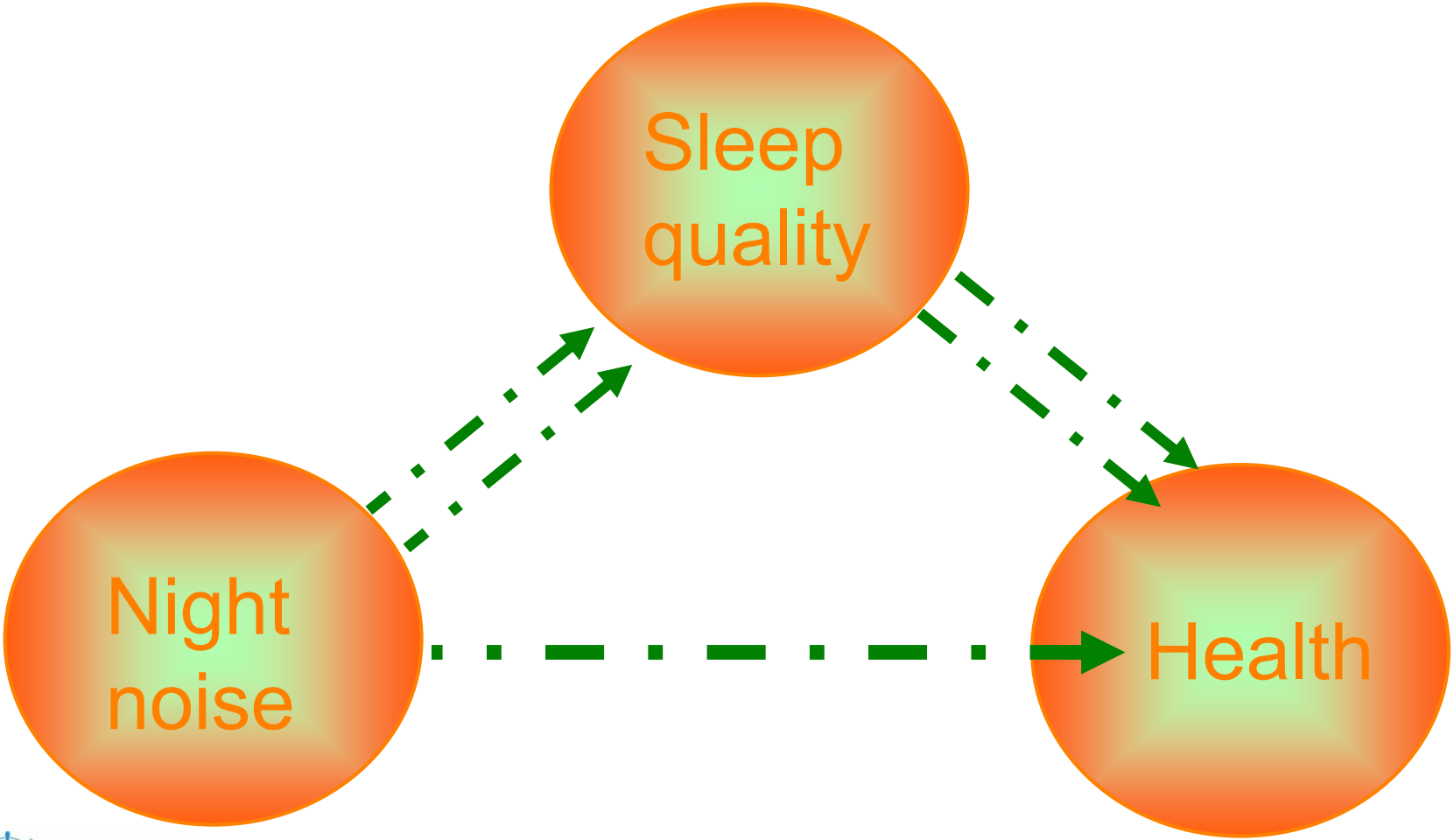
Basic Concept



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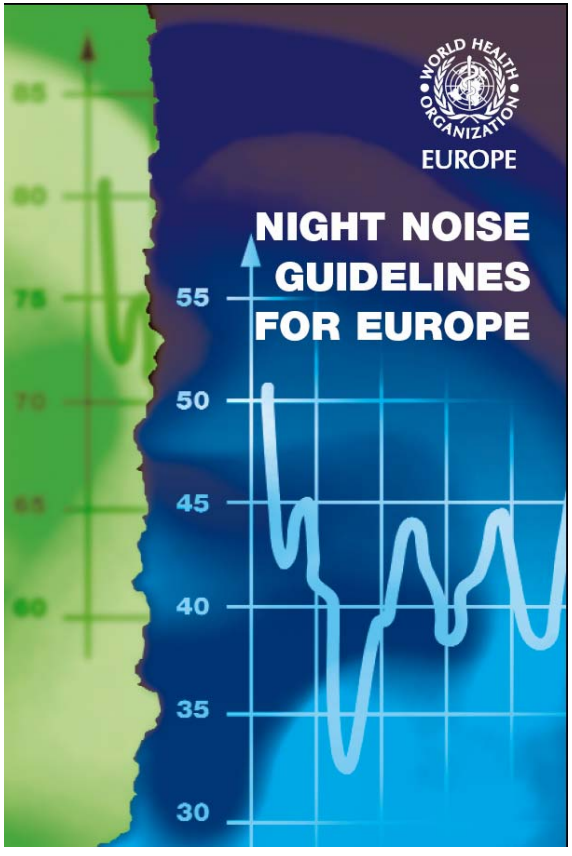
Results

- Guideline document
  - ~160 pages, ~700 references
  - Final publication expected 2008
- Contributions on
  - Sleep and health
  - Night noise and sleep
  - Night noise and health
- Dose-response relations
- Consensus meeting
  - General agreement on conclusions



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Thresholds with *sufficient* evidence

	Effect	Indicator	Threshold
Biological effects	Change in cardiovascular activity>	*	*
	EEG awakening	LAmax,inside	35 dB
	Motility, onset of motility	LAmax,inside	32 dB
	Fragmentation of sleep structur>	LAmax,inside	35 dB
Sleep quality	Waking up in the night	LAmax,inside	42 dB
	Prolongation sleep latency	*	*
	Sleep fragmentation, reduced sleeping time >	*	*
	Increased average motility	Lnight,outside>	42 dB
Well-being	Self-reported sleep disturbance>	Lnight,outside>	42 dB
	Use of somnifacient drugs and sedatives >	Lnight,outside >	40 dB
Medical conditions	Environmental insomnia	Lnight,outside >	42 dB

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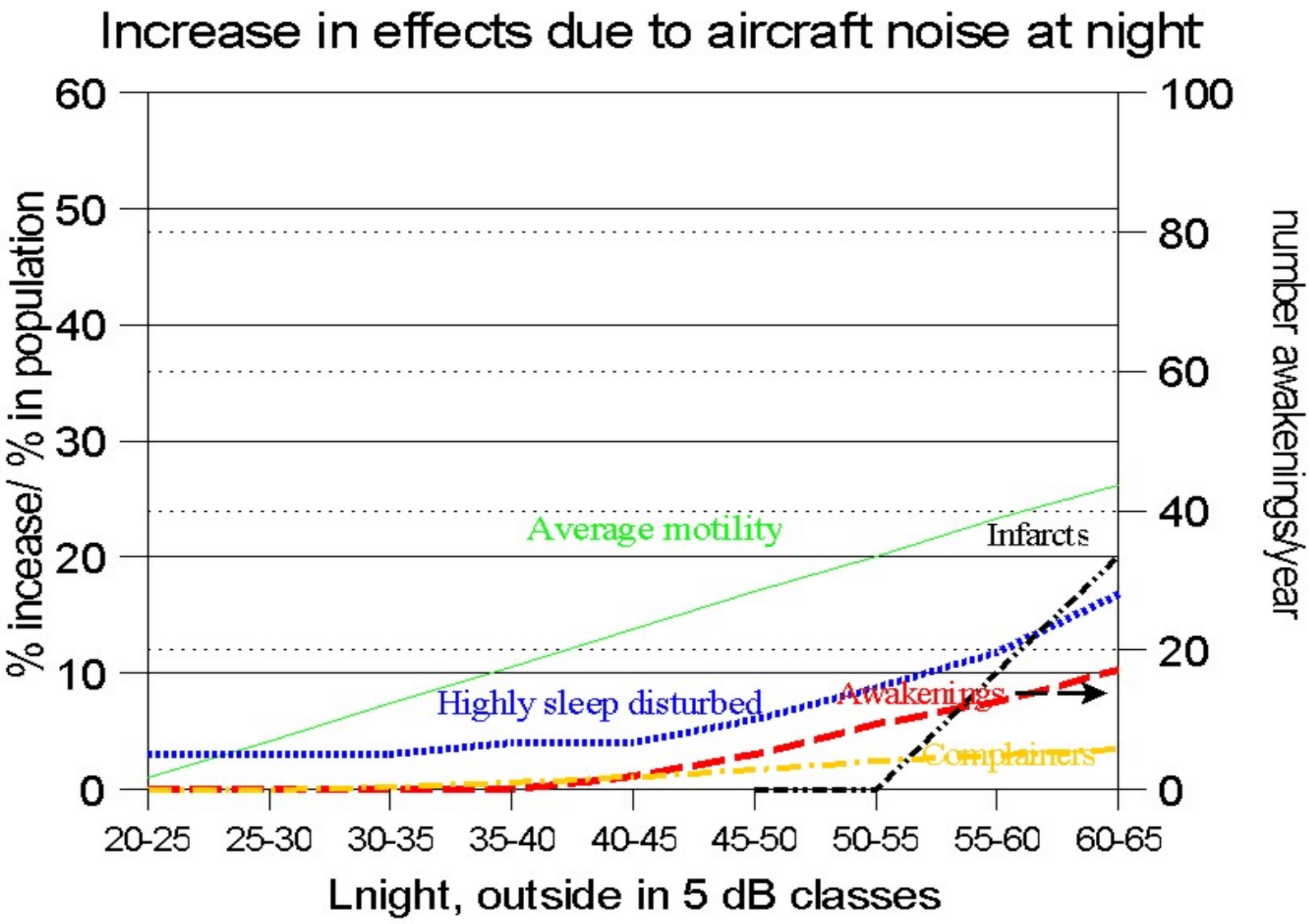
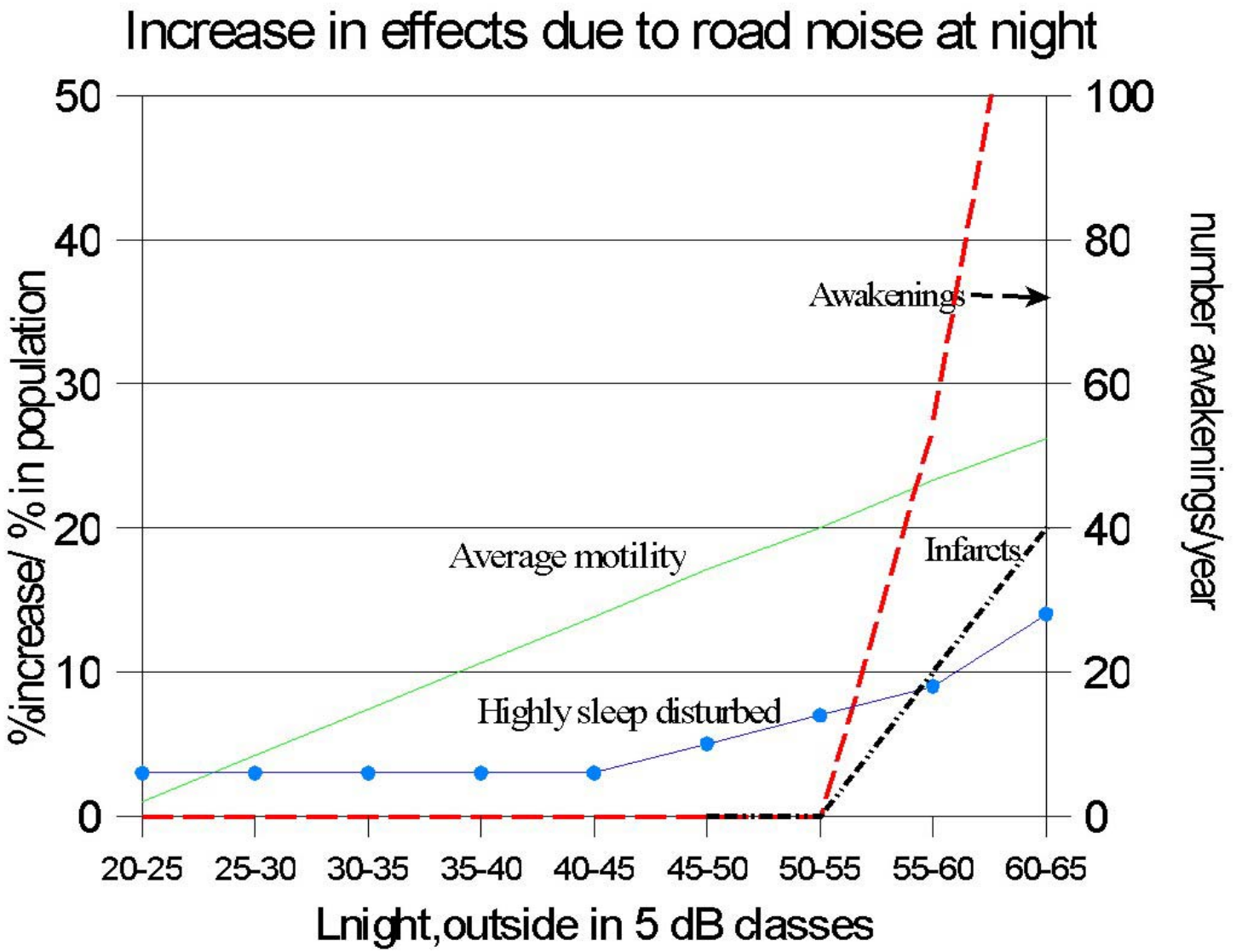

Increase in effects due to aircraft noise at night
% incease/ % in population
number awakenings/year
60
50
40
30
20
10
0
100
80
60
40
20
0
Average motility
Infarcts
Highly sleep disturbed
Awakenings
Complainers
20-25
25-30
30-35
35-40
40-45
45-50
50-55
55-60
60-65
Lnight, outside in 5 dB classes


Increase in effects due to road noise at night
50
40
30
20
10
0
100
80
60
40
20
0
%increase/ % in population
number awakenings/year
Awakenings
Average motility
Infarcts
Highly sleep disturbed
20-25
25-30
30-35
35-40
40-45
45-50
50-55
55-60
60-65
Lnight,outside in 5 dB classes

Effects in terms of L_{night}

- Although individual sensitivities and circumstances differ, it appears that up to a $L_{night,outside}$ of **30 dB** no substantial biological effects are observed.
- From a $L_{night,outside}$ of **30 to 40 dB** a number of effects are observed to increase. However, even in the worst cases the effects seem modest. It cannot be ruled out that vulnerable groups (for example children, chronically ill, elderly) are affected to some degree.

Effects in terms of L_{night}

- From a $L_{night,outside}$ of **40 to 55 dB** there is a sharp increase in adverse health effects, and a substantial proportion of the exposed population is now affected and adapt their lives to cope with the noise. Vulnerable groups are now severely affected
- Above a $L_{night,outside}$ **of 55 dB** the situation is considered dangerous for public health. Adverse health effects occur frequently, a high percentage of the population is highly annoyed, and there is limited evidence that the cardio-vascular system is coming under stress.

Proposed Guidelines for Night Noise

Interim target I (IT-I)	$L_{night,outside} = 55$ dB
Interim target II (IT-II)	$L_{night,outside} = 40$ dB
Night Noise Guideline (NNG)	$L_{night,outside} = 30$ dB

Merci beaucoup

The final document will be printed and posted on www.euro.who.int/noise in 2008.

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