Community and Policy Perspectives on Noise Exposure

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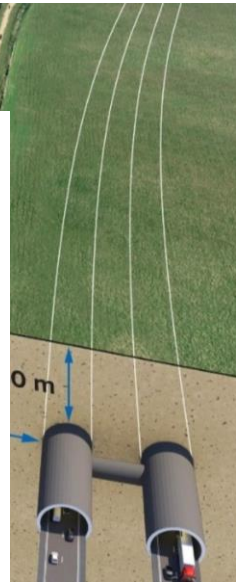
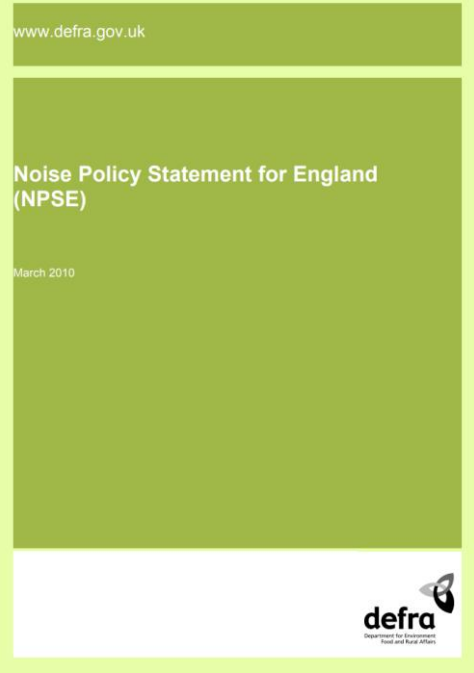
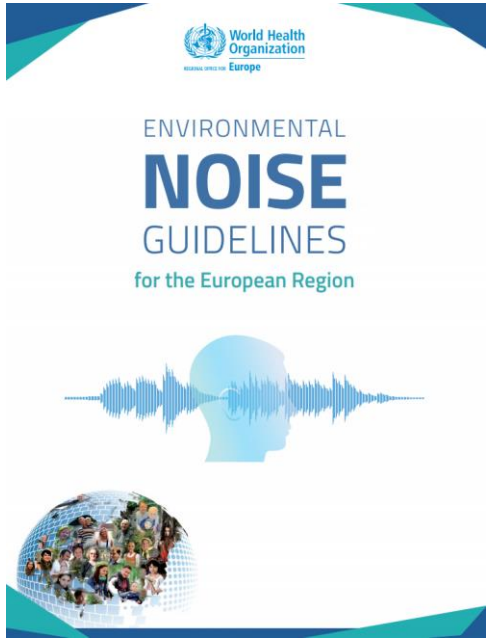
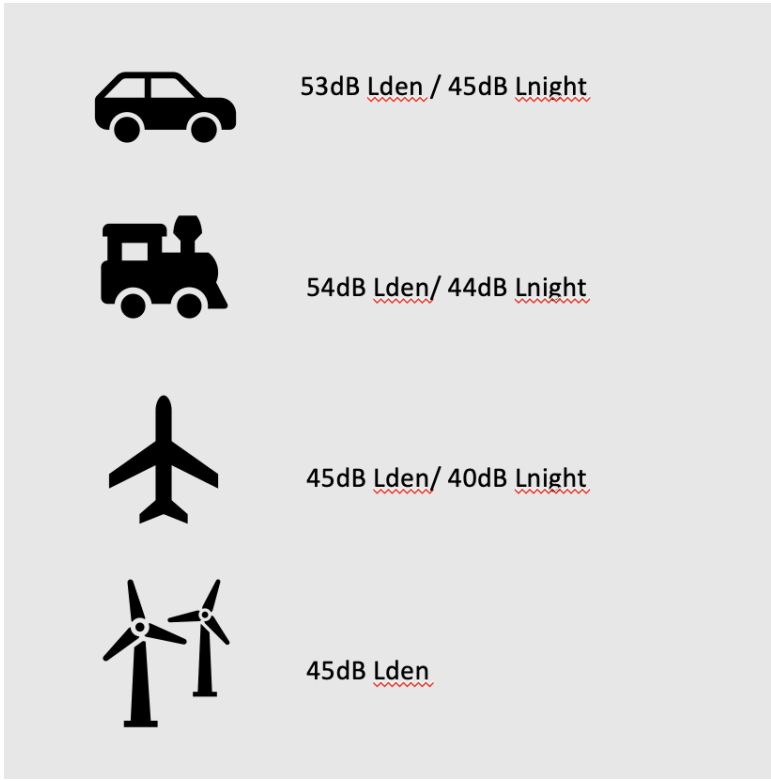
Community response to noise



Health-evidence informed policy







Avoid significant adverse impacts on health and quality of life

Mitigate and minimise adverse impacts on health and quality of life

Where possible, contribute to the improvement of health and quality of life

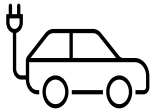
40% of English population exposed to road traffic noise levels above 50dB Lden (~17m adults)

You never turn your ears off

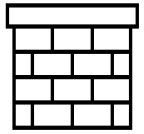
- In evolutionary terms, we are hardwired to respond to sound.
- It aids our fight or flight responses.
- Sound alerts us to danger.
- The disadvantage of this is that you biologically respond to sound all the time.
- Even when you are asleep you still respond to sound.
- If sound is a long-term stressor it affects health.

Difficult to mitigate

- Reduce at source
  - Regulation of car emissions
  - Curfews on flights
  - Quieter road surface
  - Traffic management
- Path interventions
  - Noise barriers
  - Insulation of residences
- New/closed infrastructure
  - Bypasses
  - Move flight paths
  - Urban planning control
- Other physical interventions
  - Quiet side to the home
  - Access to greenspace



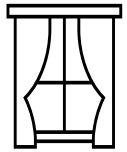
Electric cars - 1-2dB(A)



Up to 10dB(A)

Surfacing: 3-6dB(A)
Reduce speed limit 10mph – 1dB(A)

Quiet Tyres - 2-3dB(A)



~10dB(A)

Brown, A.L., & van Kamp, I. (2017). WHO Environmental Noise Guidelines for the European Region: A systematic review of transport noise interventions and their health effects. International Journal of Environmental Research and Public Health, 14(8), 873

Münzel T, Sørensen M, Daiber A. Transportation noise pollution and cardiovascular disease. Nat Rev Cardiol. 2021.

Some of the arguments I hear…..

Don’t people get used to the noise?

Evidence for habituation

- More likely to wake up in the sleep lab compared to own home.
- Awakening probabilities also decrease across nights in the lab.

BUT

- People are still woken up by noise in their own homes - habituation is not complete.
- Beyond awakenings, other biological responses that impact health, such as heart rate, habituate to a lesser degree.

Can’t people ‘*just*’ move?

- Not everyone chooses where they live.
- People don’t move very often.
- Likely to be more exposed to noise if renting.
- Even if someone moves, someone will live in the house = the risk to public health remains.

Some people are just ‘noise’ sensitive

- Response to sound varies enormously
  - Noise sensitivity
  - Aural diversity
  - Ill-health
  - Attitude to the source

- Who is the average person we are designing for?

(Image:Duncan Thomsen / SWNS)

Don’t worry, technology is making it quieter

https://www.icao.int/environmental-protection/Pages/Noise_Trends.aspx

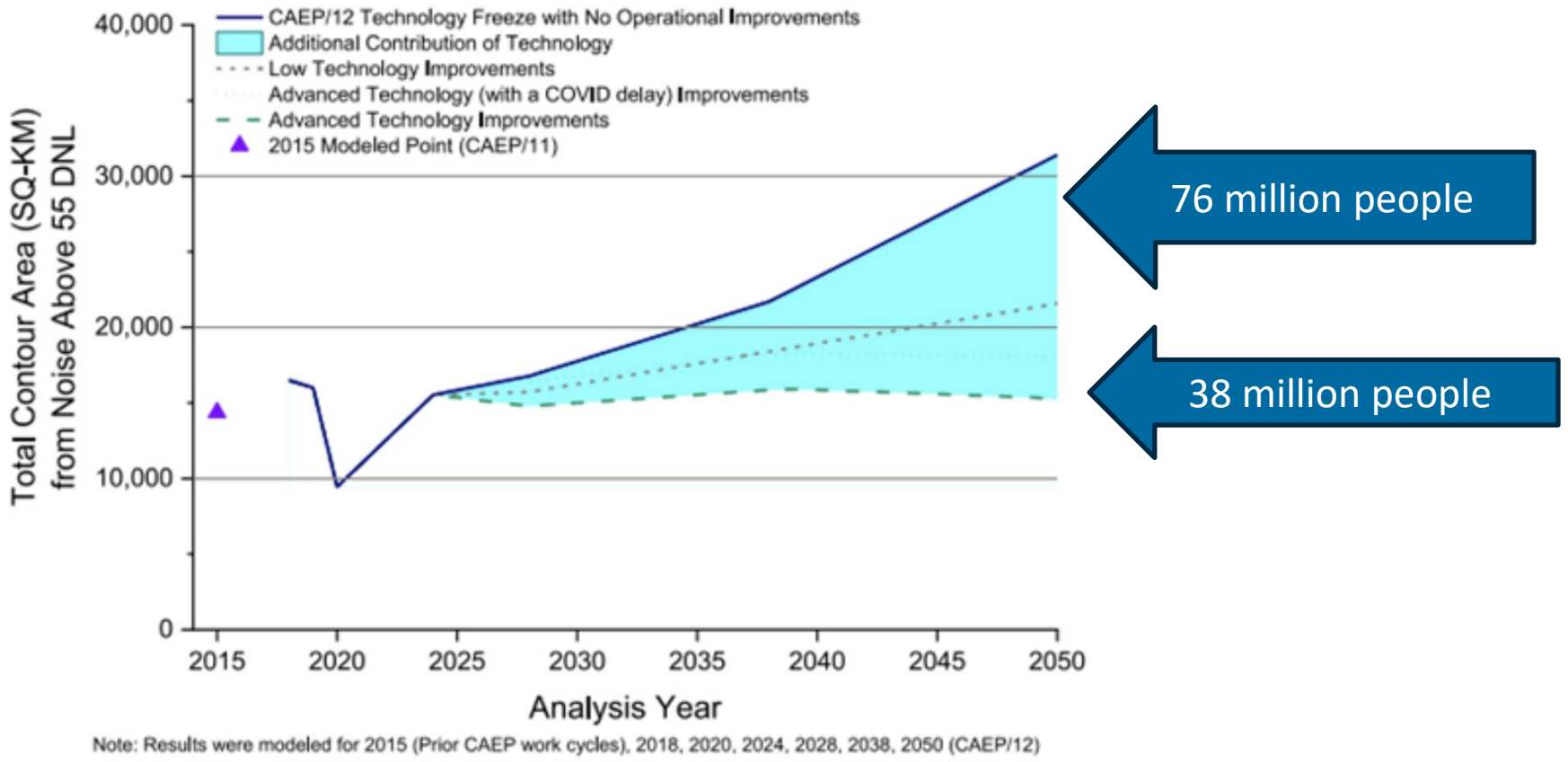


FIGURE 1-10: Total Aircraft Noise Contour Area Above 55 dB DNL for 319 Airports (km²), 2015 to 2050

Questions for the discussion

At what points can we engineer out the sound (noise)?

How can interdisciplinary working address noise issues for communities during the design stage?

How can we use interdisciplinary working to reduce existing noise exposure?

How can the network facilitate researchers to work with communities and the public to understand their issues?

Who are we designing for? (not the average person!)

Can we really make things quieter, or should we focus on designing interventions…or both?

How can the network use co-design to inform the research?