Source: @Leah Kelley, Pexels

Access to quiet green areas in European Urban Centres

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Why assessing accessibility to green and quiet areas?

20% of the EU population — one in five people — live in areas where noise levels are considered harmful to health.

Green areas are beneficial in reducing negative impact of noise pollution

- Reduction of noise annoyance
- Psychological restoration
- Reduction of noise exposure

Source: Noise in Europe 2020 (EEA, 2020)

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Potential health benefits of green areas in the reduction of noise annoyance

Scenario	Availability and accessibility	Reduction of highly annoyed adults (%)	Reduction on DALYs
Universal access to green spaces (WHO)	Access to at least 0.5 ha within 300 m walking distance 38% of the current population does not meet these conditions (417 aggl.)	1,1%	1 149
Gradual increase of green spaces	10% increase in green spaces	9,1%	9 709

Coverage: 417 agglomerations (Environmental Noise Directive)

Source: ETC HE, 2025

Policy background

Environmental Noise Directive (END)
Identify and preserve areas of good acoustic quality (quiet areas)

Sustainable Development Goals 11.7
By 2030, provide universal access to safe, inclusive and accessible, green and public spaces

Biodiversity Strategy 2030
Greening urban and peri-urban areas

Zero Pollution Action Plan
Reducing the negative impacts of exposure to transport noise by 30% in 2030
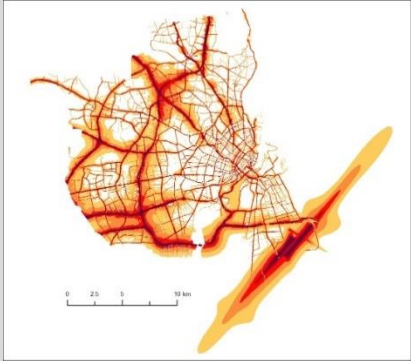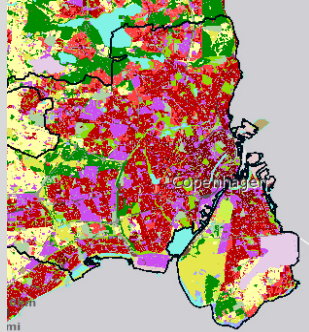
Defining quiet areas: current practices

No common, standardised definition currently exists

| *Criteria*	*Specifications*
Noise limit values	Variability in noise indicators and noise thresholds. Differential noise level between the core area and the outer border of the quiet area
Open spaces	Areas outside buildings
Aesthetic values of quiet areas	Attributes related to people's perception of quietness and percentage of natural features present within a scene
Land use	Forests, Green areas, Natural parks, Natural areas, Agricultural areas, Archaeological areas / historic and cultural areas Urban squares, City parks, Green urban areas, Gardens Cemeteries
Land ownership	Public area
Accessibility and walking distance	Walking distance. Enabling connectors to low noise landscapes.
Size	Minimum size of the area required

Source: Sáinz de la Maza et al. (2019)

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Our approach

| Criteria	Specifications	European data		Coverage	Frequency
Noise limit values	Noise threshold set by the Environmental Noise Directive (END) Areas below **55 dB L$_{den}$**	Noise maps reported under the END (voluntary)		Agglomerations > 100 000 inhabitants	Every 5 years 2017, 2022, …

Public green areas for predominantly recreational use	Classes included
	 • Green Urban Areas
	 • Forest (periphery of the city)
	
	 (Poelman, 2021)
		Copernicus Urban Atlas
		
		 • Land use/cover
		 • Attributes
		   ○ Population
		   ○ Building height
				FUA > 50 000 inhabitants	Every 3 years 2018, 2021,…

Accessibility and walking distance	400 m walking distance based on the street network	*Tom Tom Multinet*			2021

Identifying quiet green areas

Noise map + Urban Atlas (Green & Forest)
City delineation based on Urban Centres (not administrative)

Quiet green areas = Green urban areas & forests < 55 dB

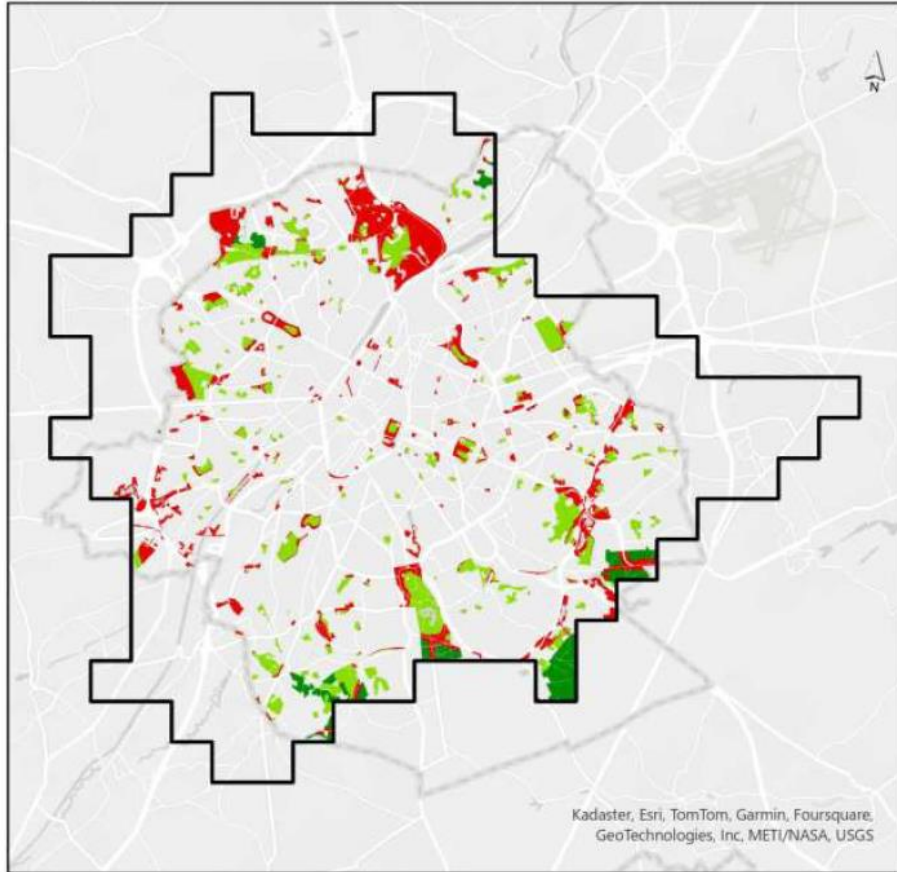Bordeaux (Sáinz et al. 2025)
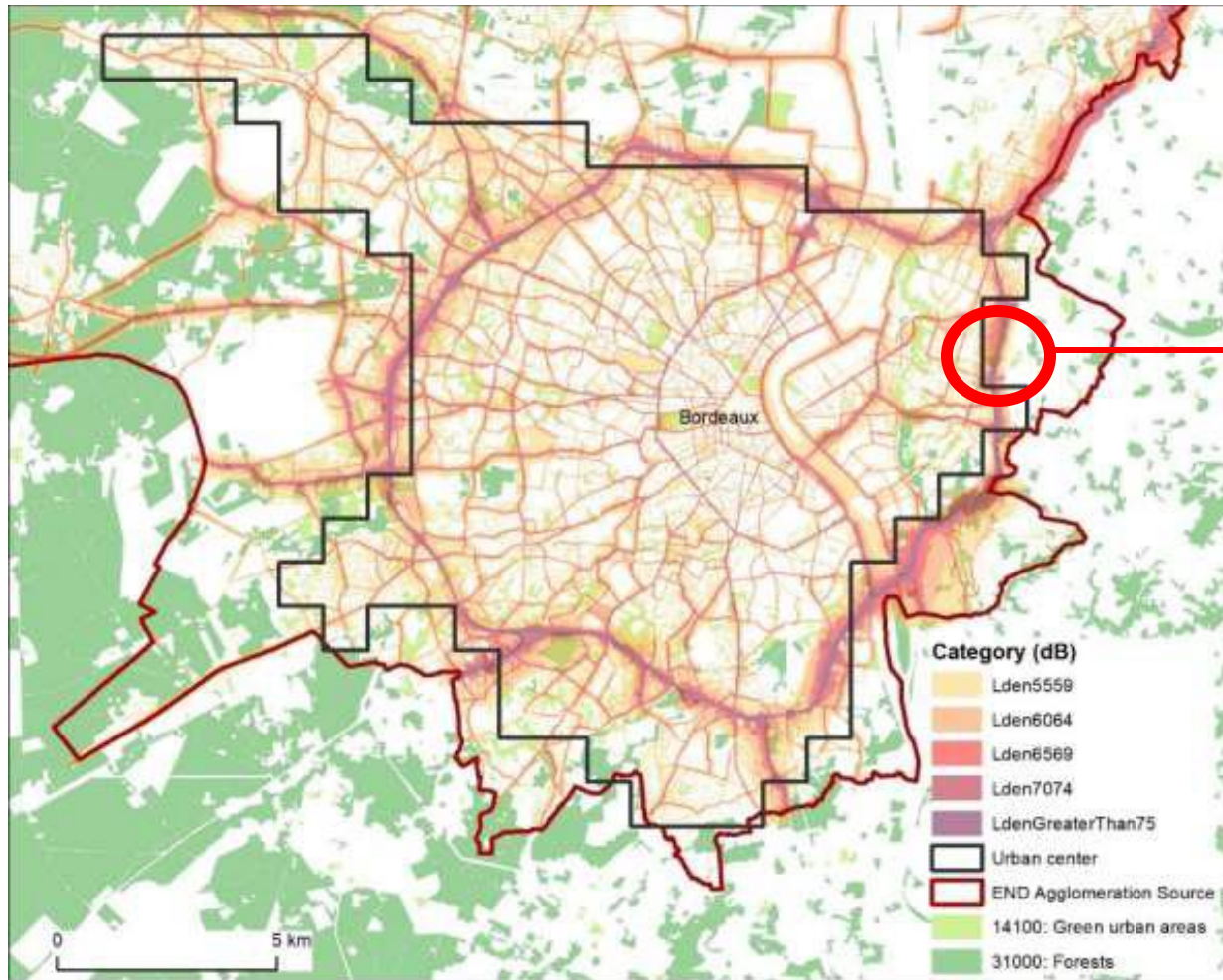
Accessibility
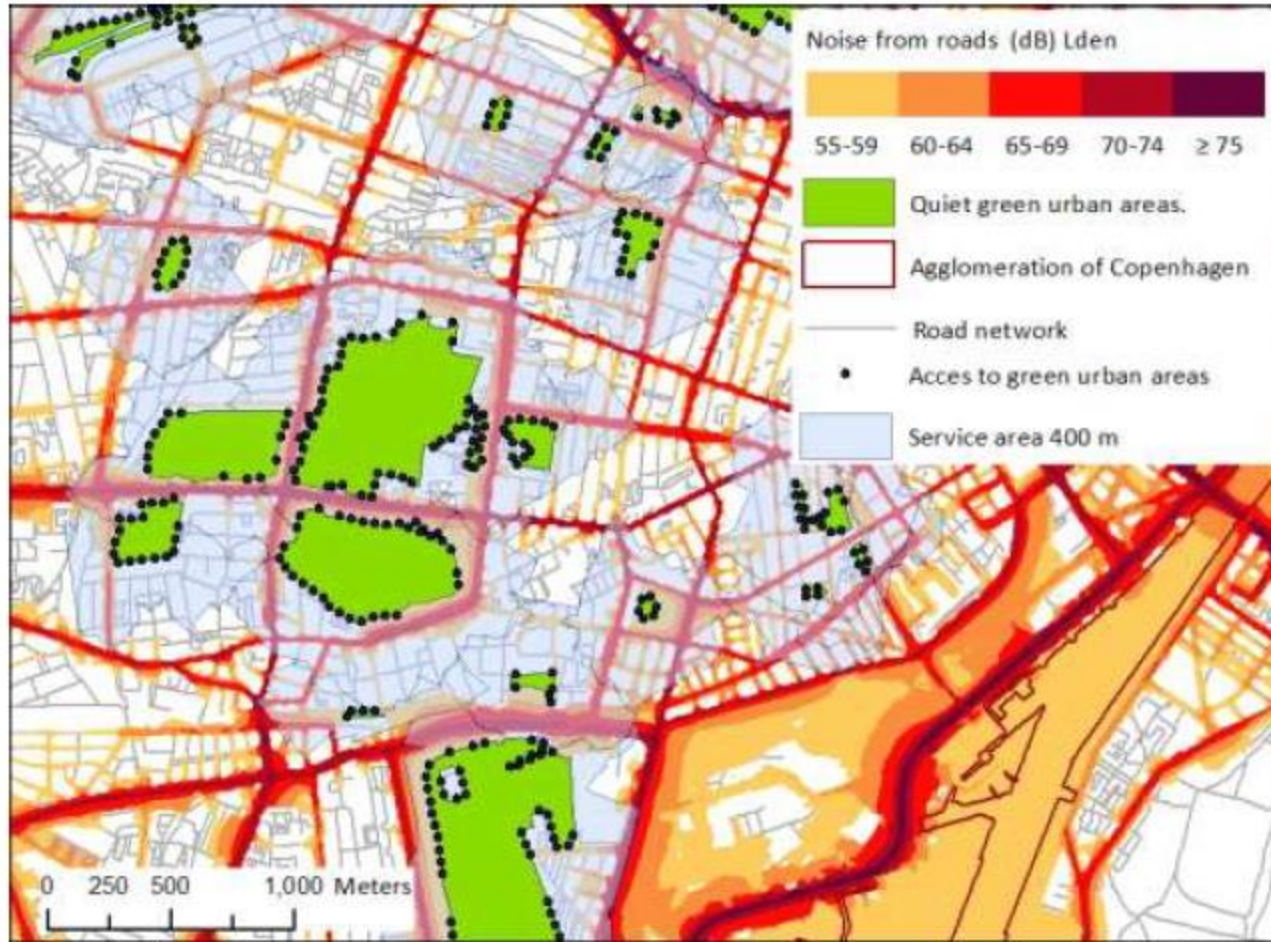
Definition of potential **access points** to quiet green areas every 50 m

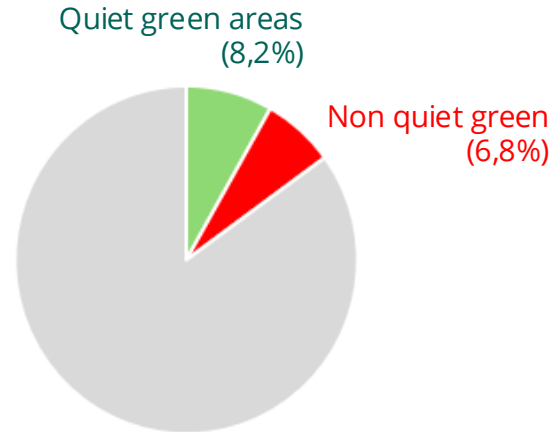Delineation of 400 m **service area** based on the street network

Calculation of the **population** intersecting the service areas using areal weighting within each populated polygon. Population data from Urban Atlas

Following the same criteria and methodology as Poelman (2021)

Availability and accessibility to urban quiet green areas

Quiet green areas (8,2%)

Non quiet green (6,8%)

People with access to quiet green areas within 400 m walking distance

27,7%

2,7 ha

Population-weighted median area

Quiet green
Quiet forests
Non quiet green and forest
Urban centre

Kadaster, Esri, TomTom, Garmin, Foursquare, GeoTechnologies, Inc, METI/NASA, USGS

0   5 km

Brussels

Total area (ha):   13.241
Population: 1.193.205

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Share of population having access to quiet green areas within 400 m walk
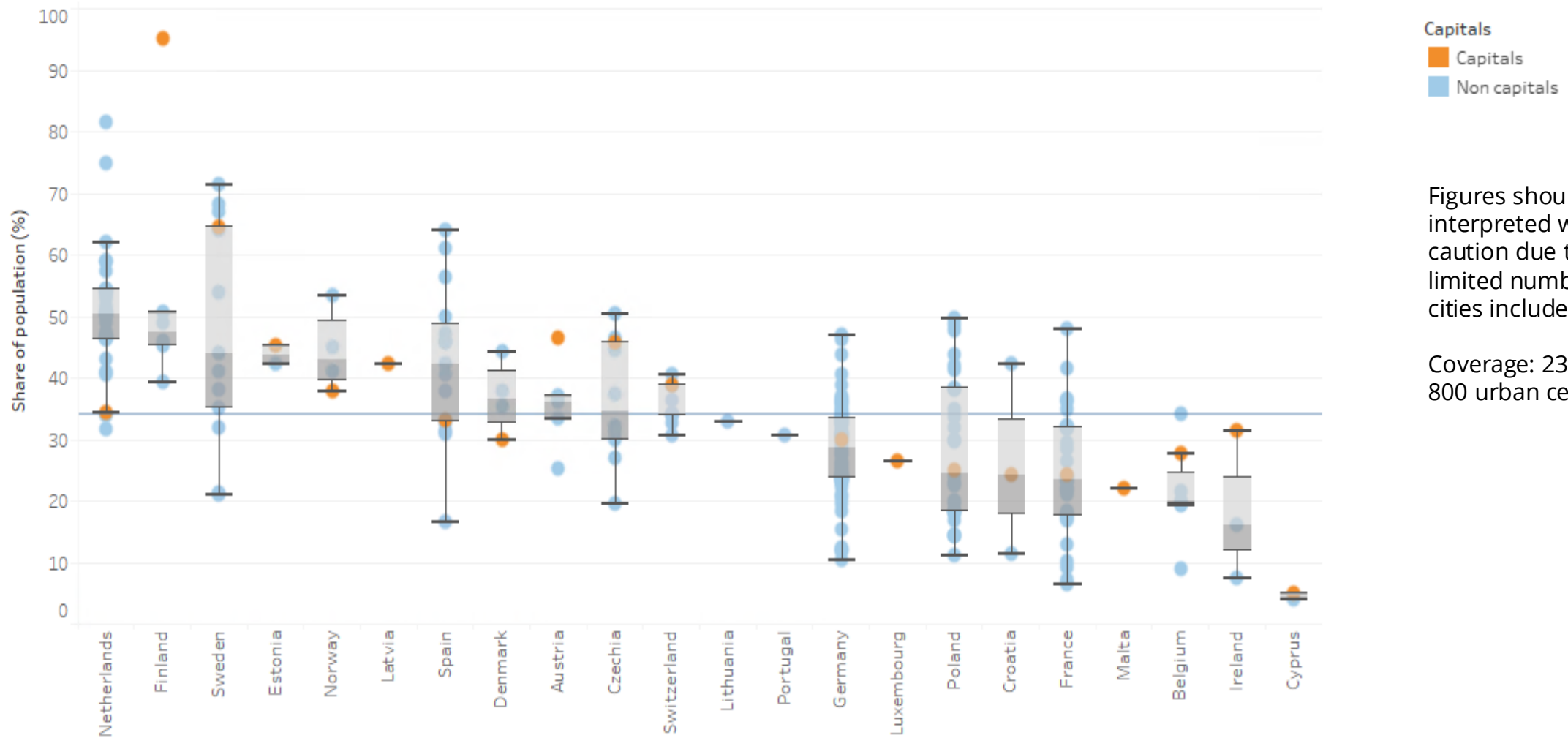
Capitals
- ■ Capitals
- ■ Non capitals
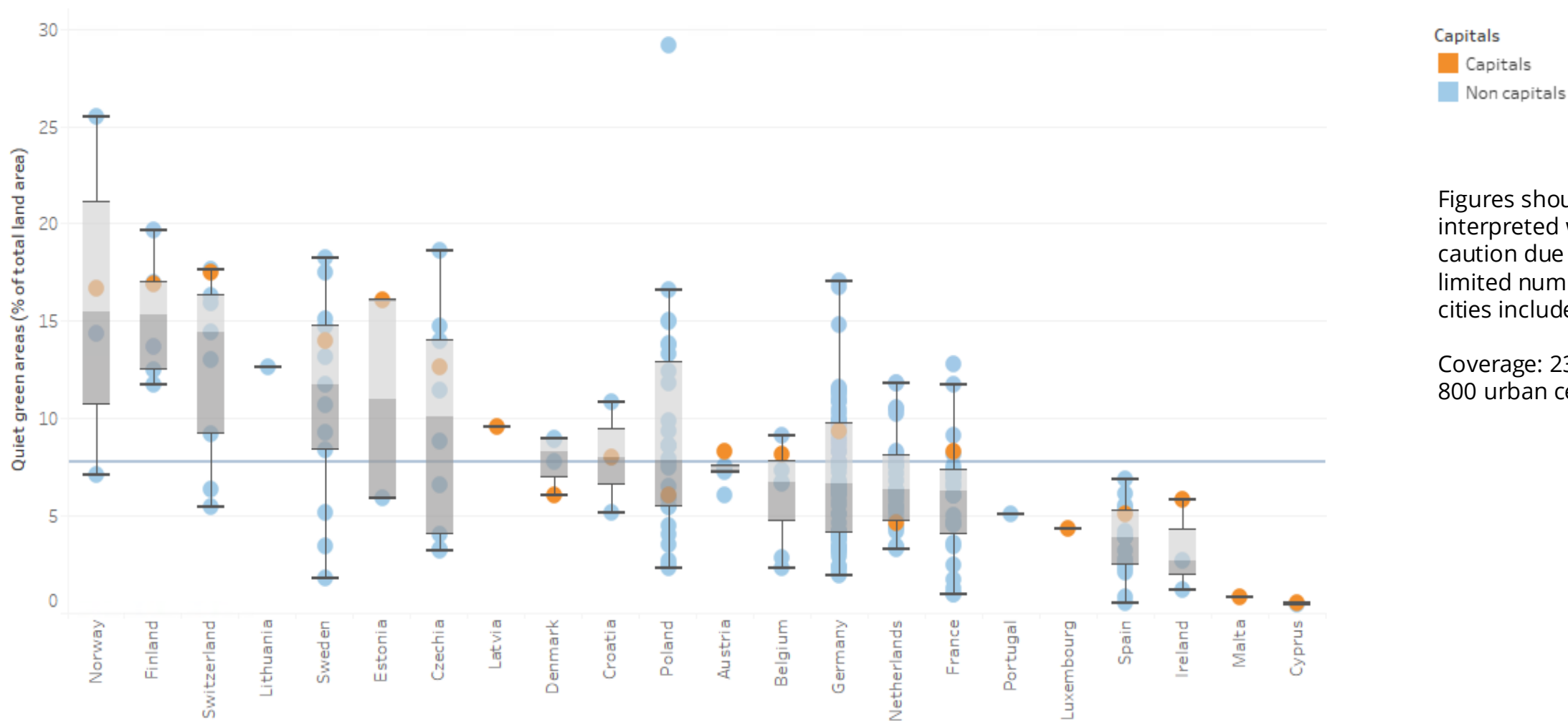
Figures should be interpreted with caution due to the limited number of cities included.

Coverage: 233 out of 800 urban centres

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Quiet green areas (% of total land area)

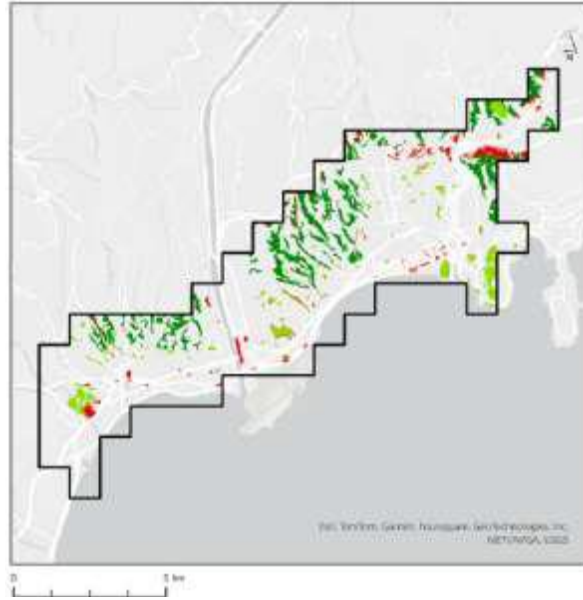Figures should be interpreted with caution due to the limited number of cities included.

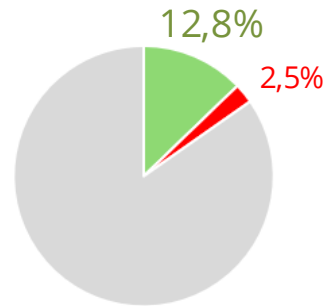Coverage: 233 out of 800 urban centres

Capitals
- Capitals
- Non capitals

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Understanding spatial patterns

Nice

Area (ha): 6.684
Population: 418.951

Quiet green areas (% of land area)
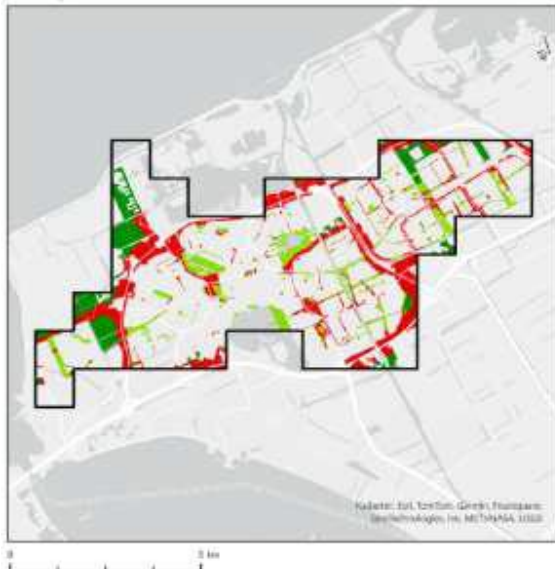
12,8%   2,5%

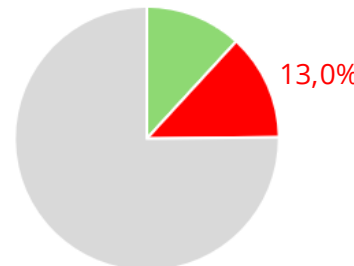*Population having access to quiet green areas*

6,3%

400 m

Weighted median

3,5 ha
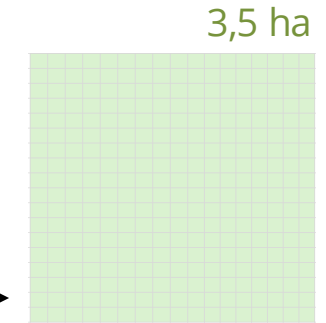
Almere

Area (ha): 4.895
Population: 176.356

11,8%   13,0%

74,9%

400 m

1,7 ha

Quiet green   Non quiet green and forest
Quiet forests   Urban centre

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Conclusions

- These results reflect the <u>maximum potential extent</u> of quiet areas, as the analysis considers only road traffic noise. However, road traffic noise is the primary source of noise pollution in Europe.

- This analysis provides a <u>Europe-wide perspective</u>, highlighting the variability between cities and the planning challenges associated with creating and maintaining quiet green spaces in urban environments.

- There is a critical need to <u>preserve existing green areas</u> with high acoustic quality, especially in densely populated cities, where opportunities to develop new quiet spaces are limited.

- <u>Coordinated, cross-sectoral actions</u> are essential for effective noise management, particularly across domains such as mobility, land use, and urban planning.

- <u>City delineation</u> remains a challenge, as definitions of agglomerations and urban centres can evolve over time. To be explored.

- Further work to be considered
  - The inclusion of <u>smaller green areas</u> (smaller green parks and squares) is currently not captured by Urban Atlas. This can be achieved by combining Urban Atlas with High-Resolution Copernicus data.
  - Integration of <u>qualitative aspects</u>, including public perception and user experience, through tools such as surveys and participatory assessments, to complement the acoustic data.

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Thanks for your attention!

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Links to reports:

[Environmental noise in Europe — 2020, EEA Report No 22/2019](#)

[Access to quiet green areas in European Urban Centres. ETC HE Report 2025/3](#)

[Evaluation of the benefits of green space on noise-related effects: a health impact assessment on annoyance](#)

Environmental noise in Europe – 2025 (June 2025)