

Environmental impacts of wind turbines

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Introduction

- Urgency of wind energy (WE) expansion worldwide
- Scarcity of unoccupied land
- Opposition to WE (NIMBY)
- Green-green dilemma

Methods

Literature review:

1. Keyword search in different scientific databases
2. Peer-reviewed literature
3. 2010-2023
4. Only onshore wind turbines

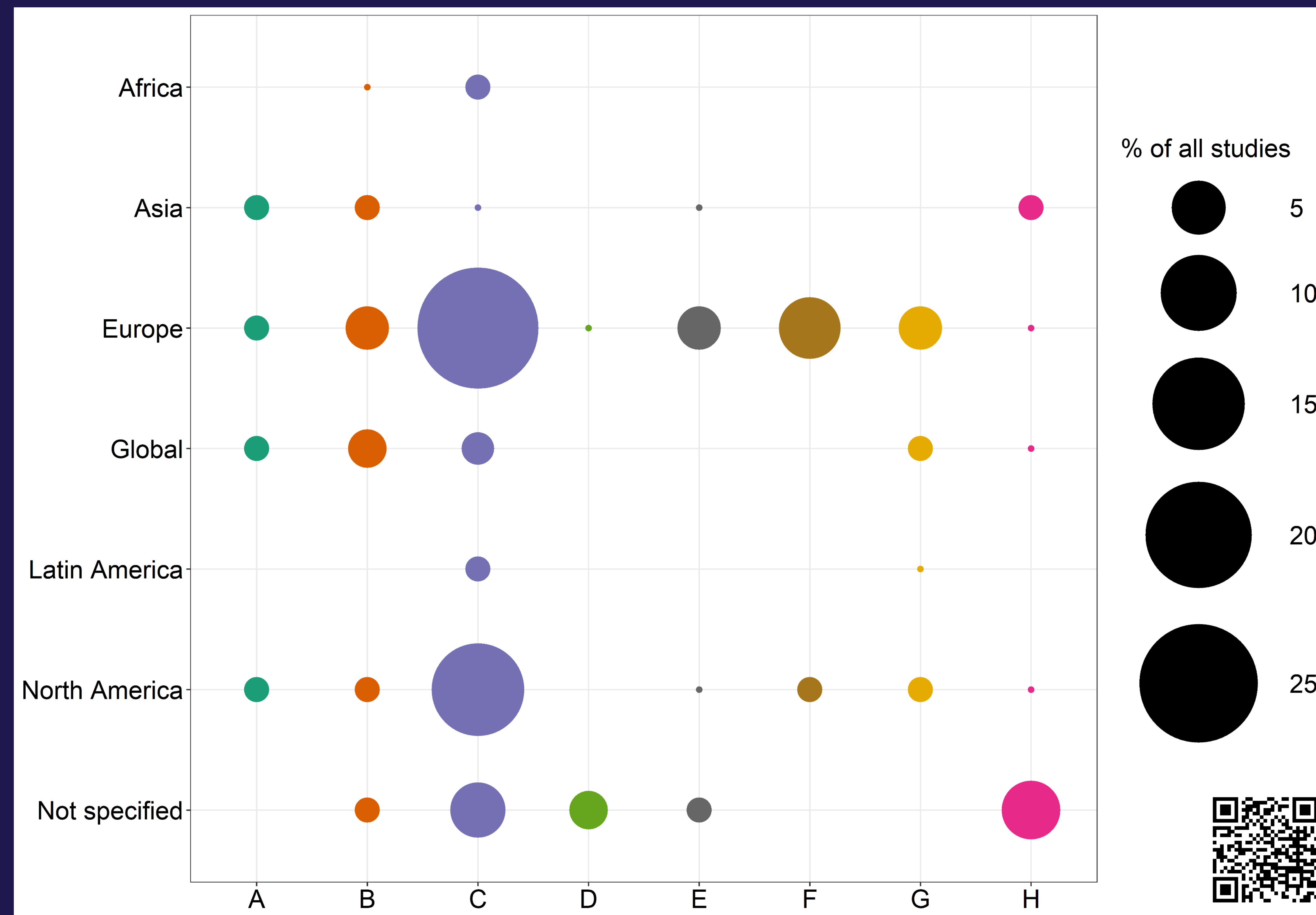
Results

- 150 studies in 80 journals
- Field studies underrepresented
- 67 % of all studies refer to Europe and North America
- > 50 % of all studies focus exclusively on (mostly direct) impacts on birds and bats
- Hardly any information on long-term (population-level) effects

Discussion

- Weaknesses:
 - Data scarcity
 - Research design
- Recommendations: Standardized research methods including 'Before-After Control-Impact' (BACI) design

Environmental impact assessments of onshore wind turbines are biased and lack standardized research methods.



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For updates on this work

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Additional info

Key topics addressed:

- A: impacts on the abiotic environment (barplot 1)
- B: impacts on the biotic environment (barplot 2)
- C: impacts on birds and bats
- D: noise impacts (barplot 3)
- E: visual impacts (barplot 4)
- F: social acceptance
- G: other impacts
- H: multiple categories

Absolute frequencies of keywords:

