Assessing preferences for Nature-based Solutions for flood-risk reduction in the Netherlands through a Discrete Choice Experiment

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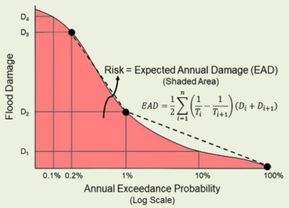
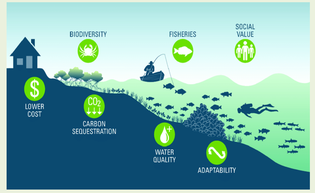
Background

2021 European floods highlighted need for effective flood-risk management policies.

Why Nature-based Solutions (NbS)?



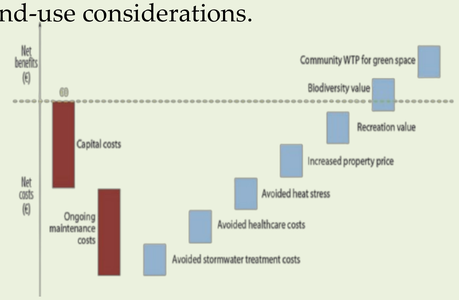


Motivation

NbS are often undervalued in CBA due to lack of co-benefits assessment.

Most Stated Preference studies did not account for disbenefits or land-use considerations.

Public sector is major NbS investor (84%).



Study goal

Improving current understanding of policy support for NbS for flood-risk reduction in the Netherlands, while accounting for land-use trade-offs and preference heterogeneity.

Methodology

Discrete choice experiment

- Grounded in Random Utility Theory
- Capture non-market values

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- Protection Motivation Theory
- Land use and equity consideration

waterschap limburg

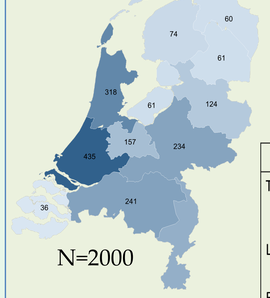
Literature review & meta-analysis

Co-creation: Stakeholder innovation lab

Expert consultations

Choice Experiment design

Distribution respondents



N=2000

- **6 attributes**
- **3 alternatives**
- **6 choice cards per respondent**
- **3 blocks)**

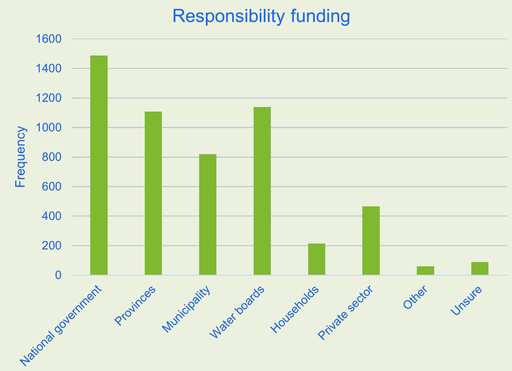
	Scenario 1	Scenario 2	Scenario 3
Type of NBS	Reforestation	Natural grassland	No additional NBS
Land use change	500 hectares	100 hectares	No land use change of agricultural land
Recreation	Water-related activities	No additional recreational activities	No additional recreational activities
Biodiversity	6 species no longer have an unfavorable status	0 species have their status changed to a favorable status	0 species have their status changed to a favorable status
Additional warning time	Two hours additional warning time	Half an hour additional warning time	No additional warning time
Annual increase waterboard tax	50 euro	100 euro	No increase waterboard tax

Results

MNL and ML models revealed preferences for reforestation and increased utility associated with all co-benefits of NbS.

On average, Dutch citizens preferences show a decrease in utility from converting agricultural land to NbS.

Responsibility allocated mainly to government and water boards.



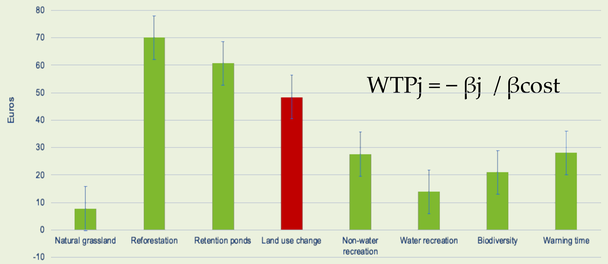
Latent class analysis

45% of respondents
No decrease in utility from land-use change

18% of respondents
Strong preference for opt-out (business as usual)

38% of respondents
Increased utility from extra warning time.

Willingness-to-pay



Future research:

Monetary estimates will be used as input for Social Cost-Benefit Analysis, coupled with hydrological modelling results

Key takeaways

- **Reforestation policies have a large impact on respondents' utility.**
- **Dutch respondents place a high value on current agricultural land.**
- **CBA should account for co-benefits and land use trade-offs to produce a comprehensive assessment.**

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2. European Investment Bank (2023). Investing in Nature-based Solutions: State of play and way forward for public and private financial measures in Europe. Available at: https://www.eib.org/attachments/lucalli/20230095_investing_in_nature_based_solutions_en.pdf
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