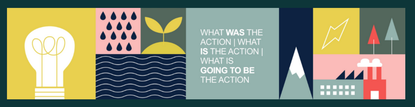
Understanding Homeowner's Flood Mitigation Decisions: Findings from 'Where We Move?' Game



TU Delft
Climate Action
Festival
June 11, 2024

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"**Where We Move?**" is a serious game that explores the incluence of income, preferences for public protection and experience with floods and information about adaptation measures to take climate adaptation choices. Participants play on tables of maximum 8 players five game rounds. Every round players receive news and throw dices to check if any flood damage.

First Game Session May - June 2023

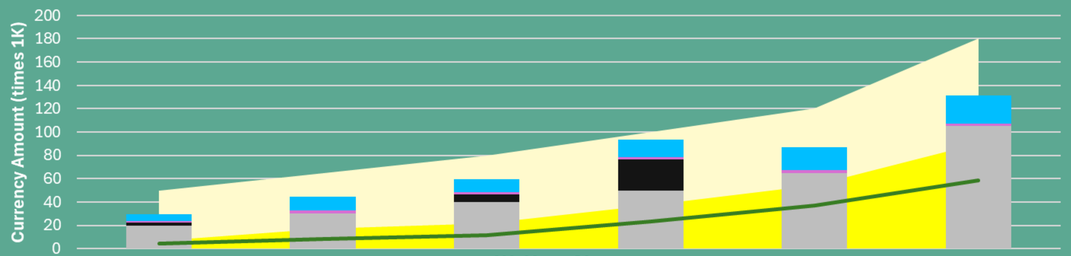
20 master students
23 municipality staff

Game Scenario

All Information	Limited Information
✓ Protection level from House Selection	✓ Protection level from House Selection
✓ Protection level from Adaptation Measures	✗ Protection level from Adaptation Measures

1) How do players distribute their average Income among the game choices?

Players randomly assume a homeowner role with a given welfare and are tasked to keep their satisfaction as high as possible by buying a house among three possible areas, investing in personal satisfaction or house adaptation measures against river (fluvial) and rain (pluvial) flooding.

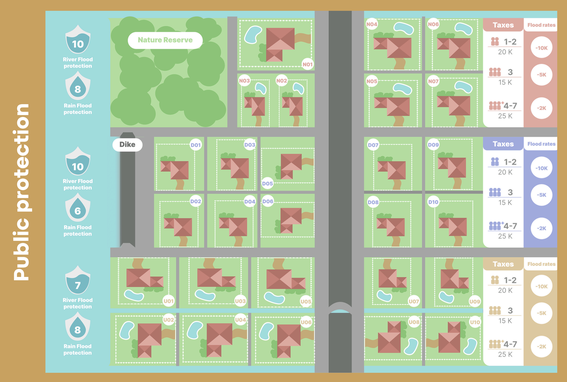


	Very low	Low	Low-average	High-average	High	Very high
# of players	7	7	15	13	5	6
Income	50k	65k	80k	100k	120k	180k
Living costs	20k	30k	40k	50k	65k	105k

Spendable income: Income - Living costs - Housing area taxes - Paying debt

Game choices: Paying Satisfaction | Paying adaptation measures | Saving

2) Which was the preferred public protection housing area?



Players per welfare type: Very high | Very low

Players per housing area

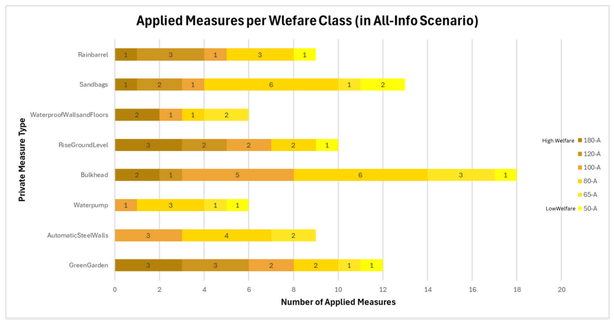
1 1 4 5 4 3	19	Natucity
4 3 6 5 2 2	22	Diketown
1 1 3 4 1 2	12	Unbesvillage

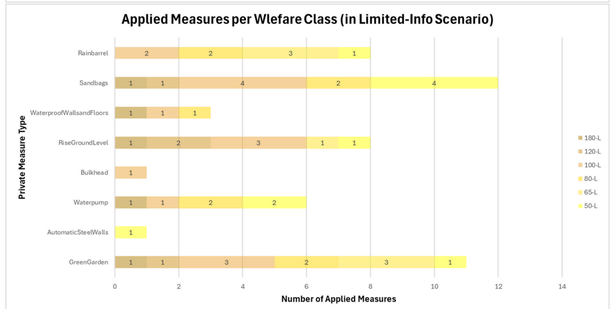
- Players relocated because players wanted to relocate to a better protected area or expenses were too high
- High-welfare homeowners mostly preferred dike town, prioritizing maximum river flood protection.
- Low-welfare players preferred natucity because there were two affordable houses from round 1.

3) Which adaptation measures were Implemented given the Welfare class and game scenario?

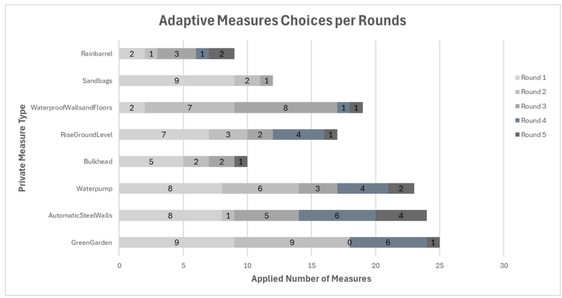
Adaptation Measure	Private Protection Information: River	Private Protection Information: Rain	Satisfaction	Cost
Rain Barrel		✓	★	11 K $
Sand Bags	✓			3 K $
Water Resistant Walls	✓	✓	★	20 K $$
Ground-level Rising	✓✓	✓	★★★	35 k $$$
Self-rising Bulkhead	✓			8 K $
Water Pump Installation		✓		6 K $
Automatic Steel Wall	✓	✓		12 K $$
Green Garden		✓	★★	20 K $$

High and Low Welfare class purchased a similar number of adaptation measures but according to their affordability.
All information scenario lead to higher implementation of unknown measures to players such as bulk head and automatic steel walls





4) In which Round Most Measures Were Implemented?

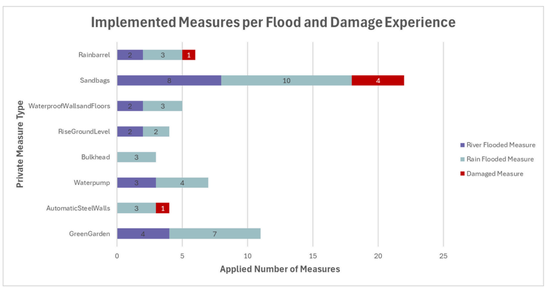


- **High Initial Preference:** Measures like Water Pump Installation, Underground Rain Barrel, Green Garden, Sandbags, and Rise Ground Level saw the highest implementations in the first round.
- **Middle Round Peaks:** Self-Rising Bulkhead was particularly popular in the middle rounds (Rounds 2 and 3), suggesting players' choices adapted to the experience floods as the game progressed.

5) Did flood Experience and damage triggered the implementation of measures?

- Having flood experience does not affect the number of implementations, but does affect the type of measure being bought

- Players generally preferred measures with rain and river protection and satisfaction benefits (green garden and rise ground)



6) What is next?

- **Behavioral Analysis:** risk perception and trust in authorities
- **Economic Analysis:** Conduct cost-benefit analyses of different flood protection measures
- **Policy and Community Engagement:** Subsidies, Mandatory insurance
- **Improved Graphical Extensions:** Data Projection is possible with versatile Chart types