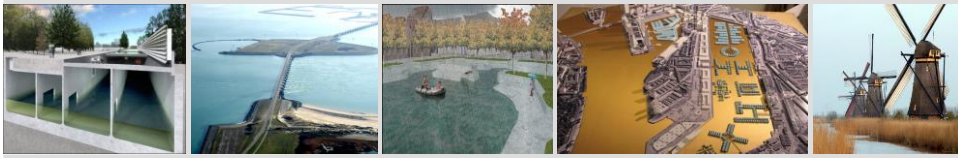


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Test Driving a Financing Instrument for Climate Adaptation: analyzing institutional dynamics using simulation gaming



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Research Problem

At the local level: investments in resilient public infrastructure will be required to address effects of climate change, such as [1]:

- Increased permeable pavement
- Renewal of existing systems to separate storm water and sewage
- Strategic elevation of certain neighbourhoods
- Deployment of green space and tree planting
- Additional space for water storage and retention
- Enhanced above-grade drainage and grading plans
- Local level positioned to plan and implement climate adaptation using municipal resources and/or raising funds from other sources [2]
- In the Netherlands: current directions
 - Indicate local government should use existing spatial planning and land development processes to facilitate local level investments
 - Dutch planning uses mix of market-based processes and principles
 - Interest in new market-based mechanisms to facilitate public goods investments [3]

[1] Bobylev et al, 2013; Makropoulos and Butler, 2010

[2] Isoard and Winograd, 2013

[3] Heurkens, 2014



Research Question:

*Is a local market-based
financing instrument applicable
for facilitating investment in
climate adaptation?*

Findings:

Practical:

Tax increment financing (market instrument) is limited largely due to scepticism that (explicit) investments in climate adaptation will add market value.

Theoretical: value uncertainty, planning horizon, indirect benefits

Three “institutional dilemmas” play a major role in shaping perceptions about the appropriateness of certain financing instruments; provide insights about the limited role a market-based instrument is likely to have based on the dynamics of the Dutch planning and land development sector.

Methodology: simulation gaming

Basic Breakdown

- 21 hours of simulation gaming:
 - 7 session (3 hours per)
 - 5 locations: Netherlands
- 59 experienced practitioners
 - Spatial planning orientation: process managers, project developers, policy-makers, and advisers
- 50% split between government and non-governmental practitioners



Data Collecting Mechanisms

1. Two Questionnaires:

- Pre-game and Post-Game (Likert Scale)
- Statistical software program (SPSS): results analysis

2. Audio Recording:

- Written summary of each session: identifying themes and key debates

3. Participant Report: each group produced a brief written report making recommendation to the fictional city of "Watervliet"

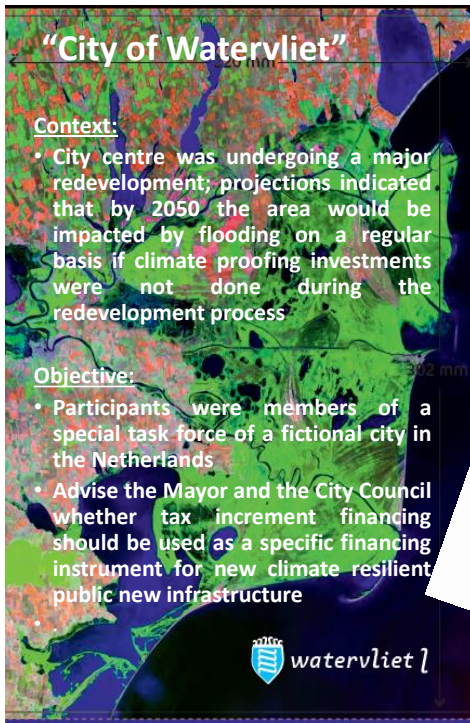
"City of Watervliet"


Context:

- City centre was undergoing a major redevelopment; projections indicated that by 2050 the area would be impacted by flooding on a regular basis if climate proofing investments were not done during the redevelopment process

Objective:

- Participants were members of a special task force of a fictional city in the Netherlands
- Advise the Mayor and the City Council whether tax increment financing should be used as a specific financing instrument for new climate resilient public new infrastructure



 watervliet

Watervliet

Buurtpetitie:

Wij willen nu actie!

Wij wonen hier:



De is de verwachte overstroming in 2050. Waarom is er geen geplande investering in deze buurt?

Bedrijven wonen hier:



Hier komt Project 'Vrijhaven' van Watervliet. Investerings zijn hier wel gepland om bedrijven te beschermen.

Plaats je handtekening en steun deze petitie!

Naam: Karen Visser Naam: Peter Boelsma
 Adres: Keerkade 15 Watervliet Adres: Rivierstraat 103A Watervliet
 Handtekening: K. Visser Handtekening: P. Boelsma

Tax Increment Financing

Fiscal tool:

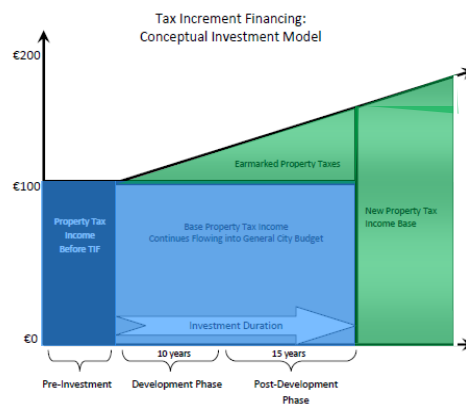
- A compulsory and bounded (Alexander, 2012) value capture tool that earmarks the future tax value increment in a designated assessment area to fund public investments. Typically for 25 years

The Increment:

- Expected increase in property taxes is used to raise financing, typically via bonds or similar approaches

Response to Market:

- "But for..." test: without public stimulation by government investment, the private sector investment will not occur



Core [practical] Findings:

Tax Increment Financing: Assessment for the Dutch Climate Adaptation Financing “Toolkit”

Characteristics	General Purpose Use	Climate Adaptation Use
Market-Based Mechanism	<ul style="list-style-type: none"> + • Tailor to current ideas: slow-growth/“organic “ development - • Speculating/future earnings: political problem 	<ul style="list-style-type: none"> - • Climate adaptation investments will not be recognized as adding market value - • Market has a short-term outlook / climate adaptation has long horizon
Use of Property Taxes	<ul style="list-style-type: none"> + • Revenue could be integrated with other budgets to stimulate market - • Risk that national government could change tax regime 	<ul style="list-style-type: none"> - • Insufficient revenue as stand-alone instrument to support “hard” infrastructure investments
Designated Area	<ul style="list-style-type: none"> + • Could unlock stalled development areas - • May indicated an unfunded project 	<ul style="list-style-type: none"> - • Create “winners & losers” between neighbourhoods - • ‘One-neighbourhood-at-a-time’ too narrow in scale
Earmarking Instrument	<ul style="list-style-type: none"> + • Integrate with existing planning instruments: achieve specific investments - • Reduce budgetary flexibility: project lifecycle 	<ul style="list-style-type: none"> - • Benefit of climate adaptation investments not recognized by taxpayers/investors
Range of Financing Models	<ul style="list-style-type: none"> + • Design model to spread financial risk to range of beneficiaries to broaden risk holders - • Analysis required to determine if reduction from Municipal Funds would result 	<ul style="list-style-type: none"> - • Municipality should be the risk-holder for specific adaptation investments

Climate Adaptation:

Institutional Dilemmas

Q. Why did participants largely agree that TIF was possible for general purposes but not for climate adaptation-related investments??

Three institutional dilemmas:

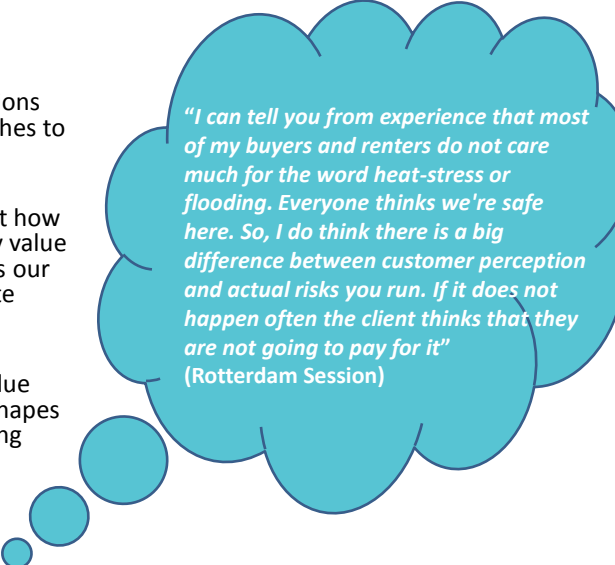
- Shape practitioners perspectives?
- Or, can a market-based instrument help to overcome the institutional dilemmas often associated with the climate adaptation?

Values Uncertainty*

Adaptation choices are guided by ^[1]:

- Sense of value, perceptions about risk, and approaches to managing risk
- Lack of agreement about how current generations may value climate adaptation limits our ability to adapt to climate change
- ** Lack of agreement on value (material or otherwise) shapes views on possible financing instruments

[1] Walker et al (2011); Berkhout (2012); Mees et al (2014):



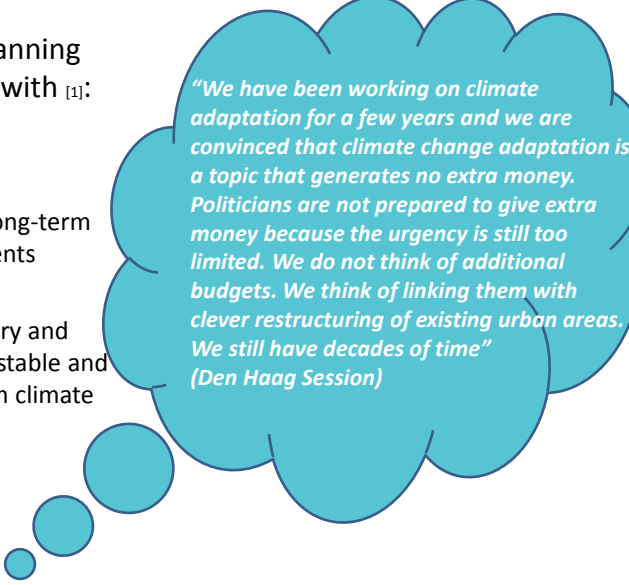
"I can tell you from experience that most of my buyers and renters do not care much for the word heat-stress or flooding. Everyone thinks we're safe here. So, I do think there is a big difference between customer perception and actual risks you run. If it does not happen often the client thinks that they are not going to pay for it"
(Rotterdam Session)

Planning Horizon*

Climate adaptation planning horizon is out-of-sync with ^[1]:

- Conventional planning approaches, even for long-term infrastructure investments
- Governmental budgetary and political cycles are not stable and consistent for long term climate adaptive planning.

[1] Bobylev, 2013



"We have been working on climate adaptation for a few years and we are convinced that climate change adaptation is a topic that generates no extra money. Politicians are not prepared to give extra money because the urgency is still too limited. We do not think of additional budgets. We think of linking them with clever restructuring of existing urban areas. We still have decades of time"
(Den Haag Session)

Indirect Benefits*

Lack of direct benefits shapes perceptions:

- Incentives are not in place for current generations to make long term investments that will benefit future generations
- Comparatively: market is inactive player and government plays a lead role

** Perception that climate adaptation investment will not result in direct benefits **is a substantial dilemma in relation to the use of market based mechanisms**

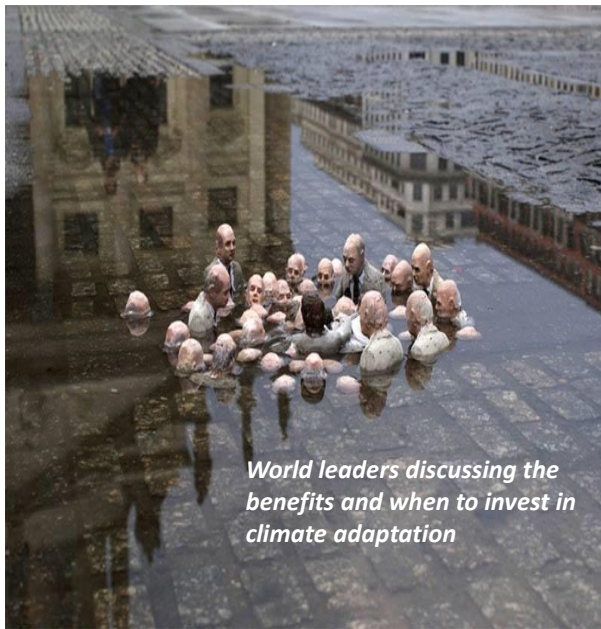
Walker et al 2011

"The question is, who will stick their neck out? You do not expect the market to do that, because it does not invest in loss. Do not expect that the government is going to do that, because it is in the red and is also limited. How are we going to divide or limit the risk?"
(Nijmegen Session)

Dutch Planning & Development Context:

What are the Instrument Characteristics for Climate Adaptation?

What Matters to Practitioners: <i>Characteristics of a Local Market-based Instrument</i>	Implications for local investments in climate adaptation: using a market instrument
Incrementalism: <i>Focus on adaptability of financial plan: "earn-as-you-go".....so you can pay-as-you-go</i>	Incremental short term financing may not be conducive to long-term infrastructure planning
Manage long term risk via short term financing: <i>Shorter term financing strategies to, avoid locked-in long term debt</i>	Short-term financing may narrow strategies to no-regrets investments or strategies that are limited towards immediate market demands
Spread risk/benefits between stakeholders: <i>Broaden financial risk with more stakeholders</i>	Perceived value/benefit prerequisite
Instrument diversity: <i>Package of tools in the context of other existing tools to reduce risk</i>	** Preferred instruments to facilitate investment: regulation and government subsidy



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Methodology: simulation gaming

Selected on Two Propositions [1]

Social Learning: Participants

- By modeling a policy making process, the objective of a simulation game session is to provide a decision-making environment for practitioners to 'test drive' a financing instrument without risking of real-life institutional failure.
- Offers a compressed and simplified environment in comparison to the real "messy" world of policy processes.

Scientific: Research

- Experimental environment is developed to enable researchers to:
"...learn about the system from the interactions among the participants and from the interaction between the participants..."
- Actors enliven the simulation model providing an opportunity to analyze the social and political dimensions of policy instrument selection

[1] Mayer and Veenemen (2005); Shubik (2009); Mayer et al (2005)