FLOOD RESILIENCY IN URBAN AREA DEVELOPMENT

The effectiveness of policy instruments in building flood resiliency of urban areas
A comparative study of Rotterdam and New York City

E Gaaff

January 20th, 2014

1st Mentor: dr. Ir. T. Daamen (TU Delft)
2nd Mentor: dr. Ir. T. Tasan-Kok (TU Delft)
External supervisor Prof. J. Keenan (Columbia University)
Master Real Estate & Housing, Faculty of Architecture & the Built Environment
Urban Adaptation Strategies Graduation Laboratory

Hurricane Sandy, NYC, October 2012

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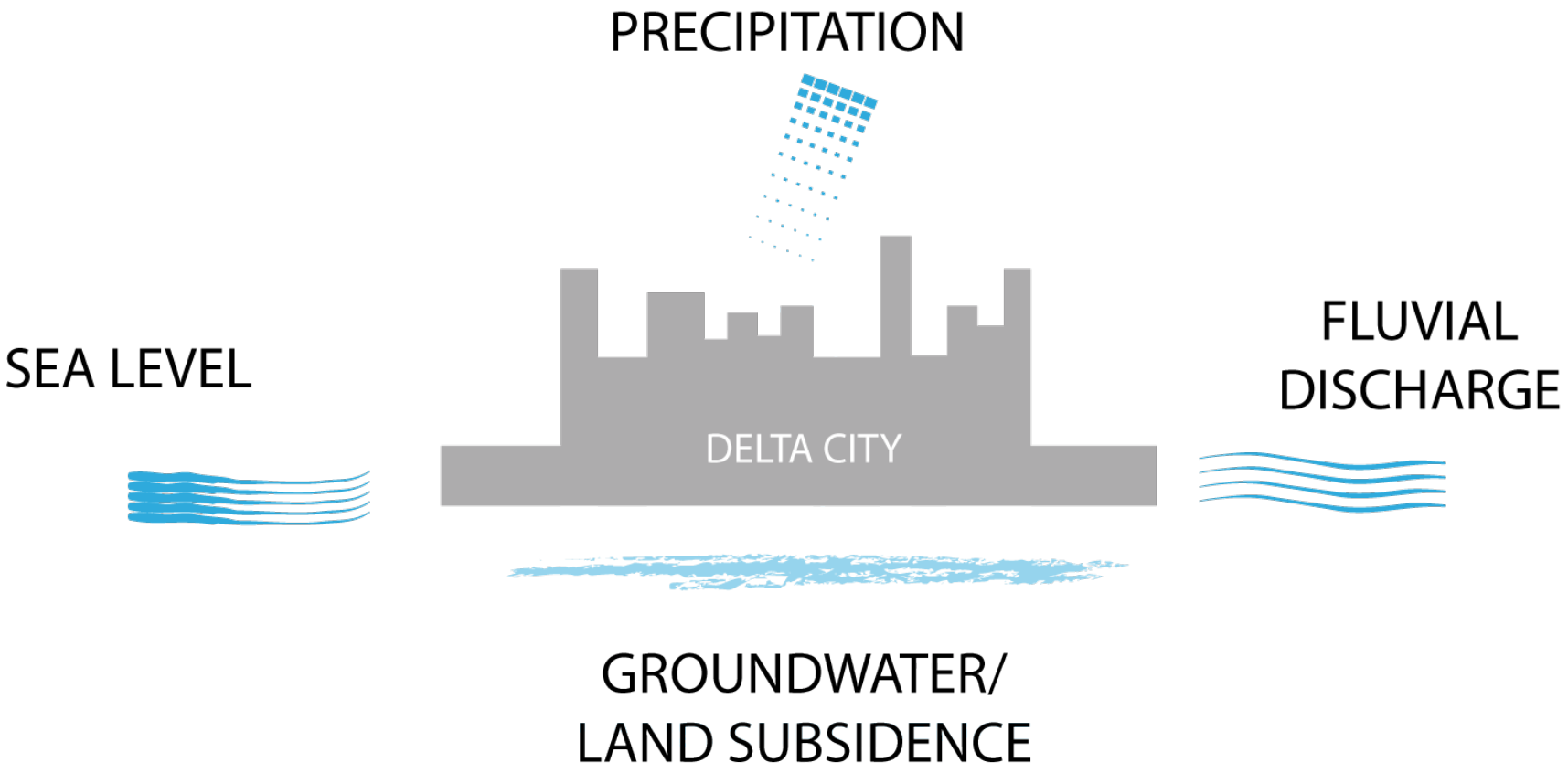
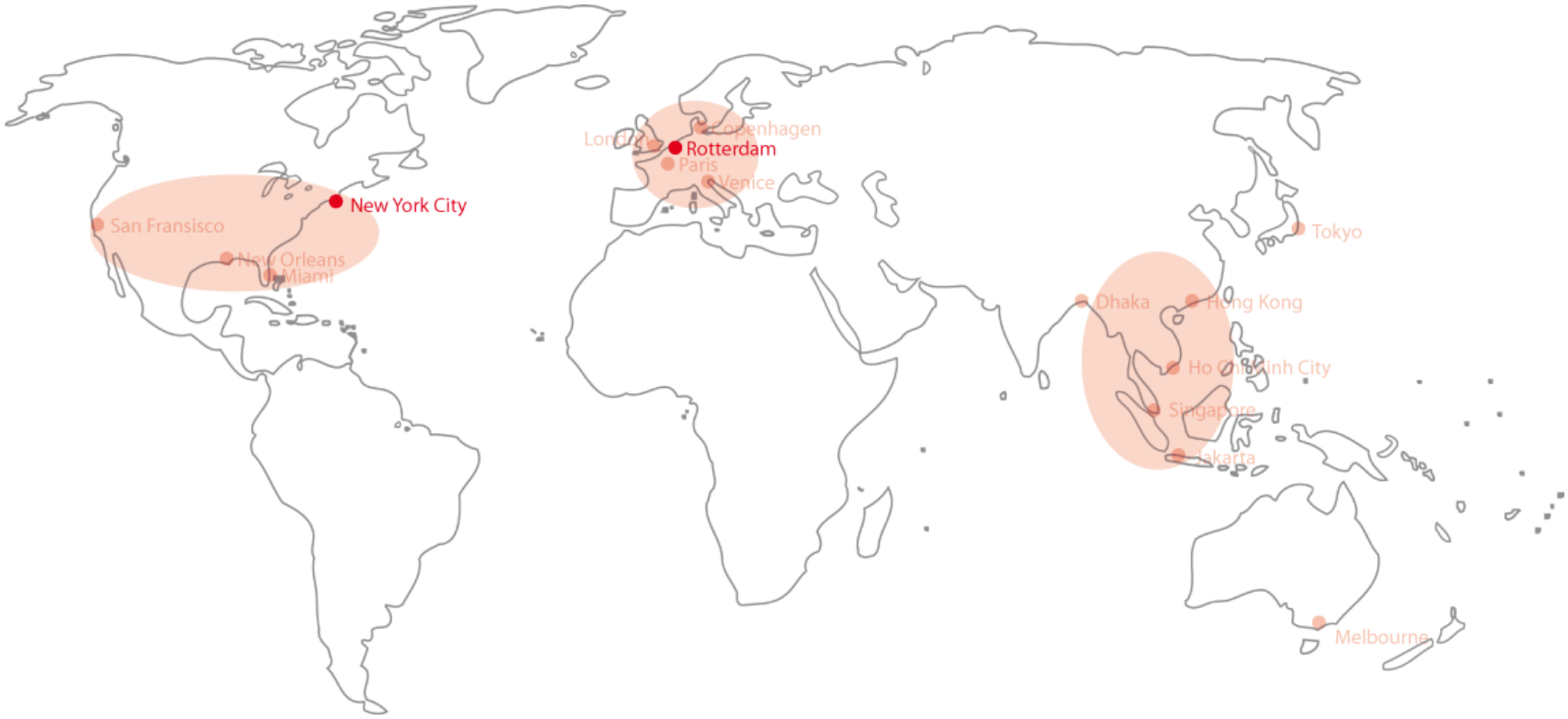
Delta cities

Delta cities



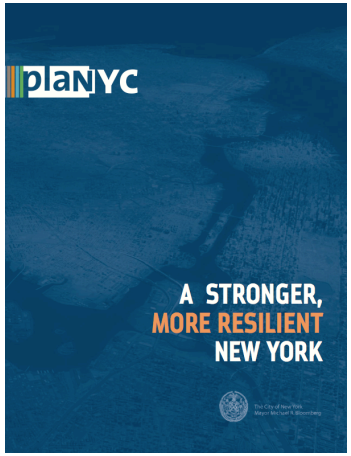
1. International comparison

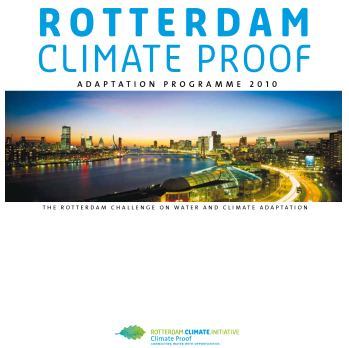


NYC & Rotterdam

Similarities

a. Western democracy
b. Technologically advanced
c. Taking action
d. Leading & learning
e. Realization hampering





Focus

Focus

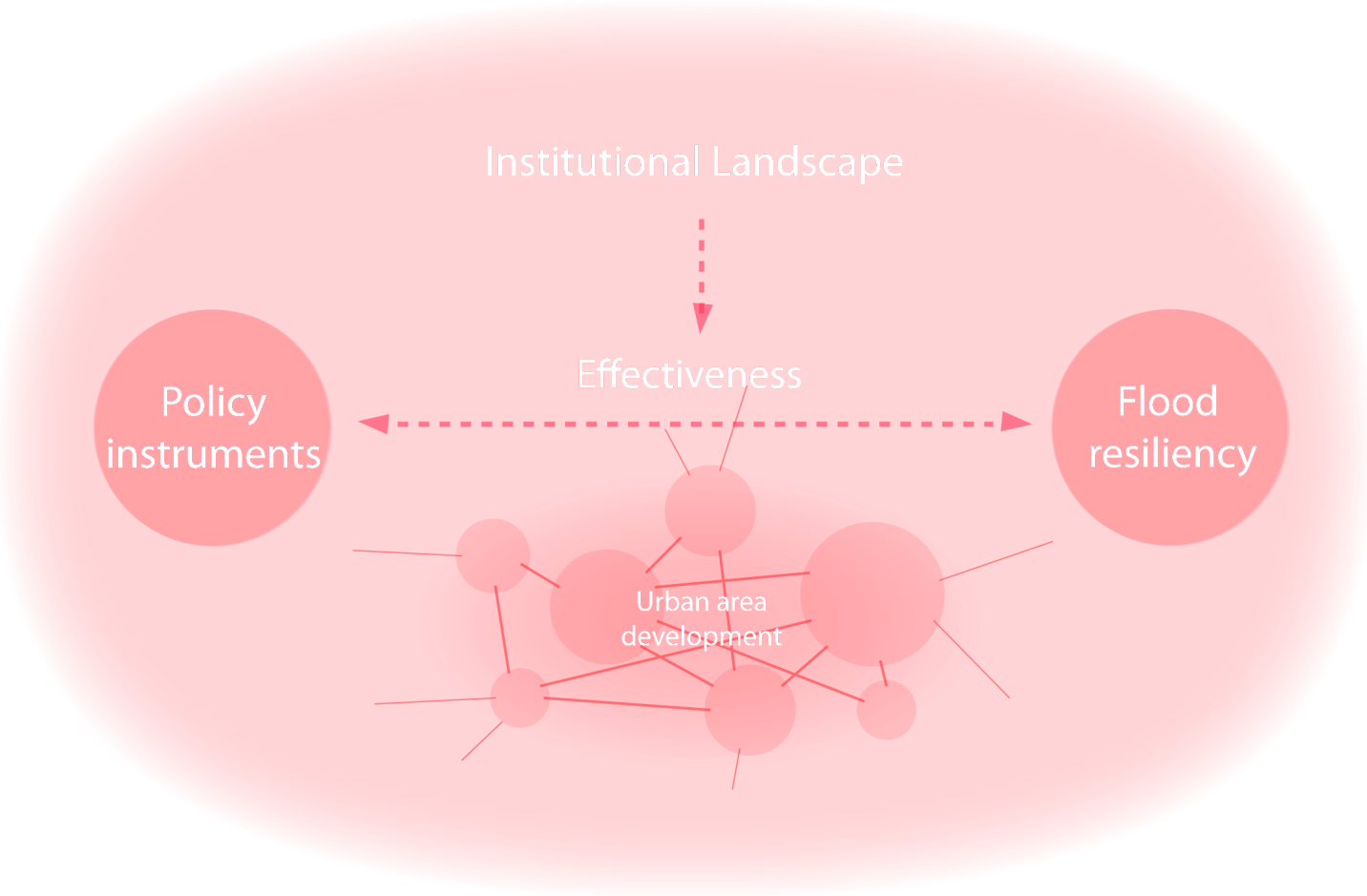
Focus

Focus

Governance

Governance

Research goals



Research goals

Compare Rotterdam and NYC to:

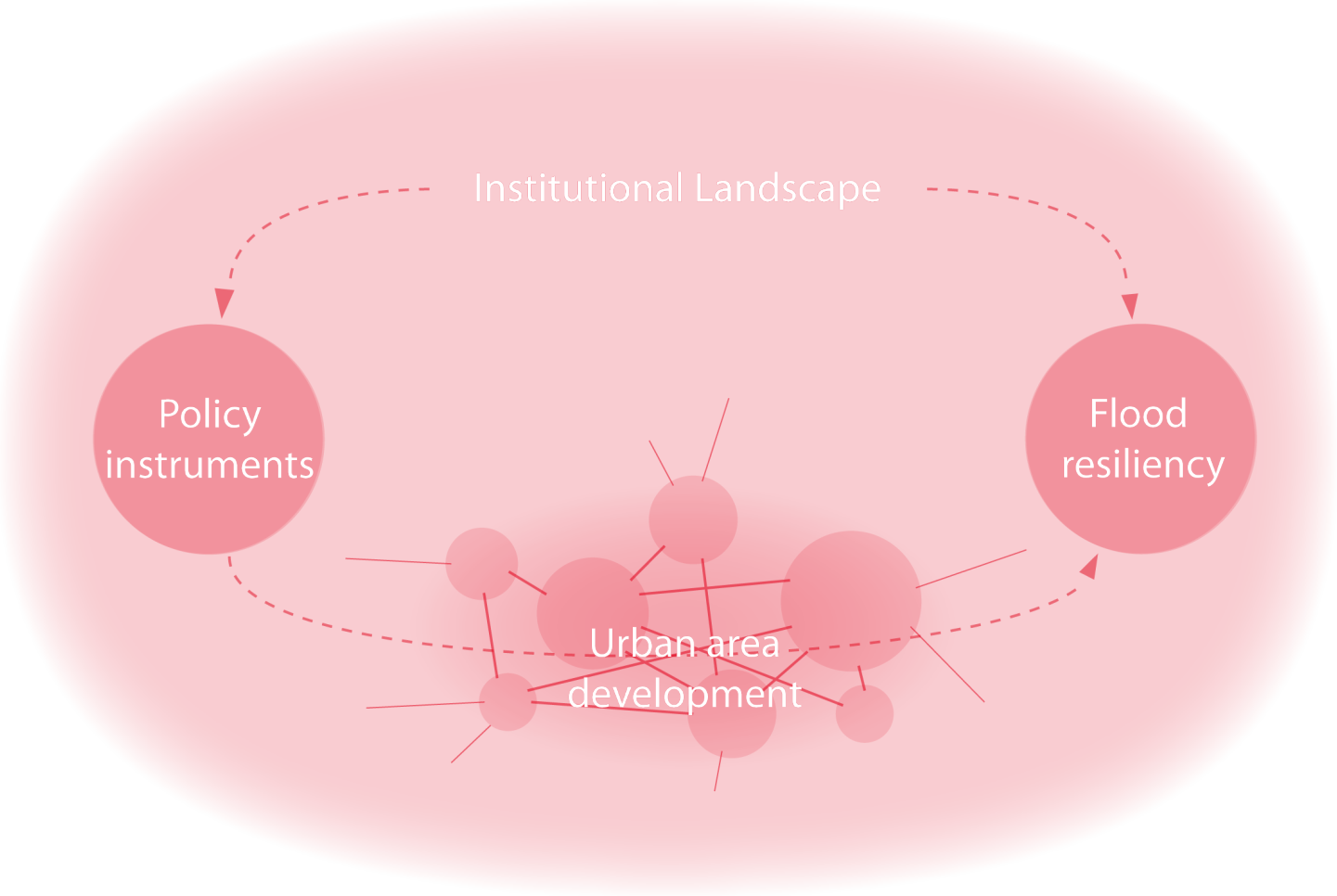
I. *assess the **effectiveness** of current policy instruments in building flood resiliency of urban areas*

II. *identify characteristics of institutional landscape that **influence** the effectiveness of these policy instruments*

2. Research Approach

I. Questions
II. Design
III. Methodology

I. Questions – Conceptual model



I. Questions

Comparing practices of urban area development in Rotterdam and NYC

I. What are the **main characteristics of the institutional landscape** in building flood resiliency?

II. **Planning policy**
   a. What policy instruments are **currently deployed** to build flood resiliency in vulnerable areas?
   b. To what extent are these policy instruments **experienced** by local actors?

III. **Flood resiliency**
   a. How is flood resiliency **currently assessed** in vulnerable areas?
   b. What aspects of building flood resiliency should be **strengthened**?

IV. What is the **effectiveness** of current policy instruments on building flood resiliency?

V. What is the **influence** of the institutional landscape on policy effectiveness?

I. Questions - Hypotheses

For both Rotterdam and NYC the following statements are tested:

1. The building of flood resiliency in urban area development is hampered.

2. Public policy instruments that are currently employed are not effective.

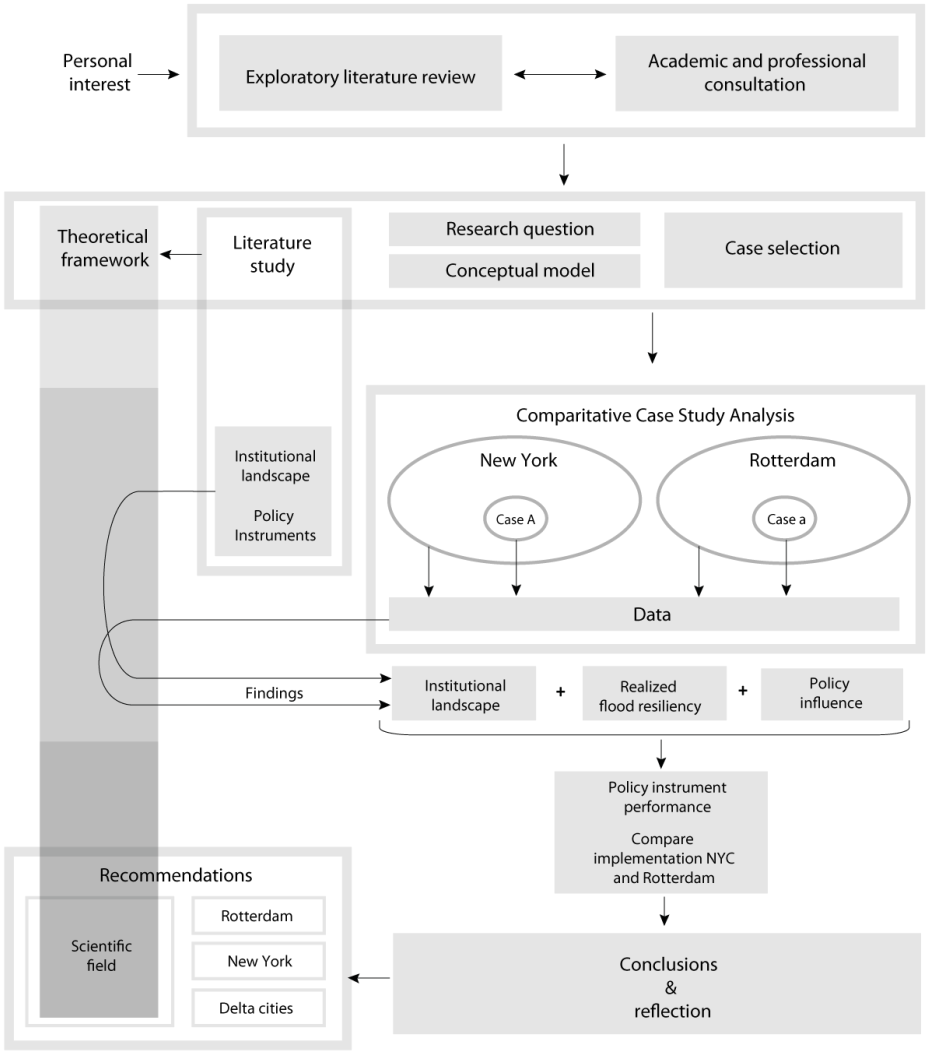
3. Institutional landscape influences this effectiveness.

II. Design

Preparation

Data collection
&
Analysis

Conclusions



III. Methodology

Sources	Variables	Policy instruments			
	Institutional framework	Issued	Perceived	Needed	Realized flood resiliency
Document analysis					
Scientific reports/ academic literature	●	○		○	●
Policy documentation	○	●			
Interviews					
Experts	●	○		○	○
Actors issuing public policy	○	●		○	○
Actors responding to public policy			●	●	○

III. Methodology – data gathering & documentation

30 interviews

SUNSET PARK ACTOR INTERVIEW

1. Do you believe in climate change and, more specific, increased flood risk for NYC d weather events and sea-level rise?
2. Do you have a clear view on the current flood risk in Sunset Park?
    - Do you think this has improved?
    - How and why?
3. Do you think there's a good understanding of future threats for Sunset Park?
    - Do you think this has improved?
    - How and why?
4. In the development of Sunset Park, have lessons from previous flooding experienc consideration?
    - If so, what lessons?
    - What flooding experiences?
    - What kind of results?
5. When it comes to building flood resiliency of Sunset Park, do you think clear goals the development of Sunset Park?
    - What goals?
    - By whom? Who's responsible for realization?
    - How are these determined and recorded?
6. Are you aware of any action being taken on realizing flood resilient measures in th
    - What kind of actions?
    - What kind of measures?
    - By whom?
7. Is the public/local community involved in building flood resiliency of the area?

Transcriptions

zijn eraan gewend. Ik heb lang geleden een analyse gemaakt van de hoeveel governance-structuren we in de randstad hebben en dat zijn er oneindig veel. We hebben voor elk probleem weer een eigen task force, project of structuur opgezet. De veiligheidsregio is bijvoorbeeld niet dezelfde als een waterveiligheids of europees programma regio. Provincies, een randstad overleg, inter-gemeentelijk overleg, metropoolregio Amsterdam, een veelheid aan structuren, voor elke vraag een 'thuis'. Maar we zijn het gewend, al lijkt het onoverzichtelijk. Nederlanders zijn cultureel maar ook bestuurlijk in staat om systeemtechnisch te denken en te opereren. Wat niet wil zeggen dat dit een goede situatie is. Teveel bureaucratie, teveel onoverzichtelijke organisaties, teveel van alles zit uiteindelijk het probleemoplossend vermogen in de weg. Ons excuus dat alles ingewikkeld is, maakt ruimte voor nog meer complexiteit in d emaneer hoe we ermee dalen, en dat kan echt veel slimmer. Amerikanen doen dat anders, daardoor leidt dezelfde complexiteit aan opgaven tot een andere reactie, een andere wanorde. Geen bestuurlijke kluwen, maar eerder een gemis aan een volwassen bestuurlijke cultuur. Wat "wij" teveel hebben lijken "ze" daar te weinig te hebben. In Nederland zijn we erop ingesteld dat ieder zijn eigen specialisme heeft en worden de onderlinge verbanden onderkend, dat betekent dat je elkaar opzoekt om het gezamenlijk over - die samenhang van de - problemen te hebben, die vaak in hun samenhang tot betere oplossingen kan leiden. Nederlanders zijn over het algemeen - en ik generaliseer nu enorm - veel beter in staat de complexiteit van een opgave in te zien en ook de samenhang met andere systemen. Systeemdenken is in de VS niet een onderdeel van de bestuurlijke of politieke cultuur wat betekent dat hoewel er misschien wel verschillende governance modellen prevaleren, dat er niet voldoende begrip achter - het besturen van een regio - zit. Niet in Nederland, niet in de USA.

Neem bijvoorbeeld de Port Authority (PA), dat is eigenlijk een waanzinnige autoriteit. Het is regionaal, wordt geleid door NY, NYC en New Jersey. Bovendien hebben ze beslissingsbevoegdheid en geld. Ze kunnen hun eigen regels stellen en ook uitvoeren. Ze zijn dus eigenlijk heel krachtig - zelfs mactig, maar onmachtig gemaakt doordat de politiek de PA de nek om heeft gedraaid. De politiek van NJ, NYS en NYC heet de PA 'gekaapt' voor haar eigen - niet synchrone - agenda's. Als het gaat om flood resiliency en adaptation in het algemeen dan heb je het toch over die regionale schaal. En dan heb je met zo'n PA als formeel overheidsorgaan toch een heel krachtige en interessante instantie te pakken. Het bestuur, de burgemeester van NYC en de twee Governors spelen eigenlijk een politiek spel met de PA waardoor deze nog maar heel weinig invloed heeft. En bovendien neemt de PA zelf - en dat vind ik fascinerend - te weinig eigen positie in om hier tegenwicht tegen te bieden. Robert Moses heeft natuurlijk een boel ellende veroorzaakt met zijn technocratische manier van denken en aanpak, maar er ligt nu wel een infrastructuur met bruggen en tunnels en een metrosysteem dat nog steeds een enorme toegevoegde waarde heeft voor de stad. Moses is niet de juiste referentie, zoals we met Rebuild by Design vertellen is de mix, of het huwelijk tussen Robert Moses en Jane Jacobs eigenlijk de beste aanpak. Hun 'lovebabies' zijn de werkelijke oplossing. Tegelijk laat de positie van de PA zien hoe relatief de macht is van verschillende overheidsinstanties in relatie tot de politiek. De PA zou een eigenstandige positie in kunnen nemen, zoals in NL met een Deltaprogramma gebeurt. De Deltacommissaris heeft een eigen

III. Methodology - Scoring

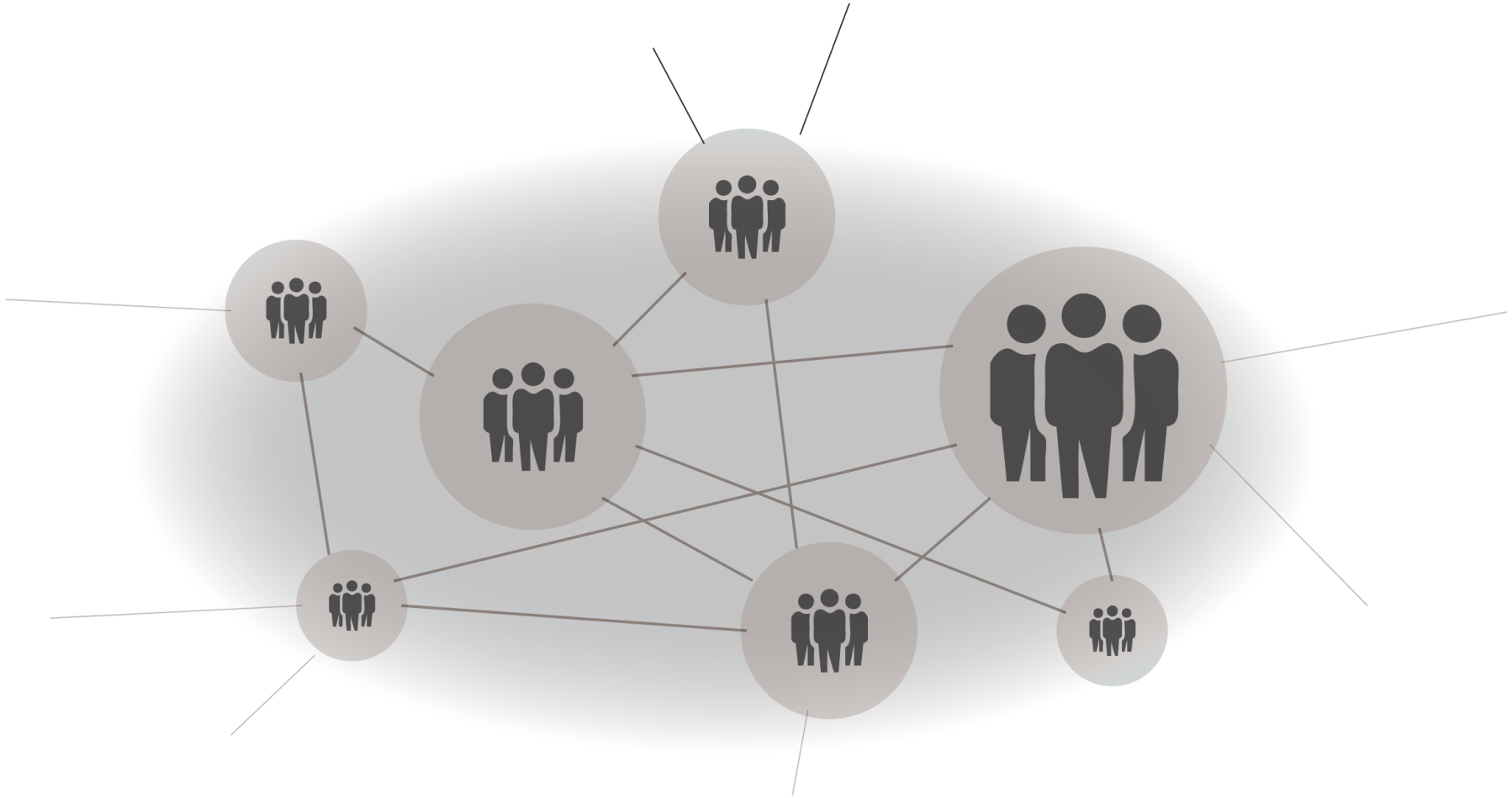
Processing: scoring mechanism

| | | |

3. Theoretical framework

I. Paradigms & theoretical strands
II. Models

I. Paradigms and theoretical strands – Network society



(Florida, 2002; Castells, 1996)

I. Paradigms and theoretical strands – Institutions theory

I. **Formal -** Range of accepted modes of governance; formal rules, laws, regulations

II. **Informal** - Generally respected social norms agreements, convenants, contracts, rules, relations

III. **Symbolic** - Communicative systems, paradigms, moral frameworks, norms and values, networks and coalitions, language

IV. **Processes -** Actor interaction, means and outcomes, roles, strategies, interests

(Scharpf [1997], Healey [2007], Koppenjan & Groenewegen [2005])

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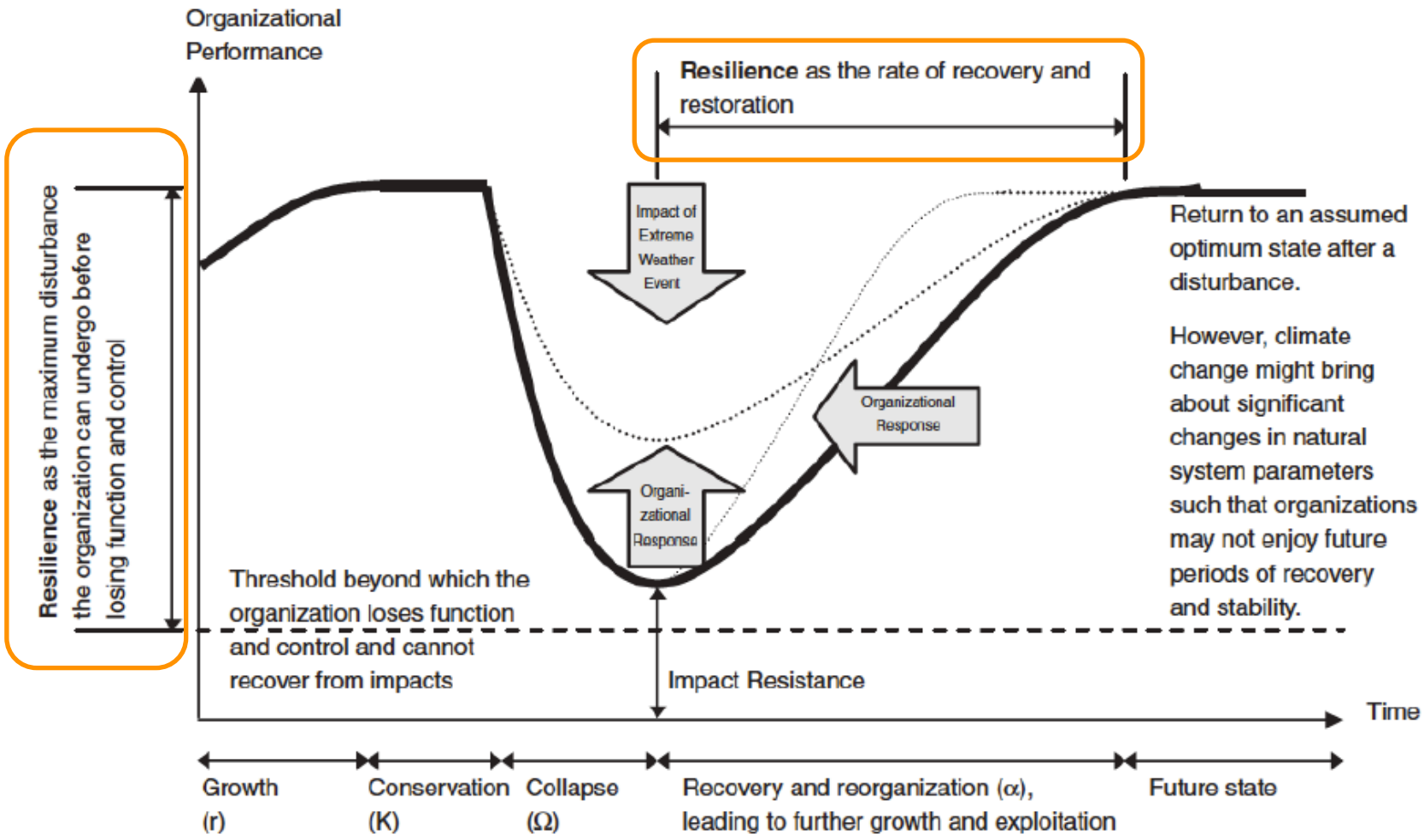
(Scharpf [1997], Healey [2007], Koppenjan & Groenewegen [2005])

II. Models – Institutional landscape

1. Norms and values
2. Interests of actors
3. Institutional arrangements
4. Institutional structure
5. Institutional rules and policies

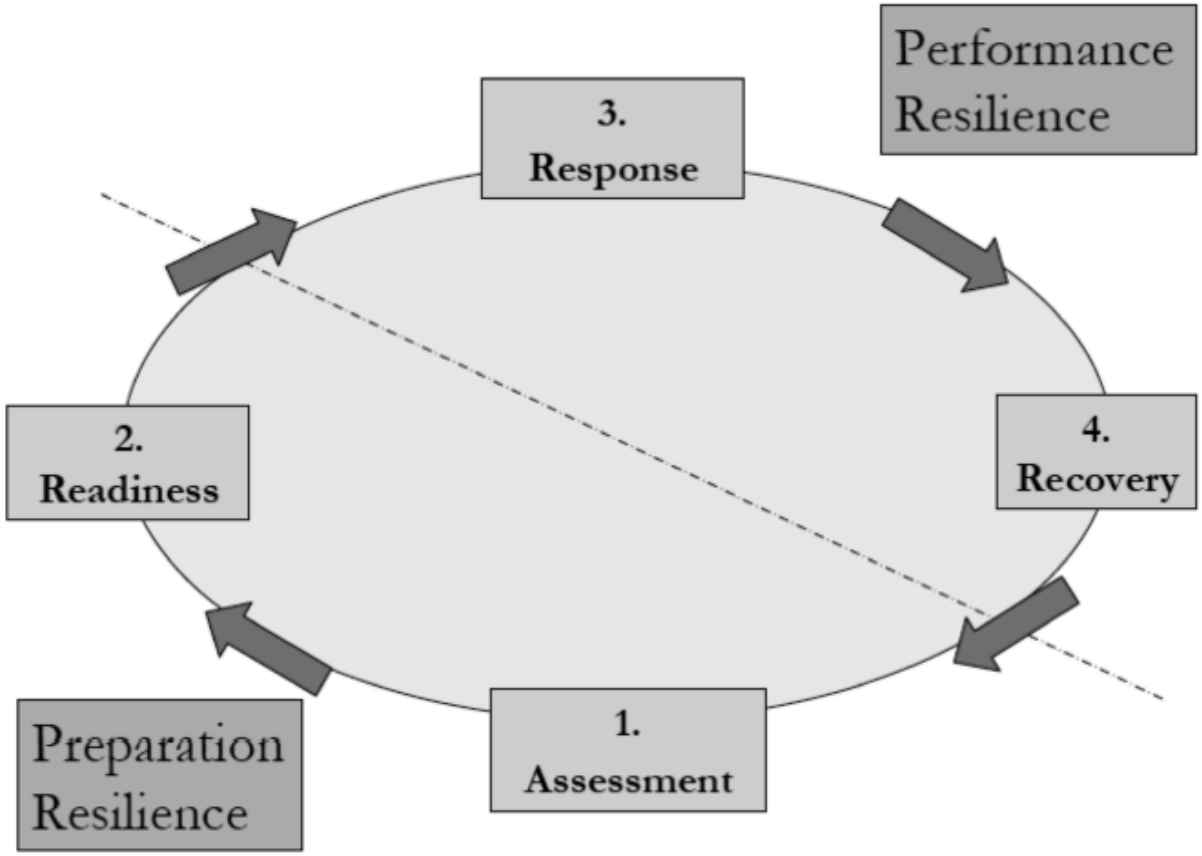
(Inam [2007])

II. Models – Flood resiliency



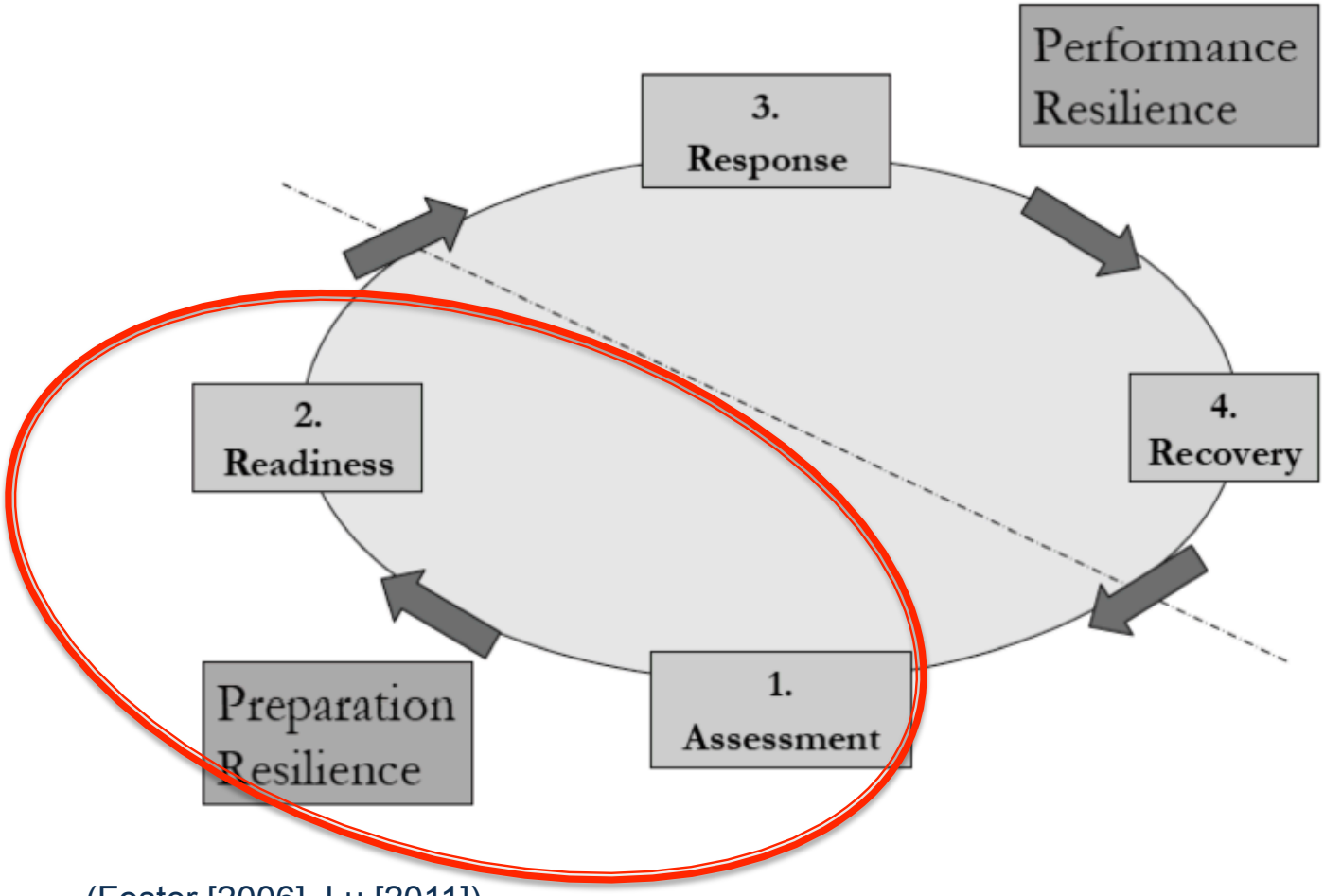
Source: Linnenluecke & Griffiths, [2010] in Lu [2011]

II. Models – Flood resiliency



(Foster [2006], Lu [2011])

II. Models – Flood resiliency



(Foster [2006], Lu [2011])

II. Models – Flood resiliency

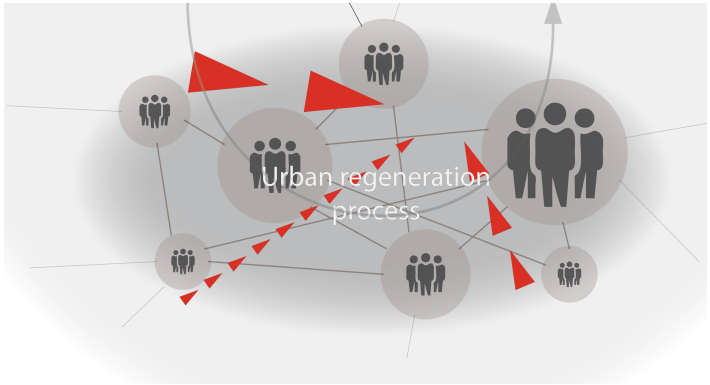
How to assess preparedness of an urban area:

1. Considering the current situation
2. Examining trends and future threats
3. Learning from previous experience
4. Setting goals
5. Initiating actions
6. Involving the public

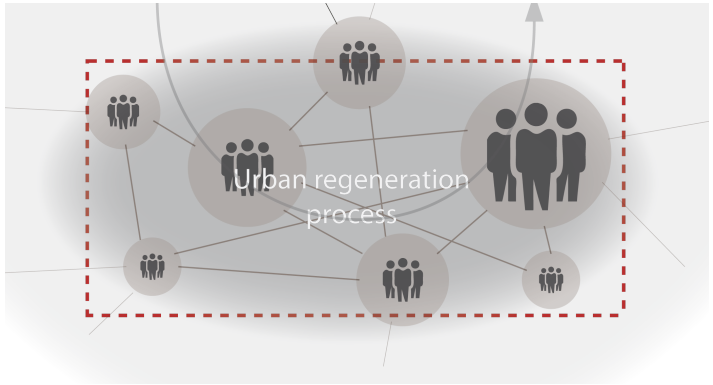
(Tasan-Kok, Stead, and Lu (2013) and Lu (2014))

II. Models – Planning policy instruments

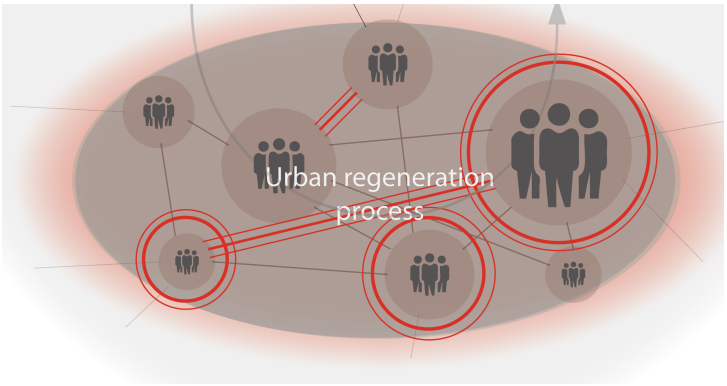
Shaping



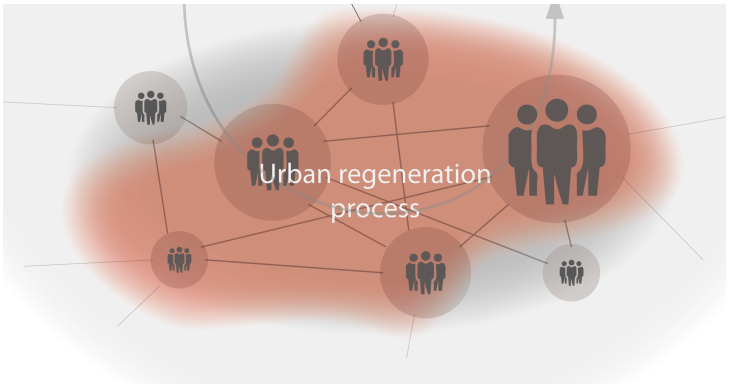
Regulating



Stimulating



Capacity building



Tiesdell and Allmendinger (2005)

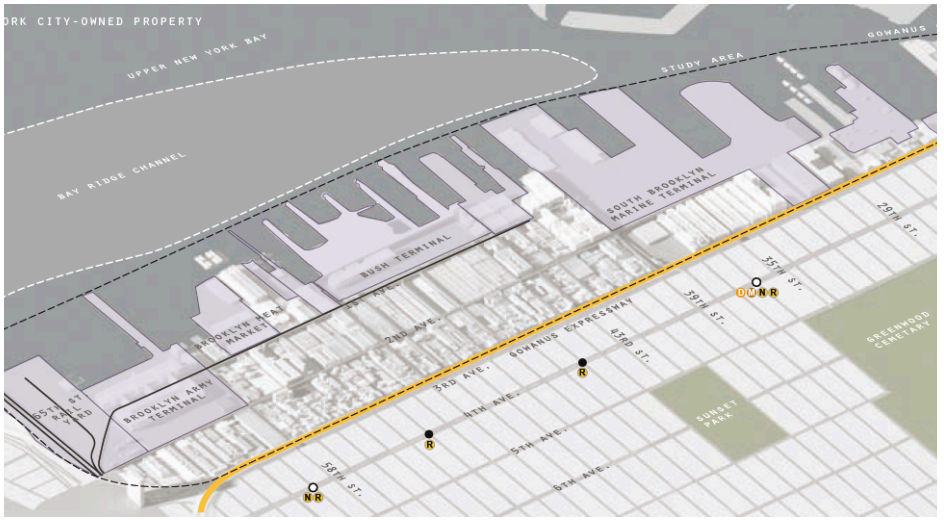
II. Models – Planning policy instruments

Instrument intention	Influence on market actors	Typical sub-types	Examples
Shaping	Shaping the decision environment or context	Development plans	Public infrastructure investment plans
		Regulatory plans	Statutory plans and stragegies; national planning policy and development plans
		Indicative plans	Non-statutory plans, strategies and advise; spatial visions, research reports
Regulation	Defining parameters of the decision environment	Public law	National regulations and legislation
		Private law	Contractual (or bi-lateral) regulation; restrictive convenants attached to land transfers
Stimulation	Restructuring the contours of the decision environment	Indirect/fiscal measures	Subsidies, tax (breaks), grants
			Land expropriation
		Direct public action	Joint ventures
			Project investment/realization
Capacity building	Developing actor's ability to identify and/or develop more effective/desirable strategies	Initiating actor-network relationships	Arenas for interaction
		Building social capital	Collaborative partnerships
		Shaping cultural perspective	Application of innovative solutions

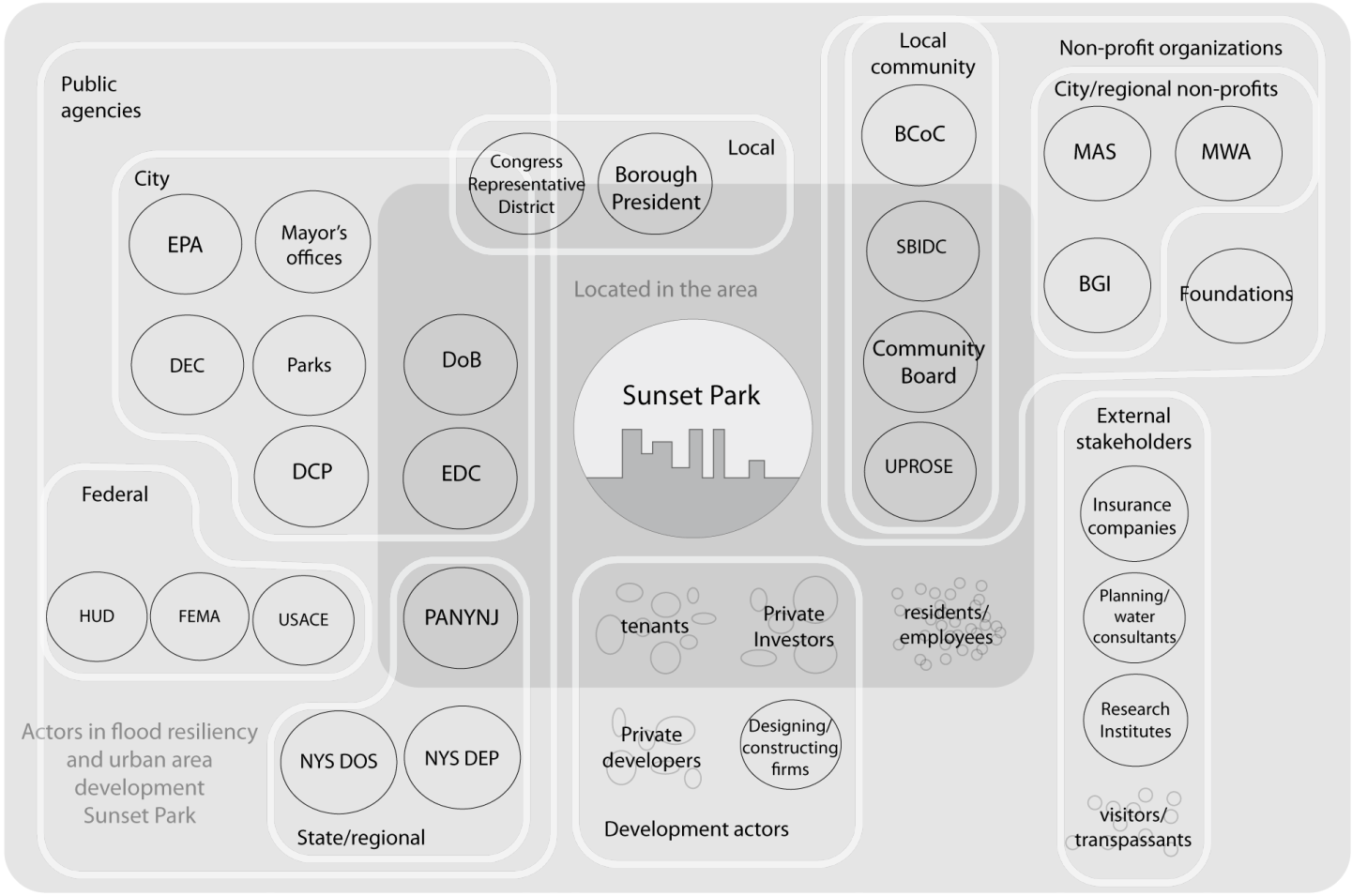
4. Case studies

I. Background
II. Findings

I. Background – Sunset Park



II. Findings – Actors NYC



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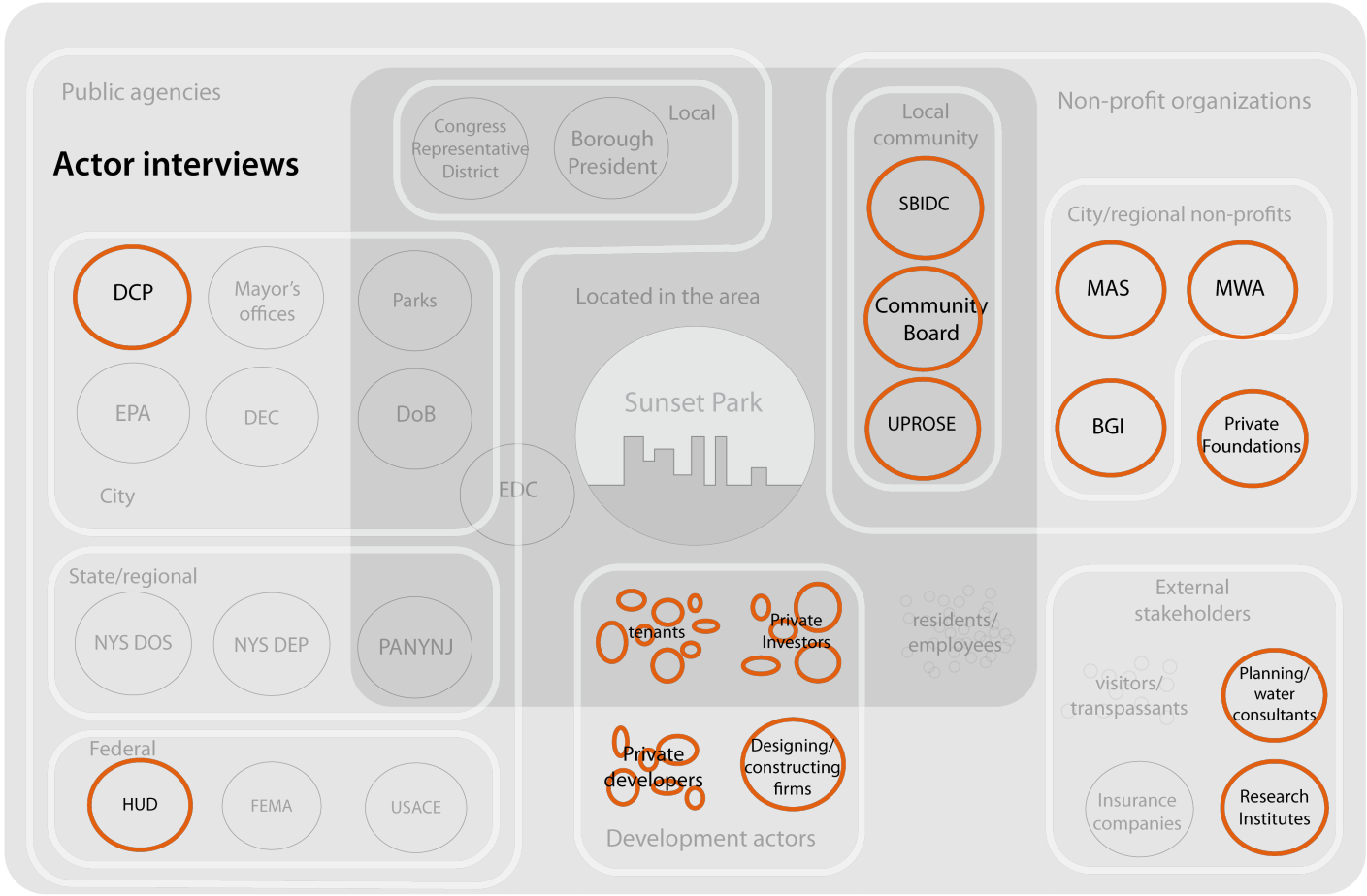

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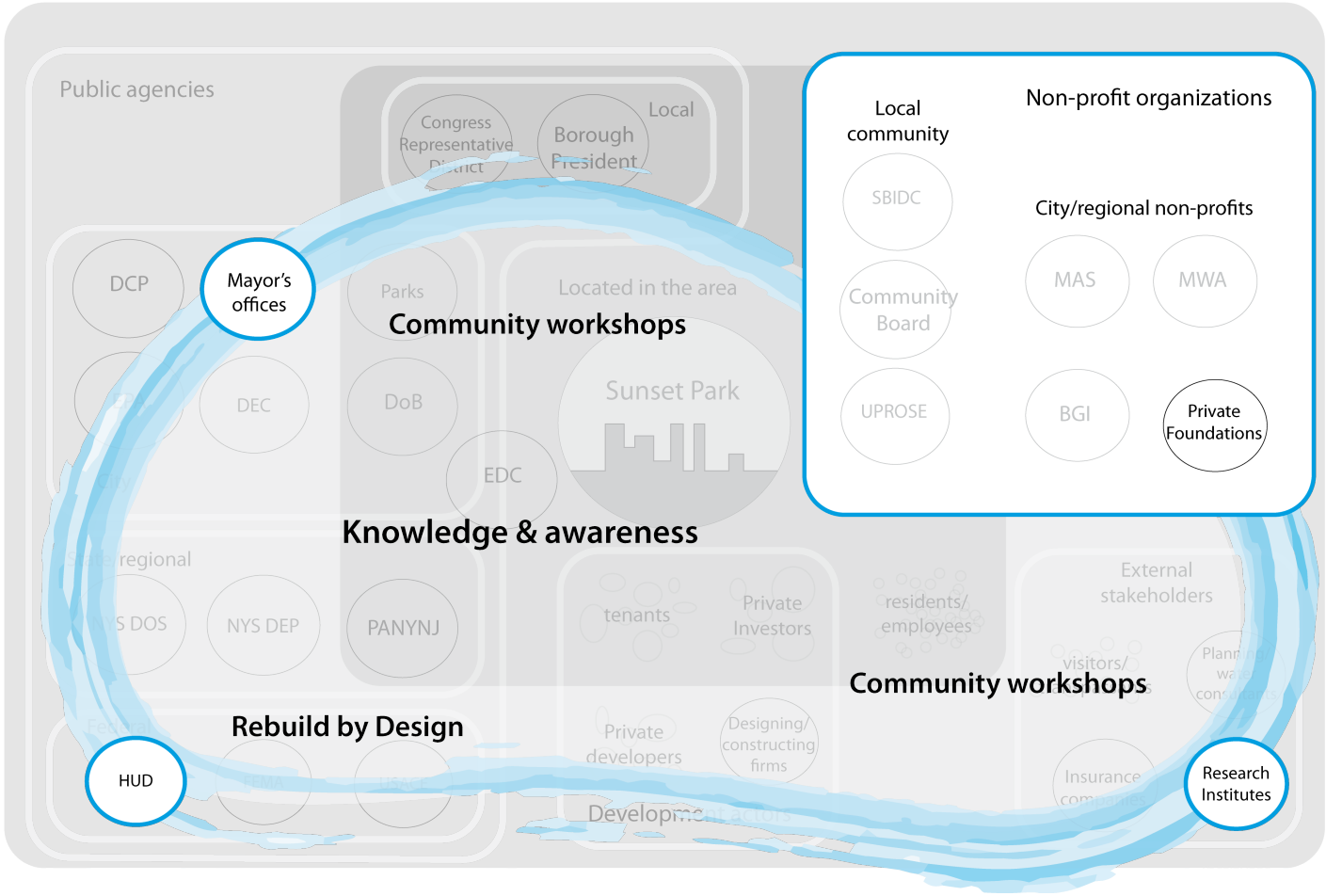

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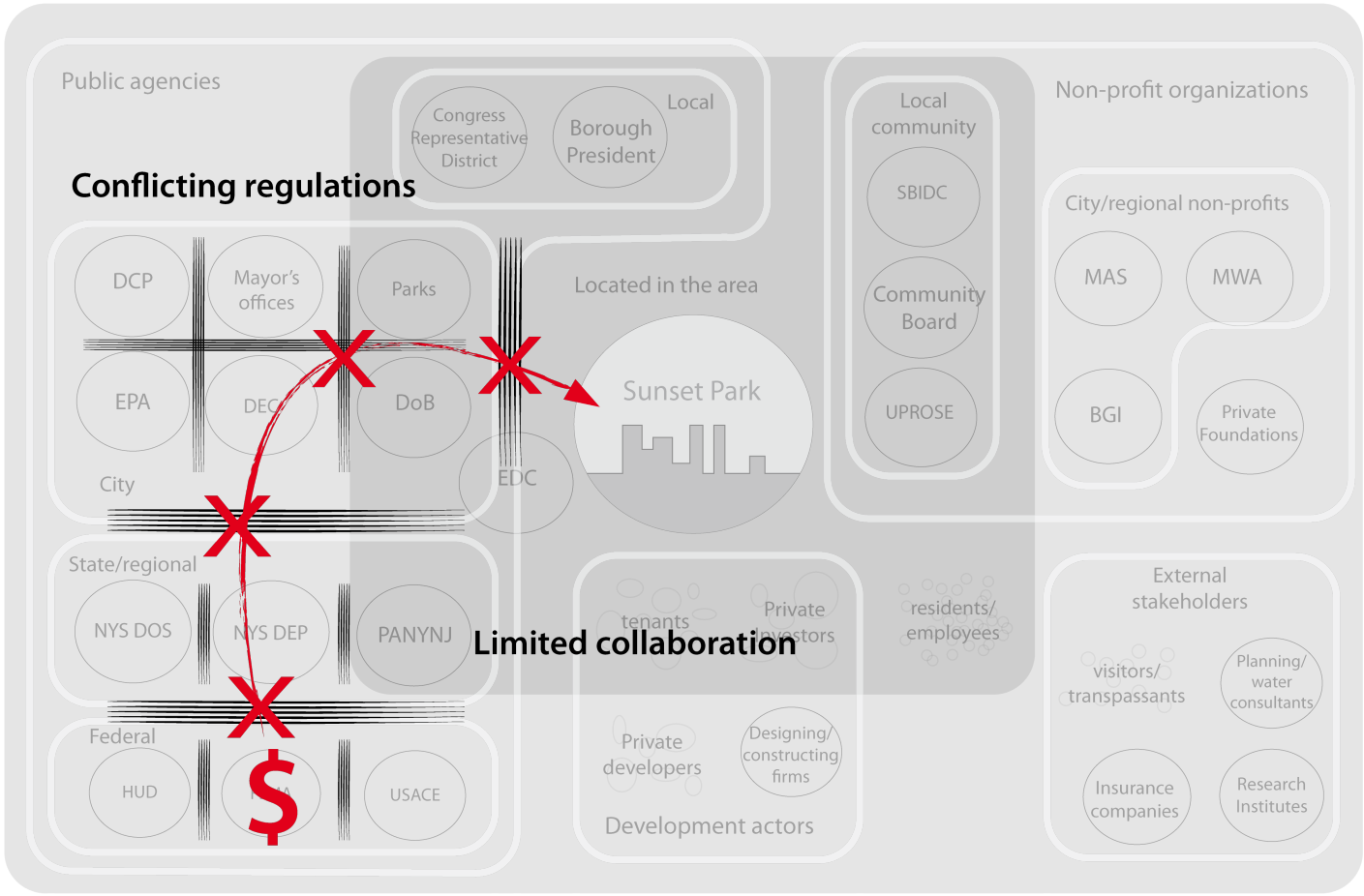

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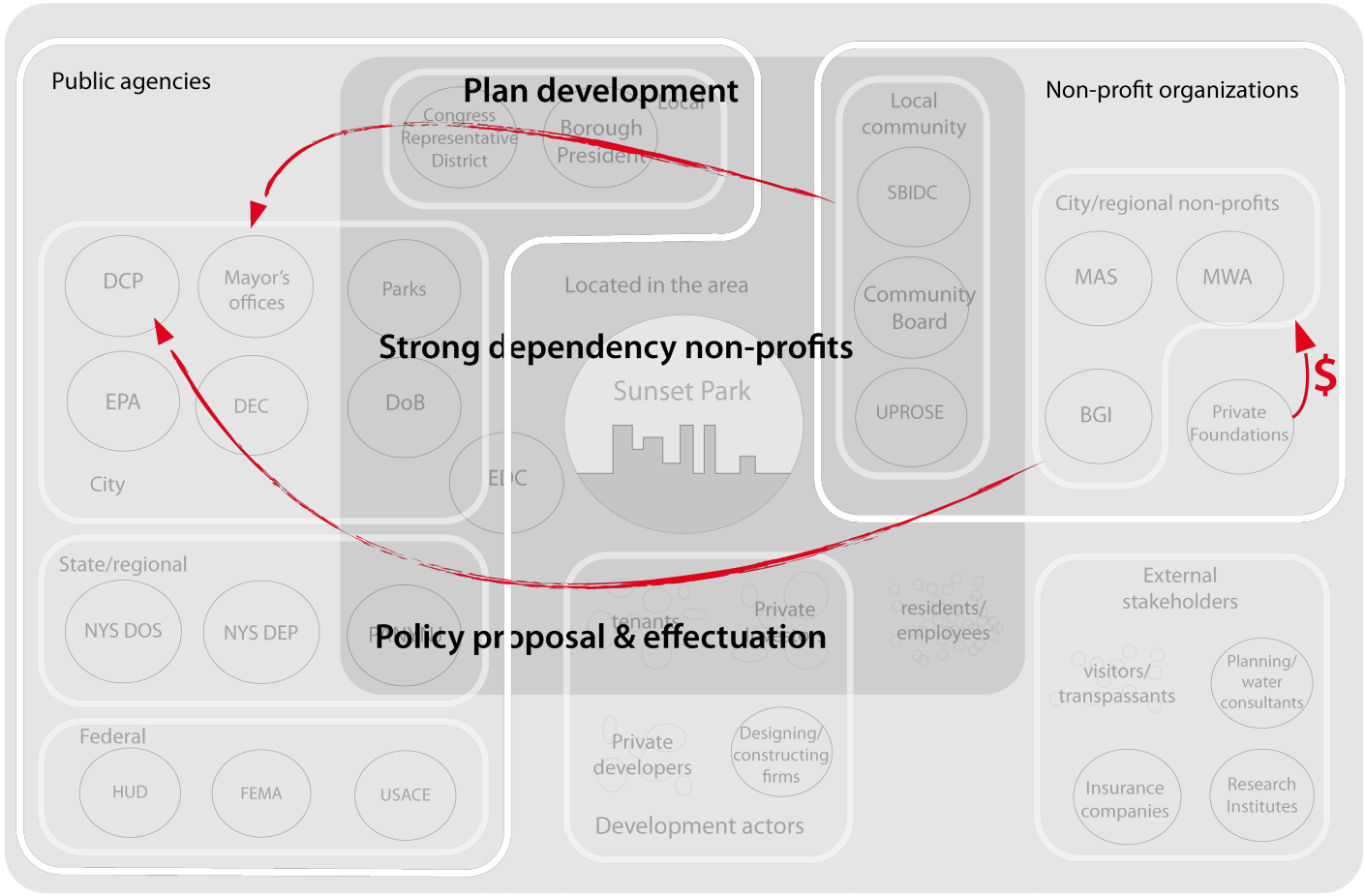

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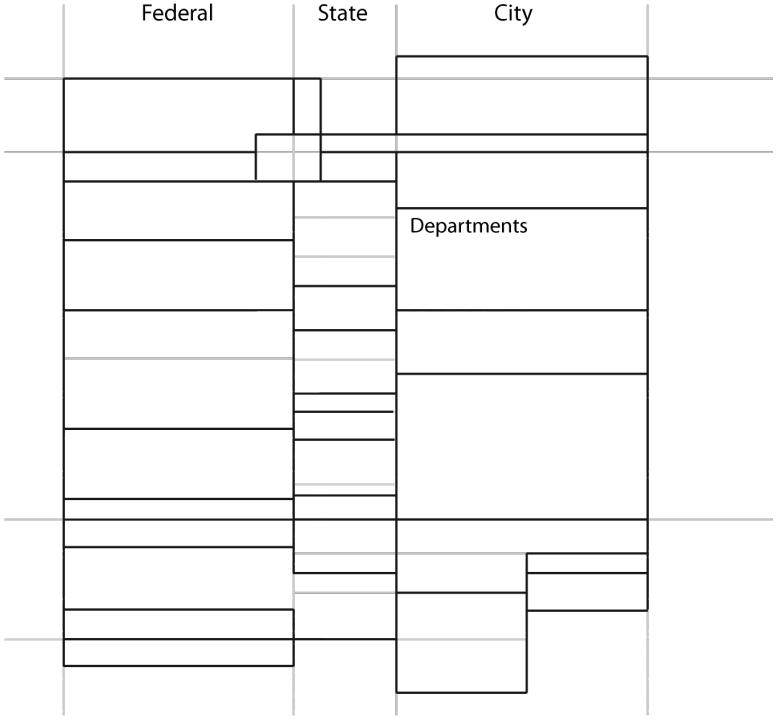

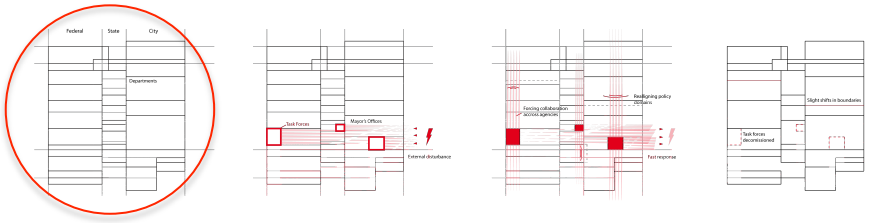

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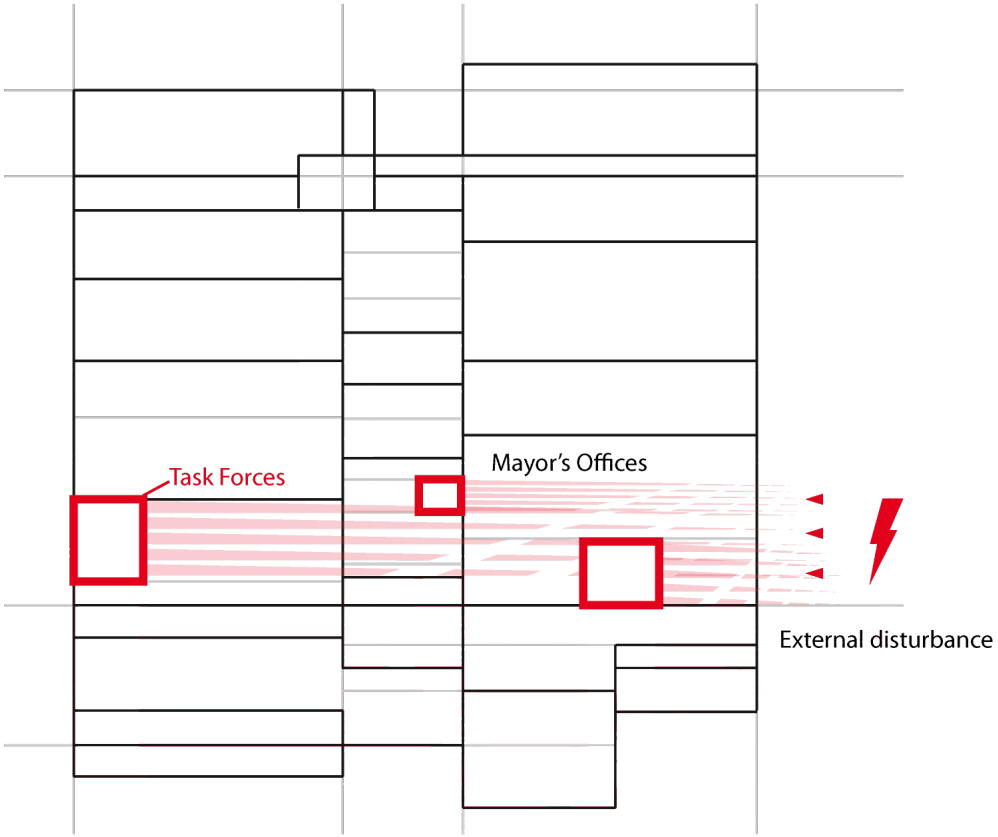

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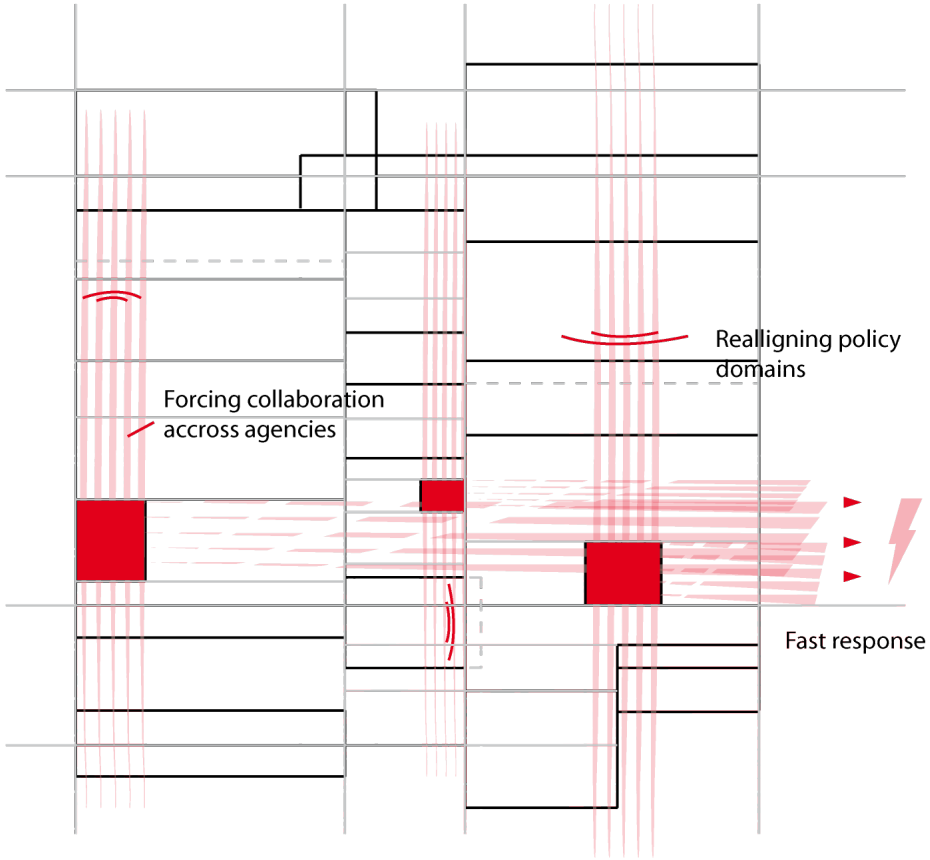

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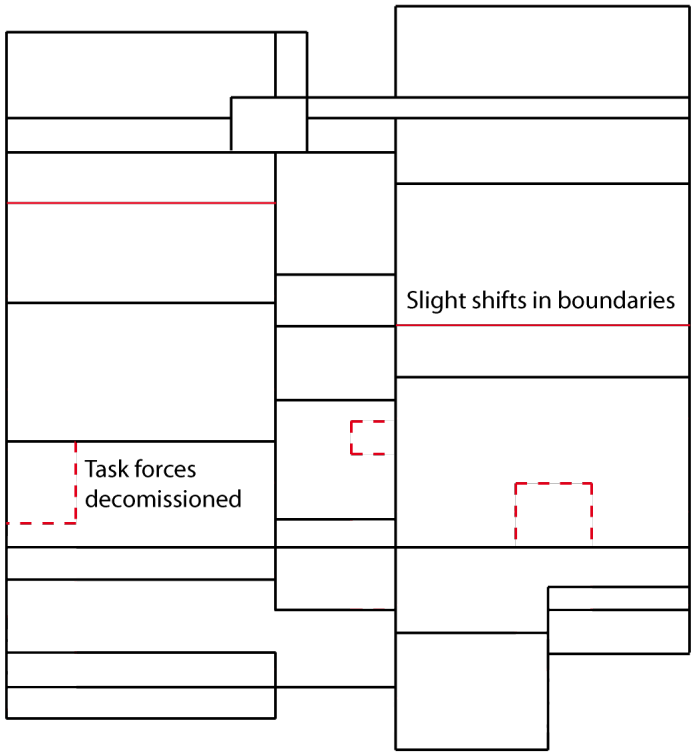
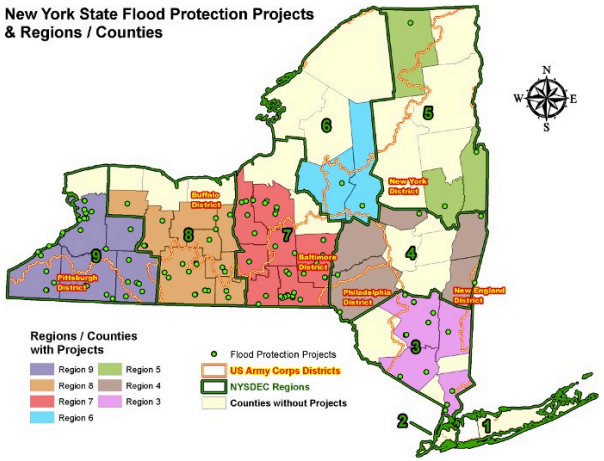
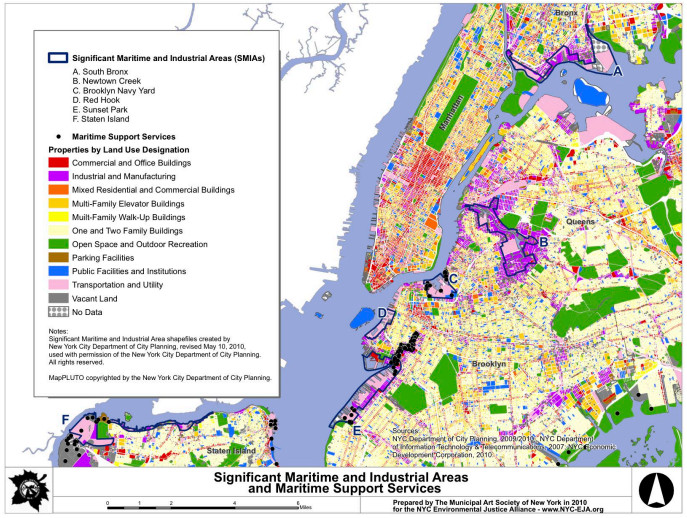


II. Findings – Policies NYC

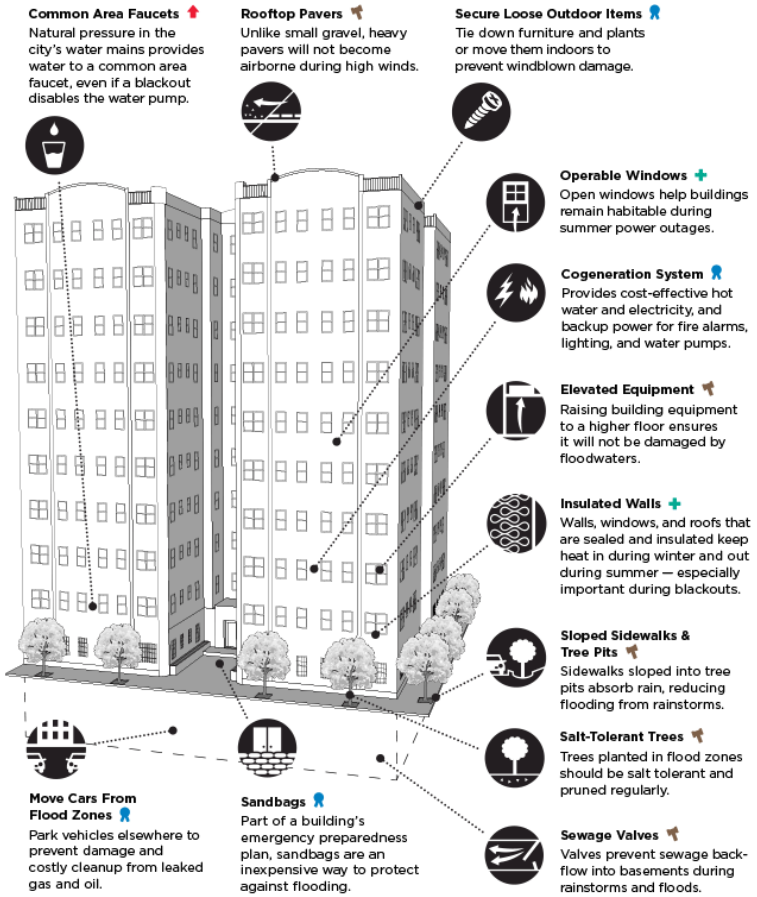
instrument intention	Policy	Main issuing agency	Level
Shaping	SIRR report	ORR	City
	Vision 2020	EDC	City
	PlaNYC	ORR, OLTPS	City
	Flood & elevation maps	FEMA	National
Regulation	Building codes	HUD, NYS, DoB	National, State, City
	Zoning plans	DCP	City
	Environmental protection legislation	NYS	
Stimulation	Sandy recovery funds	FEMA	Federal
	Community Block Grant	HUD	Federal
	NFIP		
	BOA Program		
	Rising Small Businessess Program		
	Game Changer competition	FEMA	Federal
	New York Rising programme	DOS, DEC	State
		NYS OSR	State
		HUD	
		NYS	Federal
Capacity building	Community workshops	DCP, PANYNJ	City/local
	Rebuild by Design	HUD	Federal

II. Findings – Policy instruments NYC





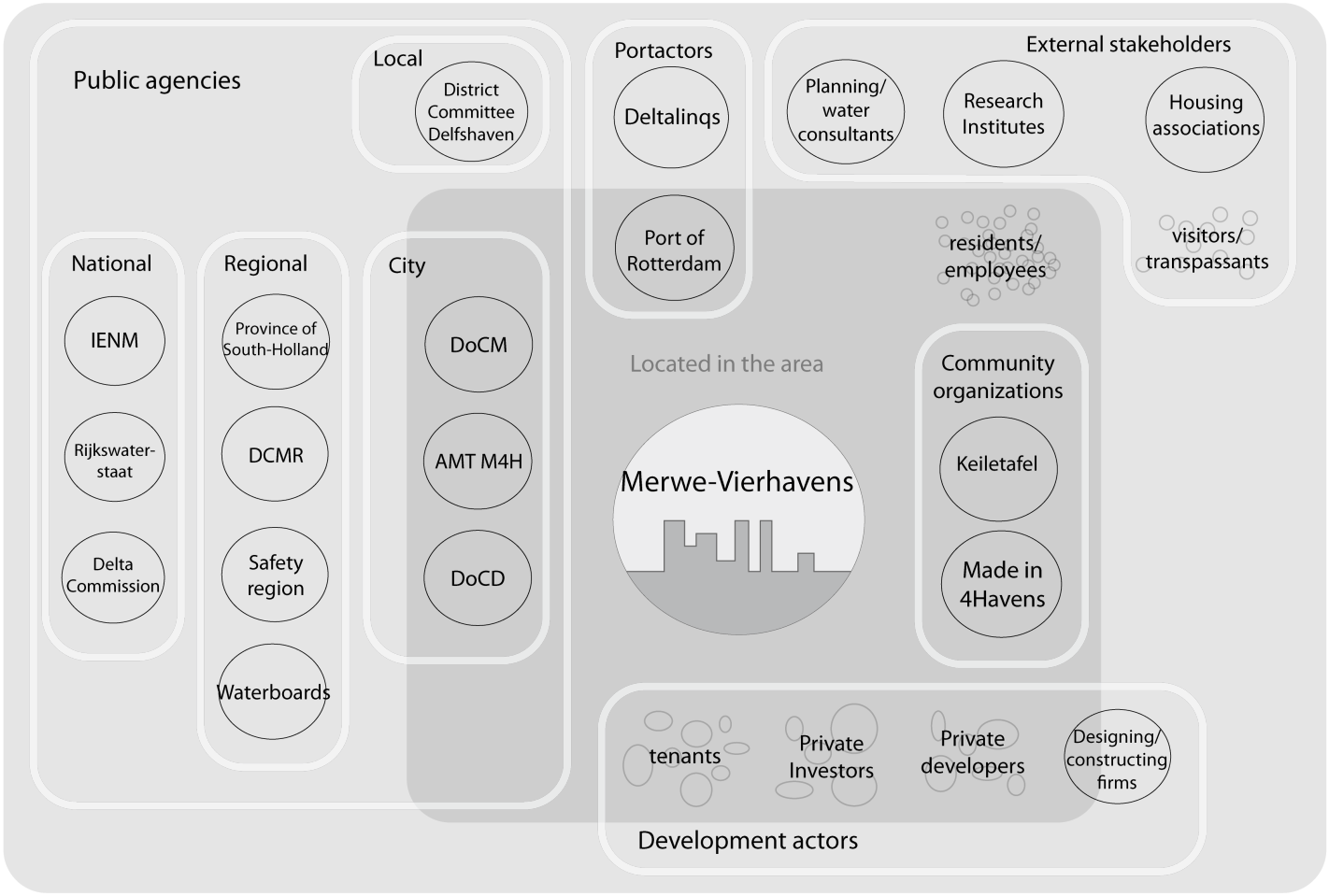
Design guidelines



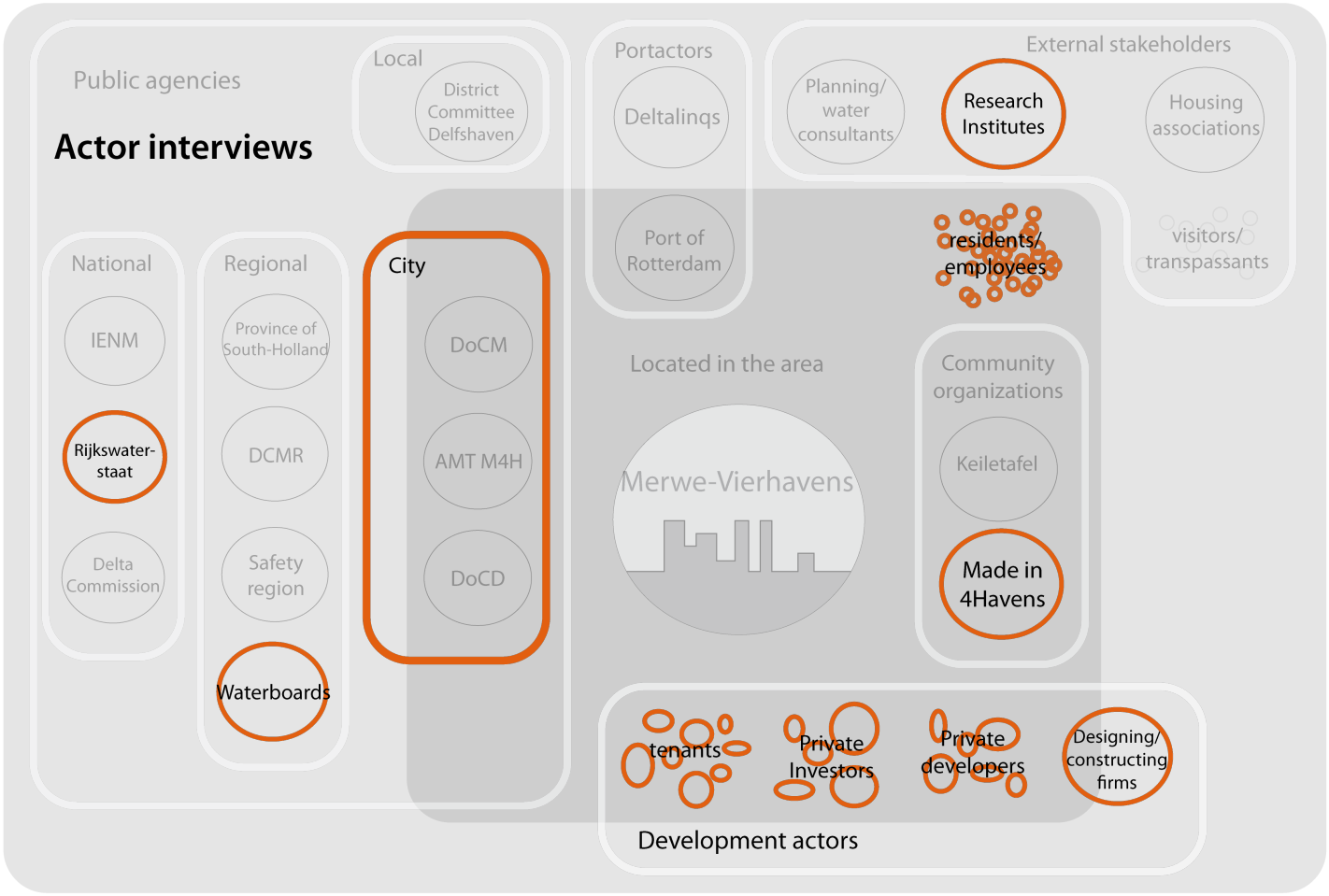
II. Findings – Arrangements & structure NYC

II. Background – Actors Rotterdam

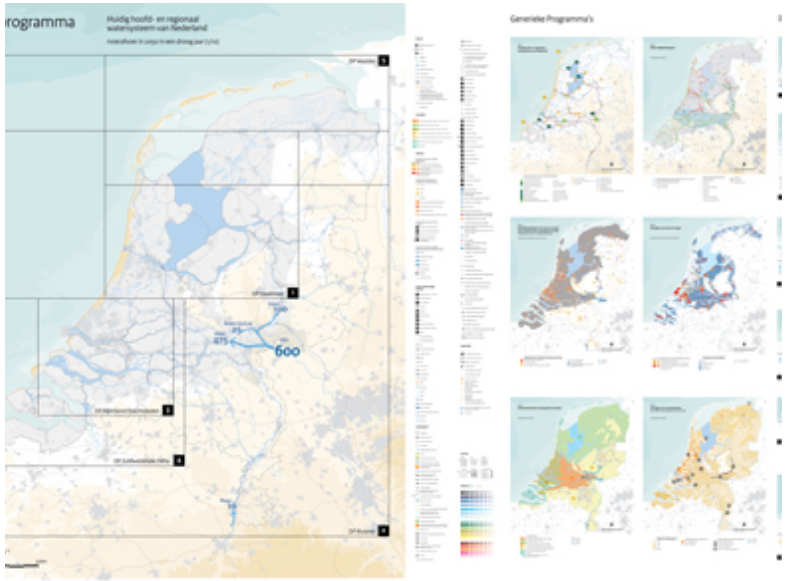
II. Findings – Actors Rotterdam



II. Findings – Actors Rotterdam



II. Findings – Policy instruments Rotterdam



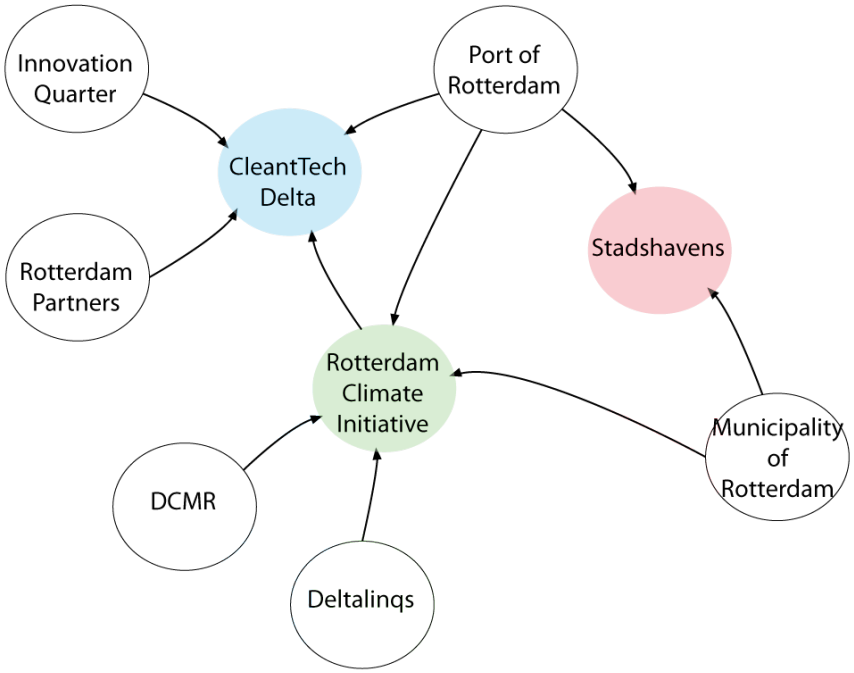
Herijking

WATERPLAN 2 Rotterdam

Werken aan water voor een aantrekkelijke en klimaatbestendige stad

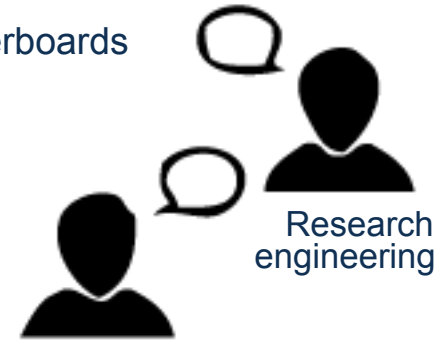
Gemeente Rotterdam / Waterschap Hollandse Delta / Hoogheemraadschap van Schieland en de Krimpenerwaard / Hoogheemraadschap van Delfland

II. Findings – Arrangements & structure Rotterdam



Rijkswaterstaat, Provinces, Municipalities

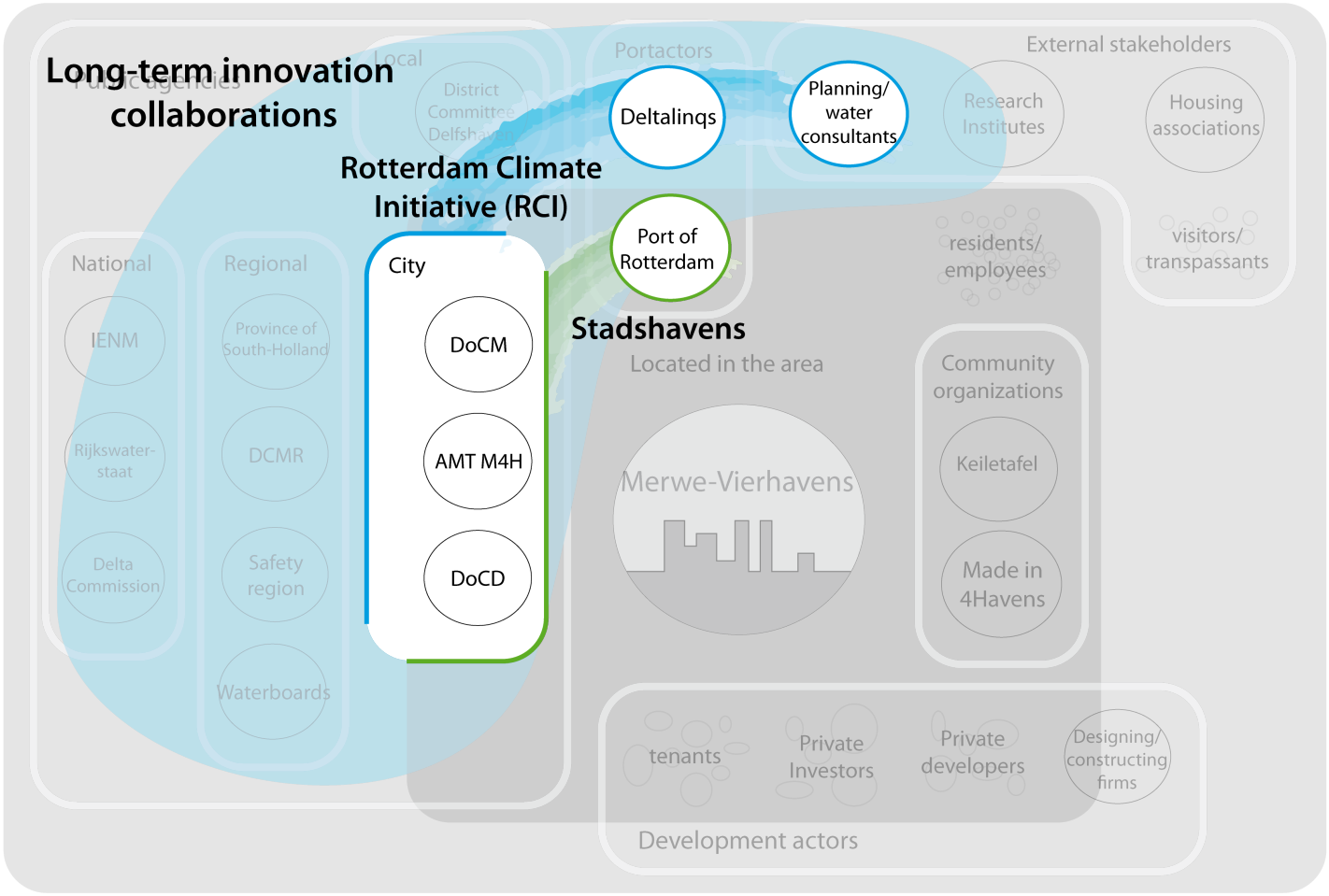
Waterboards



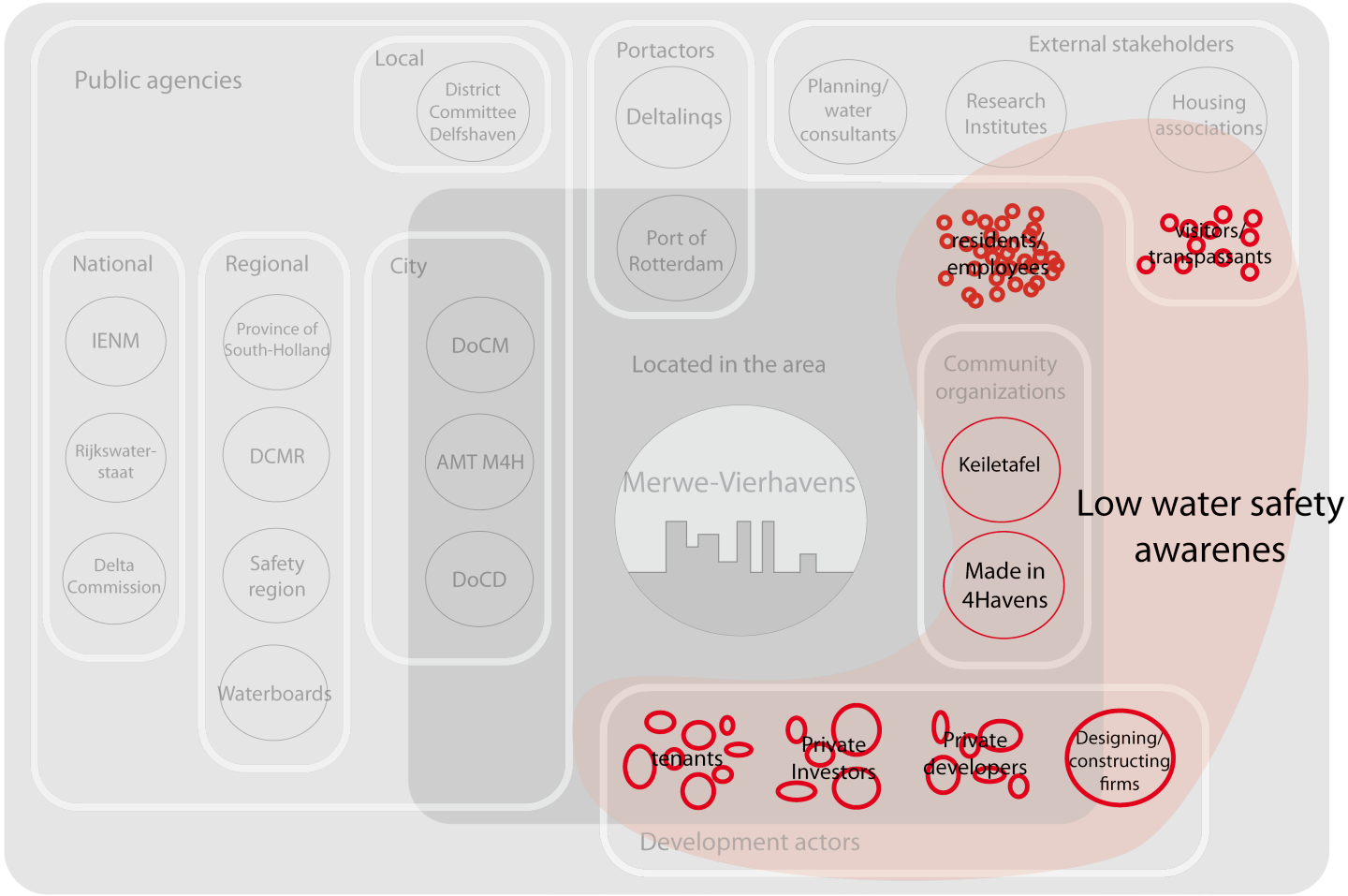
Research institutes, engineering consultants

Port of Rotterdam

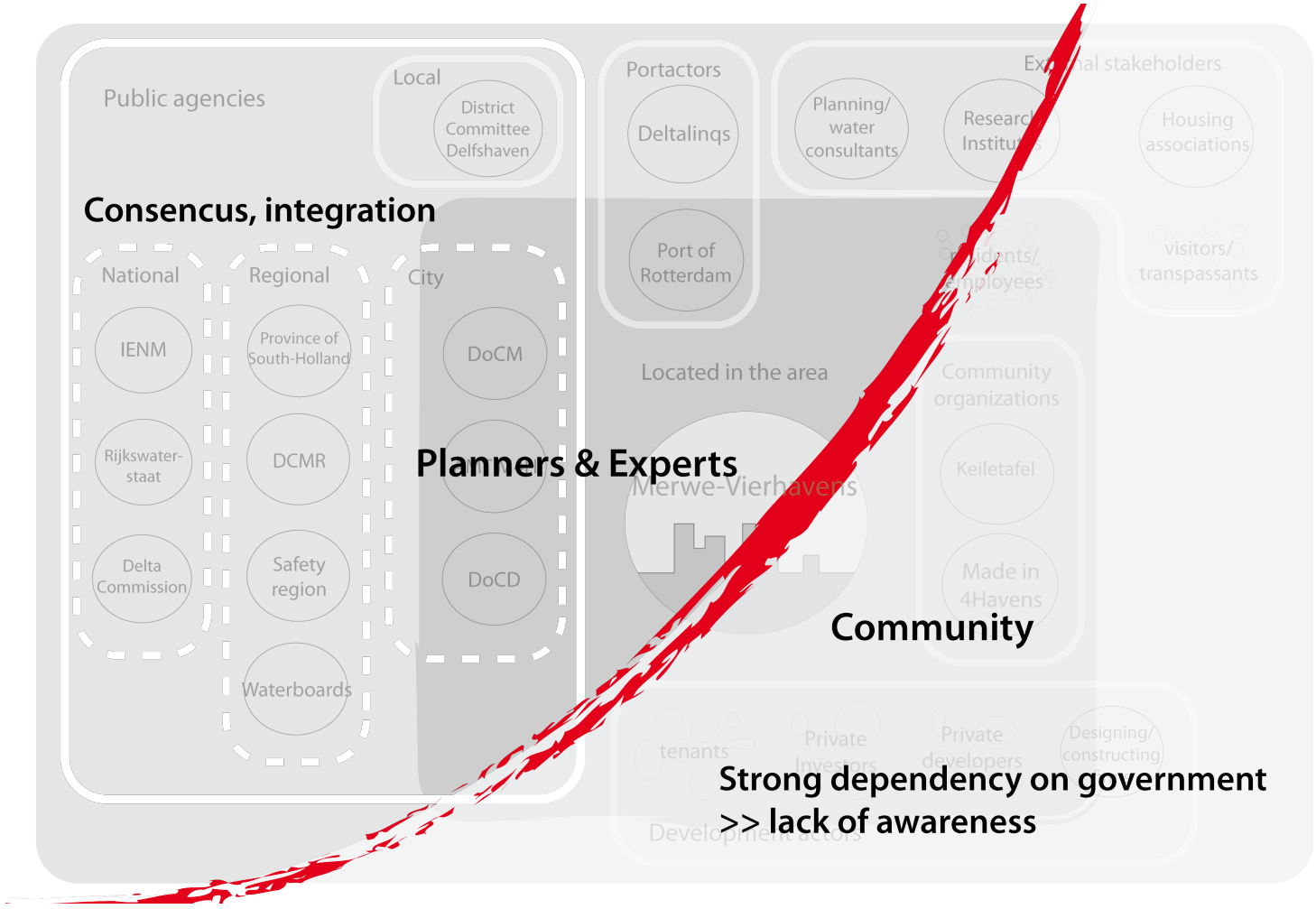
II. Findings – Actors Rotterdam



II. Findings – Actors Rotterdam



II. Findings – Actors Rotterdam



II. Findings – Policies Rotterdam

Instrument	Policy	Main issuing party	Level
Shaping	• Rotterdam Climate Proof • Waterplan I & II • Deltaprogram • Structure Visions & PIP • Pilot projects	RCI	City
		Municipality of Rotterdam	City
		Deltacommission	National
		Provincie Zuid-Holland	Regional
		Municipality of Rotterdam	City
Regulation	• Building codes • Zoning plans • Watertest • AMvB Ruimte • Legger and Keur	Ministery of IenM	National
		Municipality of Rotterdam	City
		Delfland Waterboard	Local
		Ministery of IenM, Provinces, VnG	National
		Waterboards	Regional
Stimulation	• Deltafund • Infrastructure maintenance • Land sellings and development tenders	Deltacommission	National
		Ministery of IenM	National
		Municipality of Rotterdam	City
		Municipality of Rotterdam	City
Capacity building	• Keiletafel	Stadshavens	City

5. Conclusions

I. Answers to research questions
II. Recommendations
III. Reflection

I. Answers to research questions - Questions

Comparing practices of urban area development in Rotterdam and NYC

a. What are the main characteristics of the institutional landscape in building flood resiliency?

Public planning policy

a. What policy instruments are currently deployed to build flood resiliency in vulnerable areas?
b. To what extent are these policy instruments experienced by local actors?

Flood resiliency

a. How is flood resiliency currently assessed in vulnerable areas?
b. What aspects of building flood resiliency should be strengthened?

Effectiveness & institutional landscape influence

a. What is the effectiveness of current policy instruments on building flood resiliency?
b. How can the findings on policy effectiveness be explained by the characteristics of the institutional landscape

I. Answers to research questions - Hypotheses

For both Rotterdam and NYC the following statements apply:

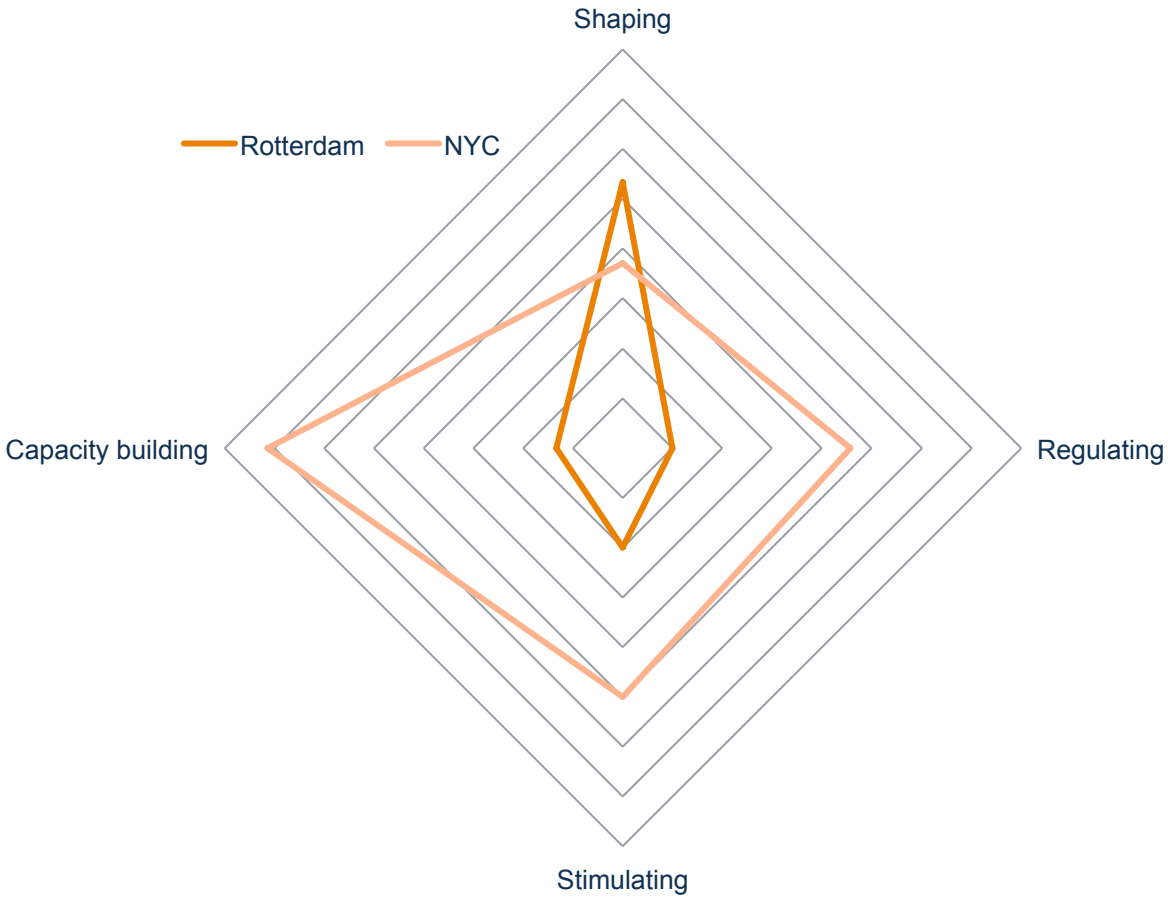
- The building of flood resiliency in urban area development is hampered.
- Public policy instruments that are currently employed are not effective.
- Institutional landscape influences this effectiveness.

What are the main characteristics of the institutional landscape of flood resiliency in urban area development

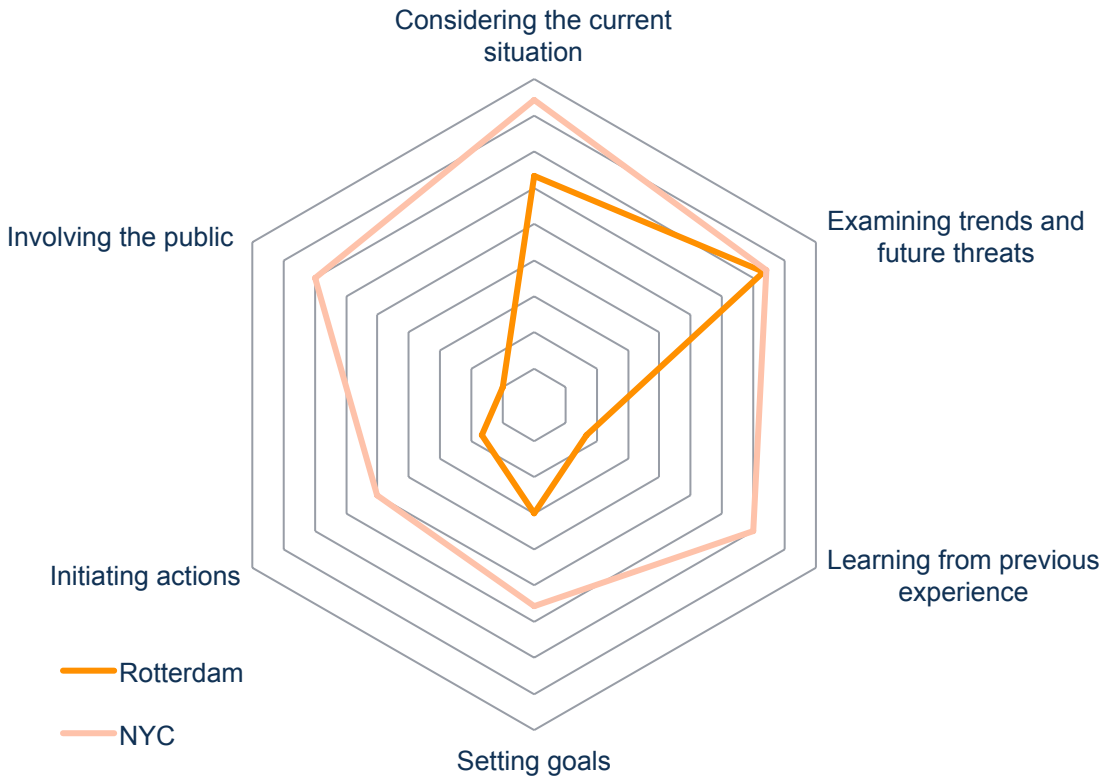
Characteristics	NYC	Rotterdam
Norms and values	Freedom of the individual, opportunistic, result-driven, ideology, diversity	Collaboration, concensus, equality, integration, redistribution, Process-driven
Interests of actors	Strong, directly related to actor behavior/policy Often economic focus, local and short-term scope	Flexible, intertwined, loosely defined
Arrangements	Stand-alone, dynamic, project-based Strong politically driven, responding to external forces (task-forces)	Traditional, long-term, inclusive Planning and procedure-based, ongoing processes, Strong administrative driver; based on internal forces within government
Structure	Hierarchical in vertical relations, panarchy on horizontal level Significant role of community organizations, NGO's, private sector	Oligarchy (water management level) Network (spatial planning)
Rules and policies	Functionally defined – jurisdictions determine spatial projects Overlapping and conflicting	Spatially defined – spatial characteristics determine projects and jurisdictions Overlapping and alligned

What public policy instruments are deployed to build flood resiliency of the urban environment?

Issued policy instruments

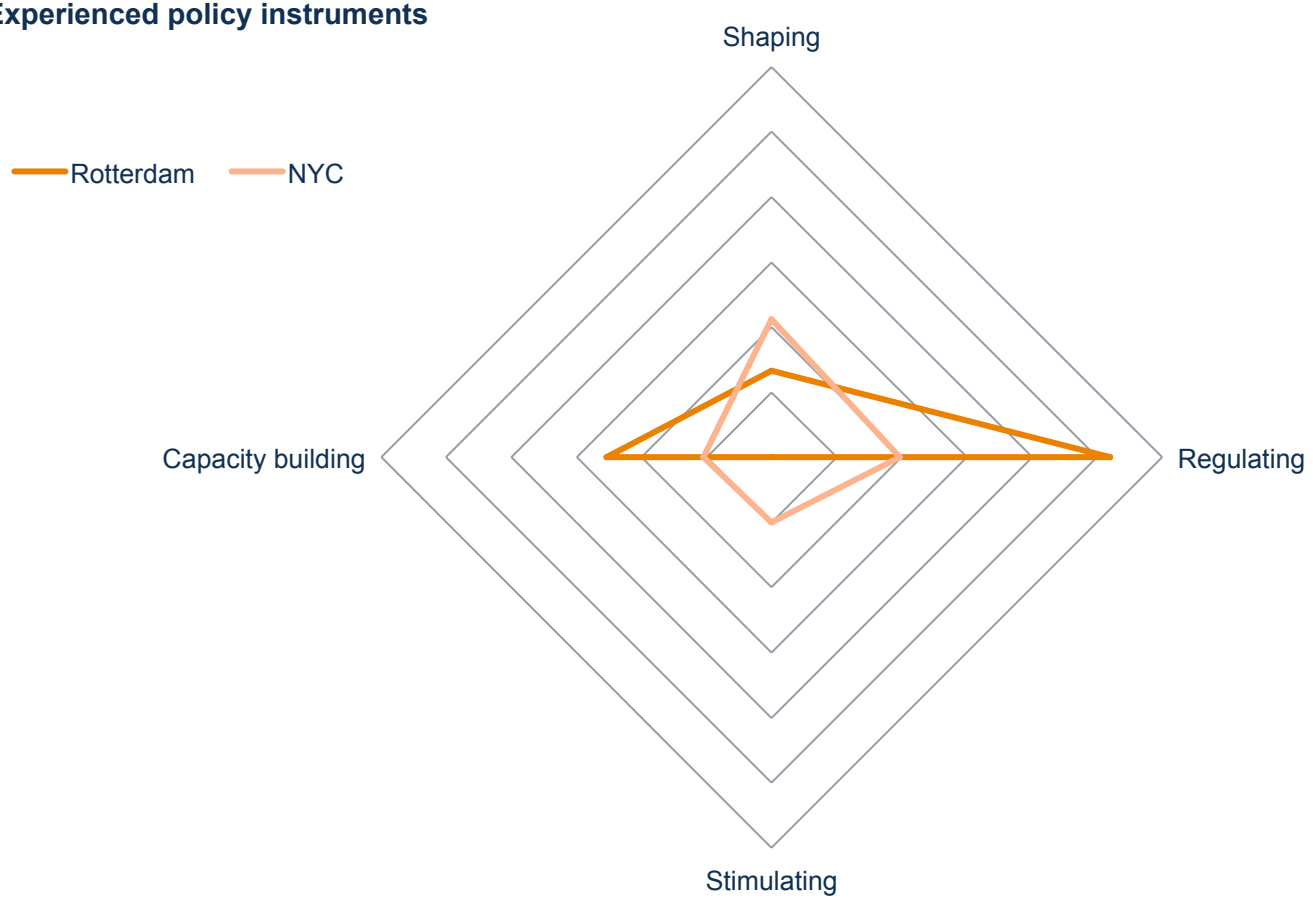


i. How is flood resiliency assessed by local actors?



What is the effectiveness of these policy instruments?
ii. What policy instruments are experienced to improve the building of resiliency?

Experienced policy instruments



What is the effectiveness of these policy instruments?

iii. How is actor behavior influenced by public policy instruments?

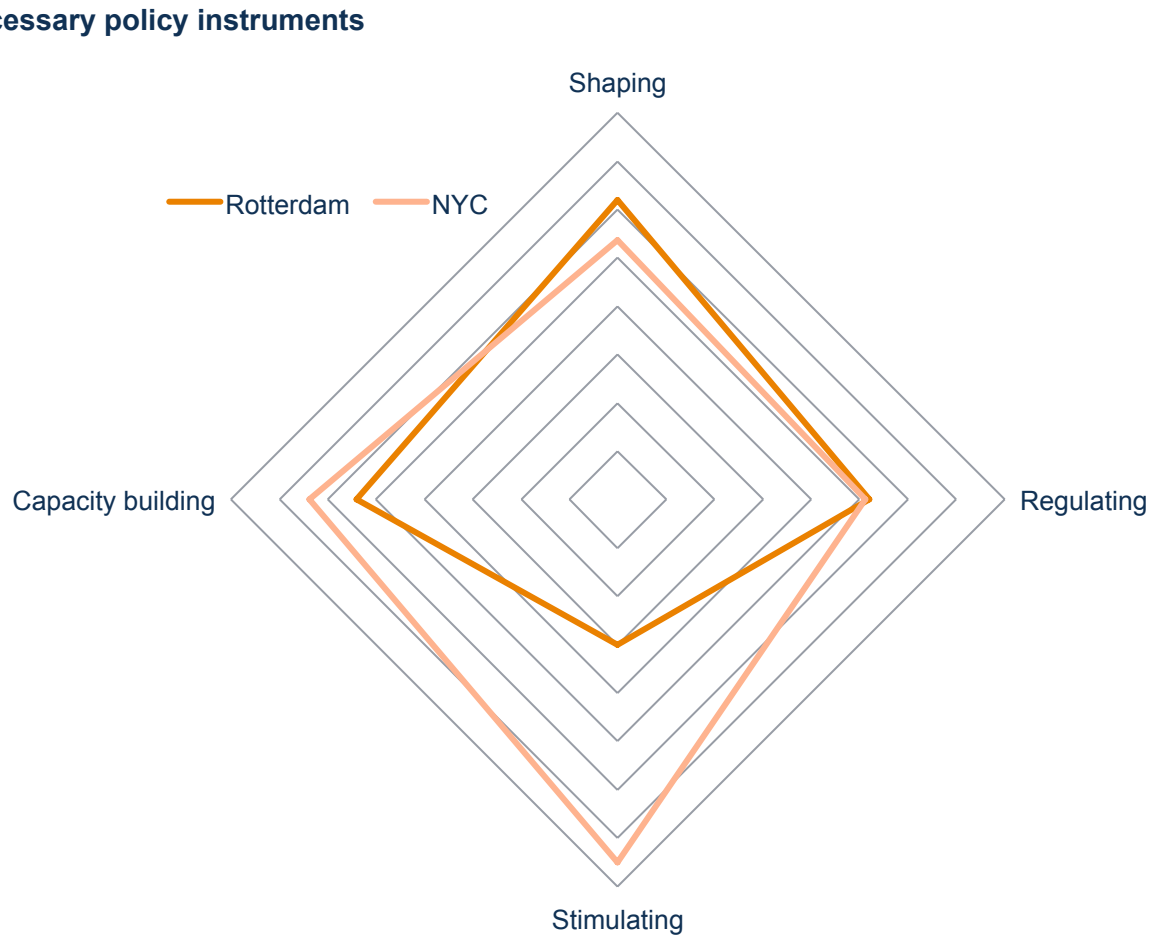
NYC

- Plans developed by local actors, but not realized due to lack of funding and political cooperation
- Public parties are limited taking action in public space construction works
- Individual property owners are taking measures on building level
- Local actors are trying to take initiative in organizing workshops, making plans etc.
- Grants on building level as well as area-wide projects hampered

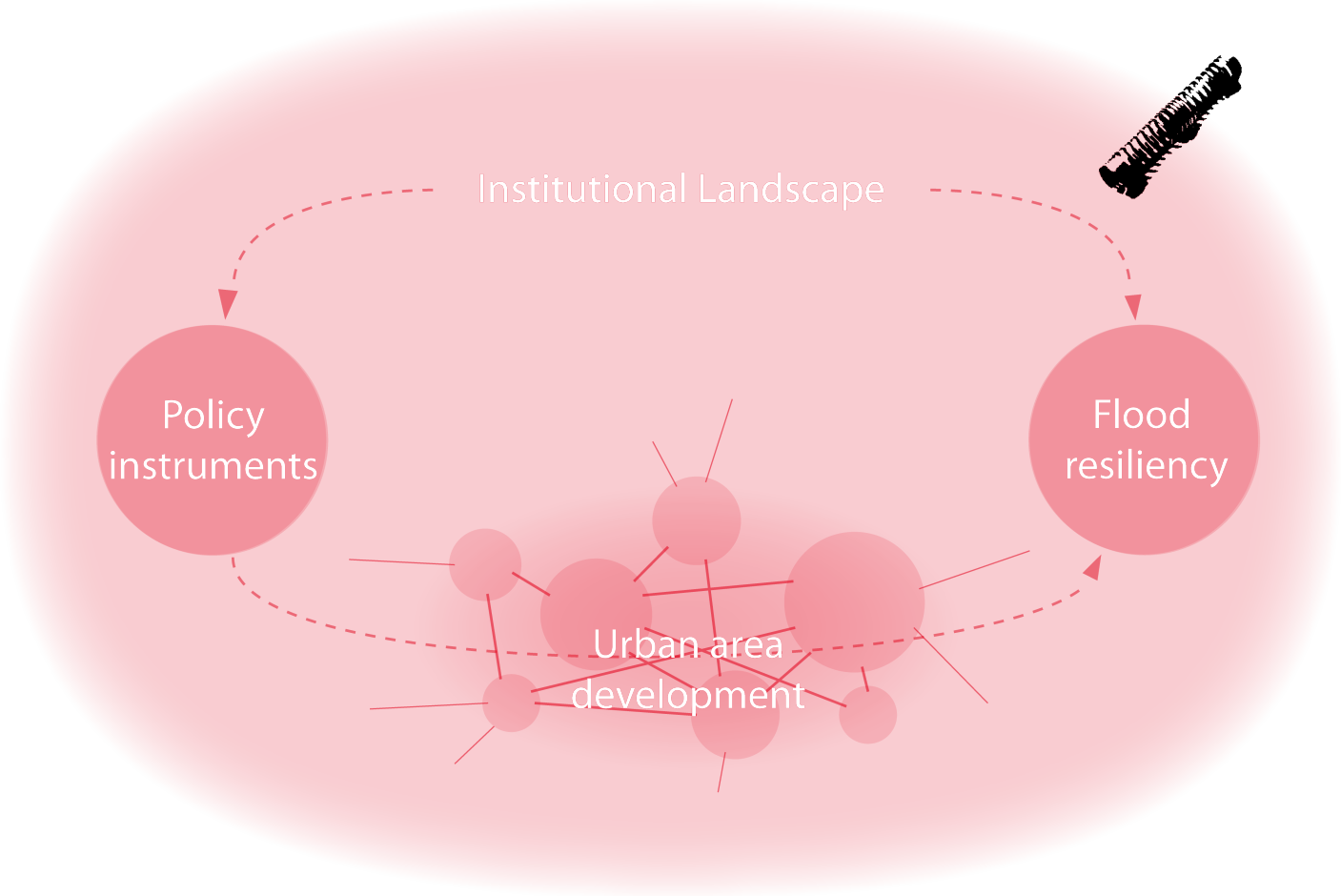
Rotterdam

- Plans developed by public agencies, local parties not involved
- Public parties are taking mainstreaming action in public space construction works
- No measures on building level
- Local actors are working together on business and economic development of the area
- Grants on building level approved

What is the effectiveness of these policy instruments?
iv. What policy instruments are necessary to stimulate collective actor behavior?



How can the findings on policy effectiveness be explained by the characteristics of the institutional landscape

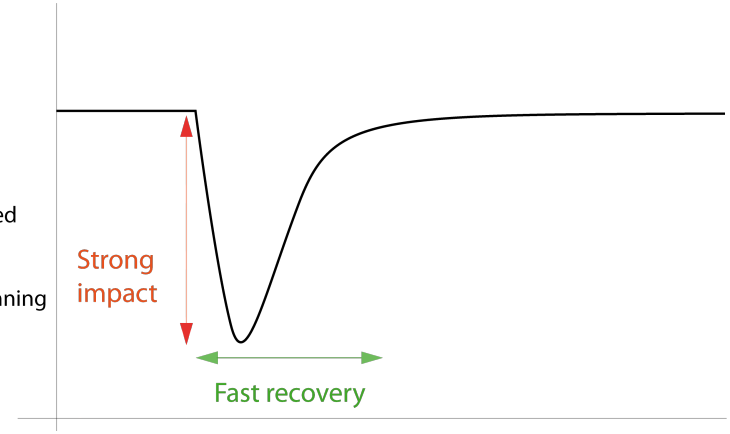


How can the findings on policy effectiveness be explained by the characteristics of the institutional landscape

NYC

- Conflicting policy and limited collaboration public bodies

- Responsive, short-term planning

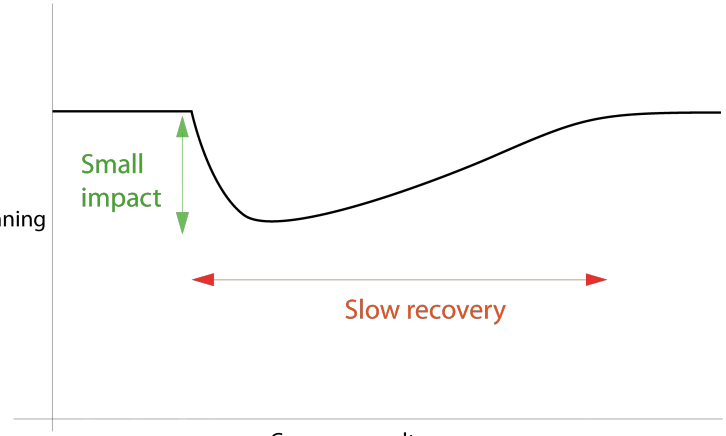


- Individual, practical and small-scale measures
- High awareness and independent acting communities
- Involvement private funding and political goodwill

Rotterdam

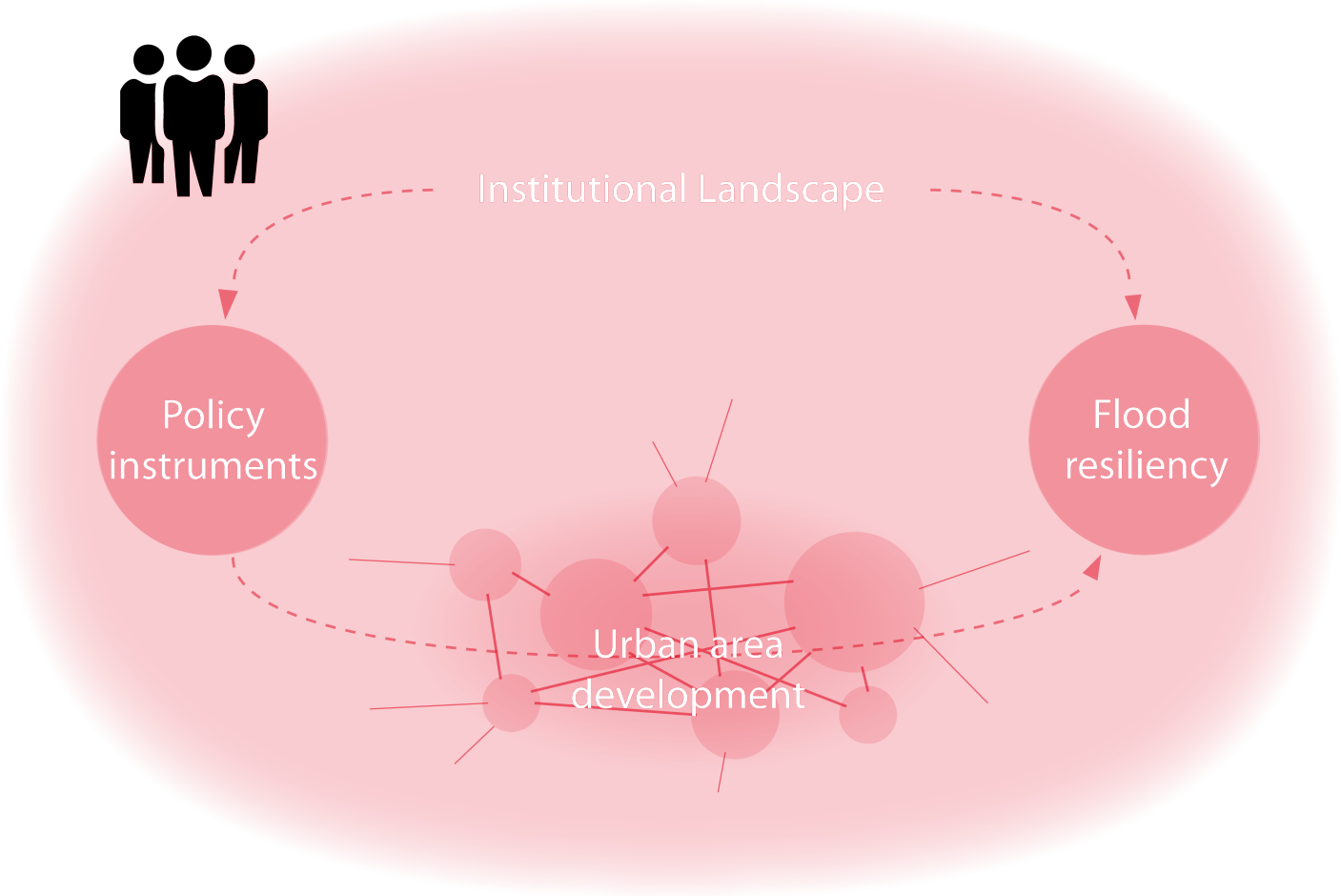
- Clear responsibilities public bodies in water safety

- Anticipating, long-term planning



- Concensus culture
- Integrativeness spatial design
- Lack of awareness population

How can the findings on policy effectiveness be explained by the characteristics of the institutional landscape



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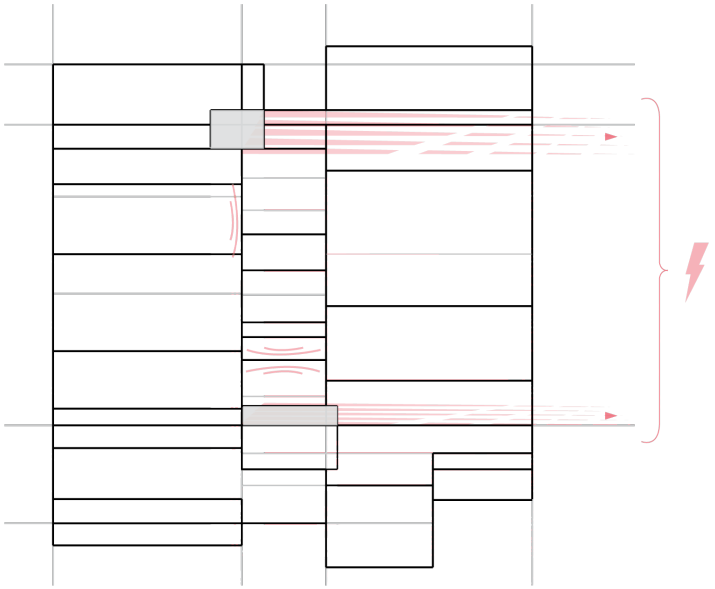
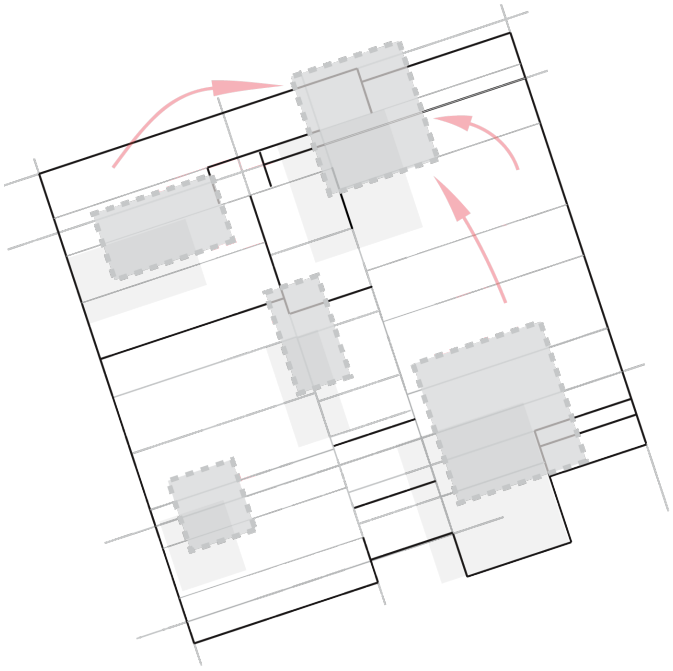
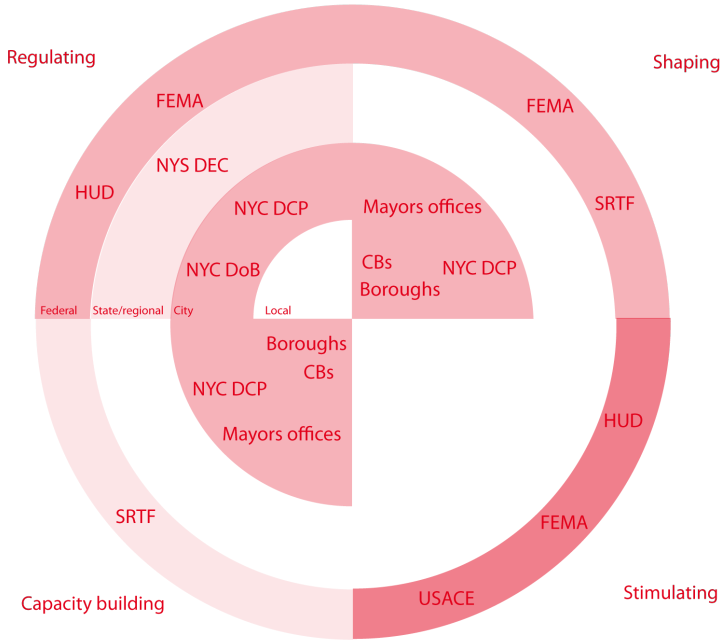
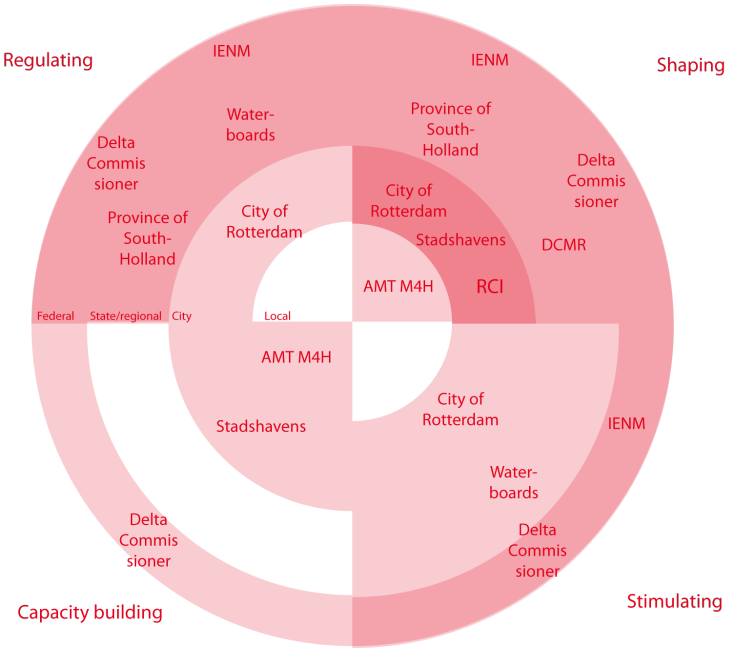




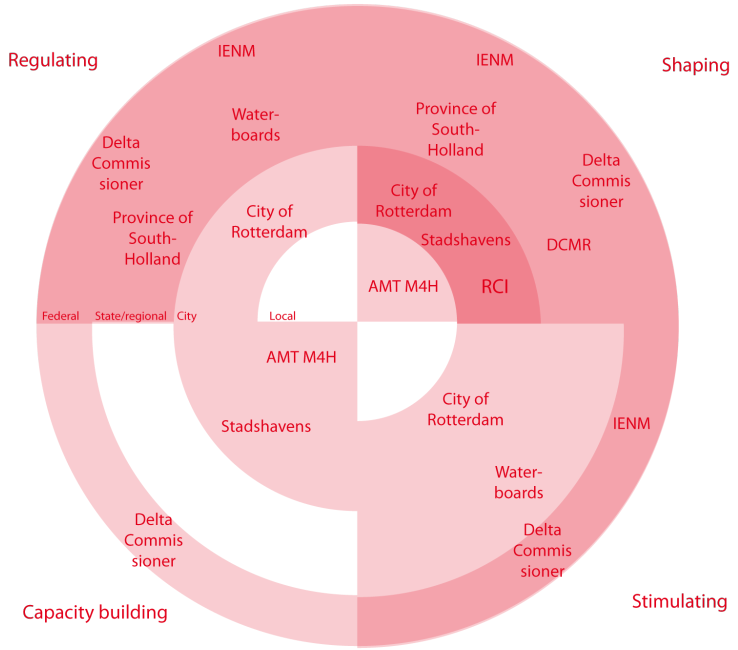
How can the findings on policy effectiveness be explained by the characteristics of the institutional landscape





III. Recommendations - Rotterdam

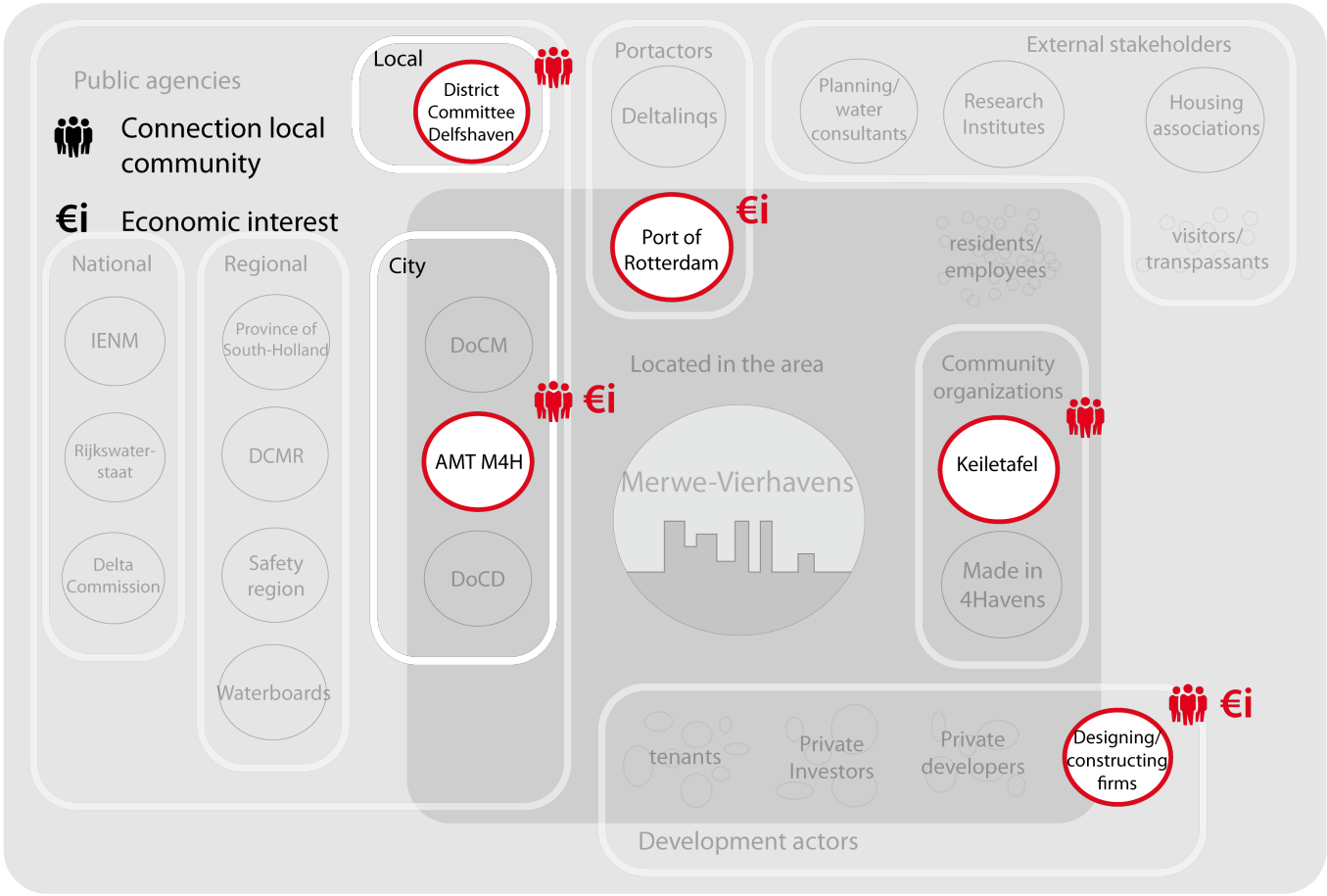
- policy limitations, development drivers and key actors



Connection local community

Economic/innovation interest

III. Recommendations - Rotterdam

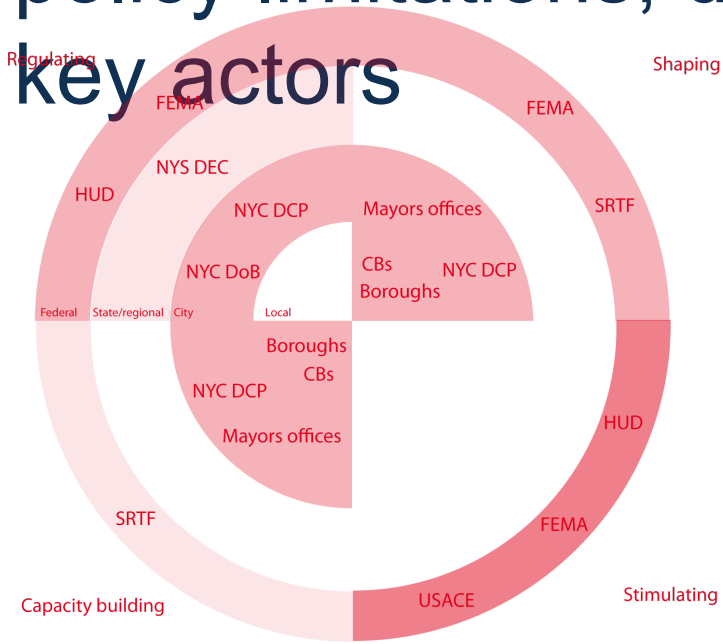


III. Recommendations - Rotterdam

- Full integration spatial and water-management legislation
- More attention responsive capacity
- Lower boundaries public domain
  - Raise awareness on flood risks and water management
  - Involve local communities
    - Plan development
    - Mainstreaming 2.0
    - Collaborative Funding
  - Approach market parties more actively
    - Developing parties
    - Broad scope: Investors, (re-) insurers, knowledge institutes, consulting firms, industries housed in the wider region

III. Recommendations - NYC

- policy limitations, development drivers and key actors

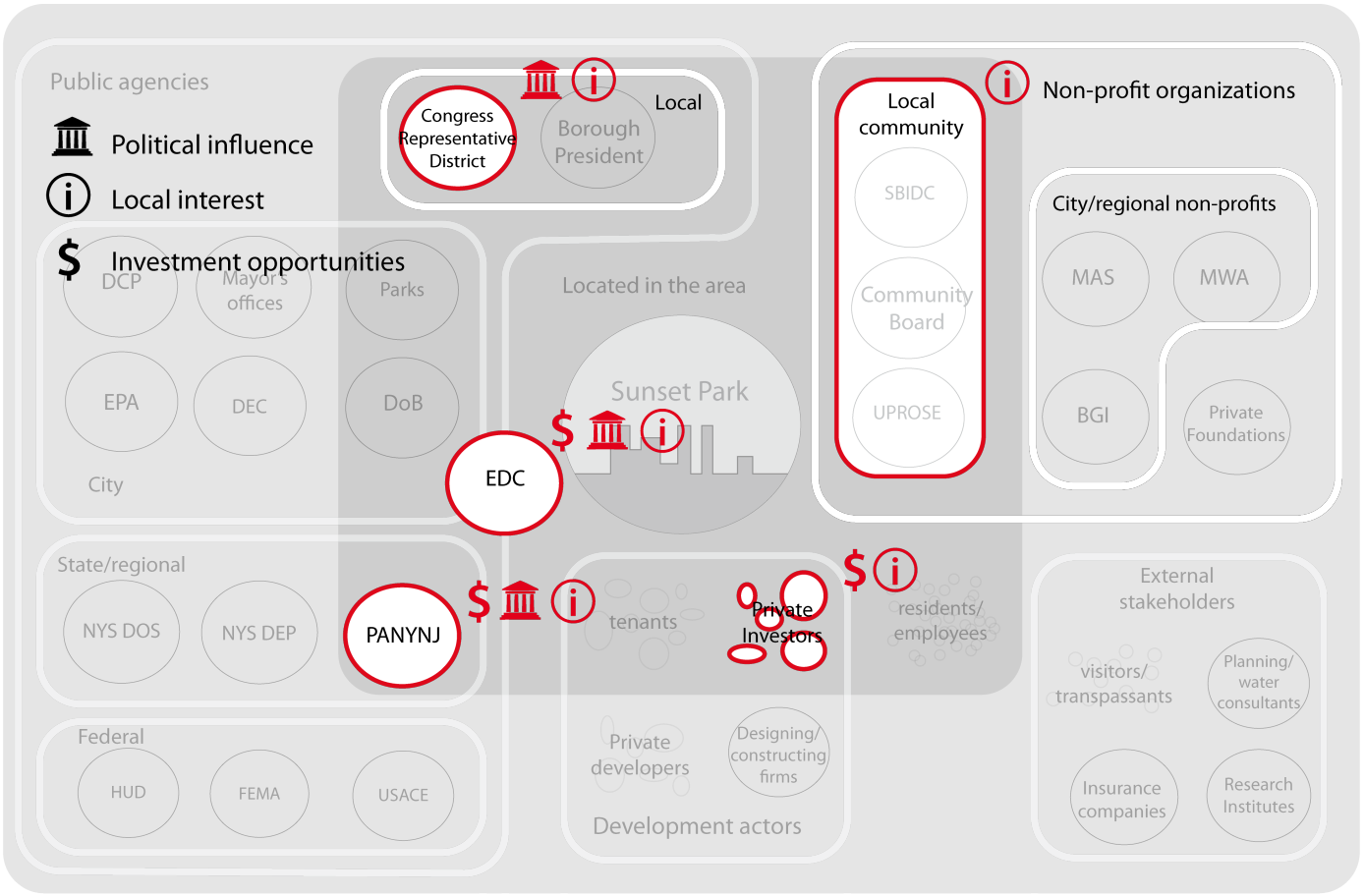


Political influence, leadership

Local interest

Investment opportunities

III. Recommendations - NYC

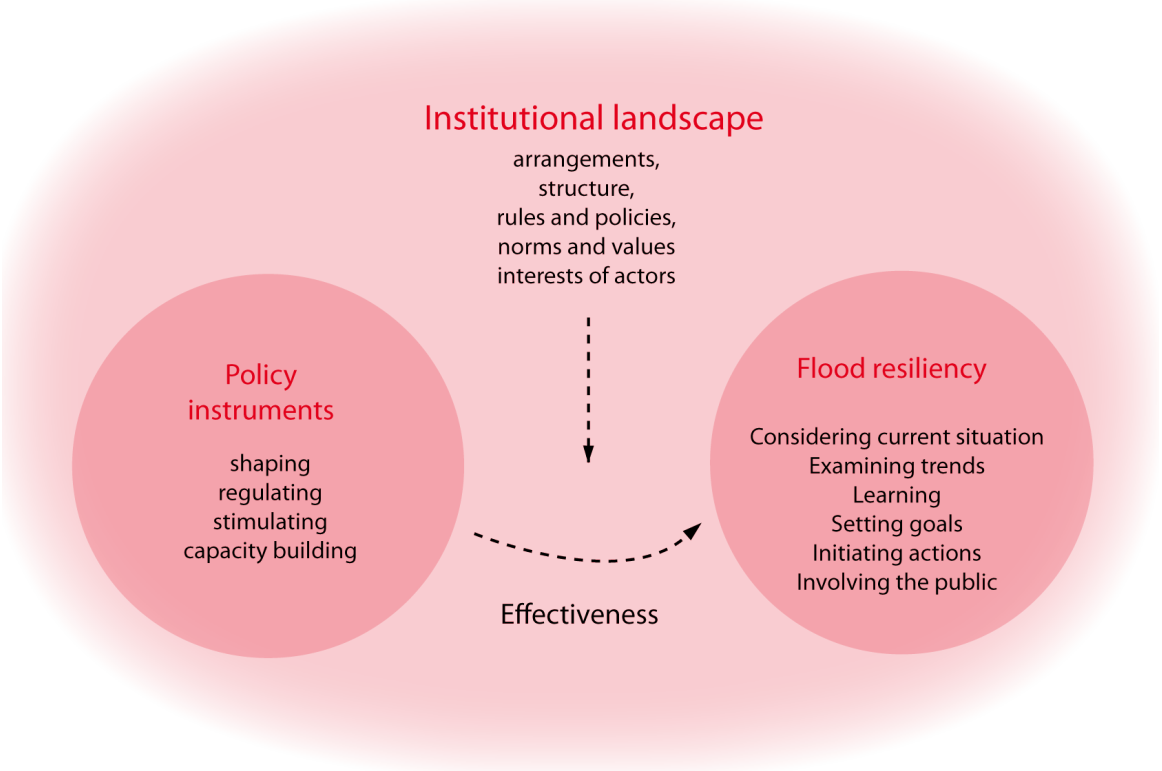


III. Recommendations - NYC

- Lower boundaries between government agencies
  - Align regulations
    - Between government layers
    - Between agencies in specific domains
  - Regional collaboration & strategies
  - Money
- Empower local actors
  - Provide directly applicable information
  - Connect to private foundations and political champions
  - Give room to community initiatives and plan proposals

III. Recommendations – Delta cities

1. Consider institutional landscape characteristics
2. Define policy limitations, development drivers and key actors
   - Leadership (capacity building)
   - Knowledge (shaping)
   - Financial means (stimulation)
   - Political authority (regulation)
3. Prioritize flood resiliency aspects
4. Select policy instruments to match means actors with goals



III. Recommendations – Further research

- The effect of risk awareness on actor behavior
- Adaptive capacity as a result of institutional landscape characteristics
- Emphasis responsive/protective resiliency in relation to inst. Landscape
- Longer term studies
  - Assess realization process
  - Assess responsiveness
- Examine more cases, other cities, other countries etc.

III. Reflection

Compare Rotterdam and NYC to:

I. *assess the effectiveness of current policy instruments in building flood resiliency of urban areas*

II. *identify characteristics of institutional landscape that influence the effectiveness of these policy instruments*

III. Reflection

Flood resiliency alleen maar aantonen verschillende cultuur en daarmee omgang ruimtelijke ordening internationaal

Effective policy not directly transferable to other system. Depends on institutional landscape for implementation and answering to specific needs

Key lessons

- Lack of information/technology/funding not problem
- Institutional landscape influences policy effectiveness
- Flood resiliency ≠ physical interventions

E Gaaff
1363247
January 20th, 2014

1st Mentor: dr. Ir. T. Daamen (TU Delft)
2nd Mentor: dr. Ir. T. Tasan-Kok (TU Delft)
External supervisor Prof. J. Keenan (Columbia University)
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Questions

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