

Rebuild by Design: Implementation of green infrastructure for flood resiliency in Hoboken

Robert Sakic Trogrlic¹, Jeroen Rijke³, Nanco Dolman², Chris Zevenbergen³

¹Heriot- Watt University, United Kingdom

²Royal Haskoning DHV, Netherlands

³UNESCO- IHE Institute for Water Education, Netherlands



- Background to Rebuild by Design
- Hoboken and RBD
 - RBD solution for Hoboken
 - Drivers for implementation
 - Barriers for implementation
 - A way forward
- Lessons from RBD and conclusions



Hurricane Sandy



- Second most damaging hurricane after 1990 (Blakeet, 2013)
- Unveiled the vulnerabilities in the region
- “Tipping point”- urban resilience to the forefront of discussion



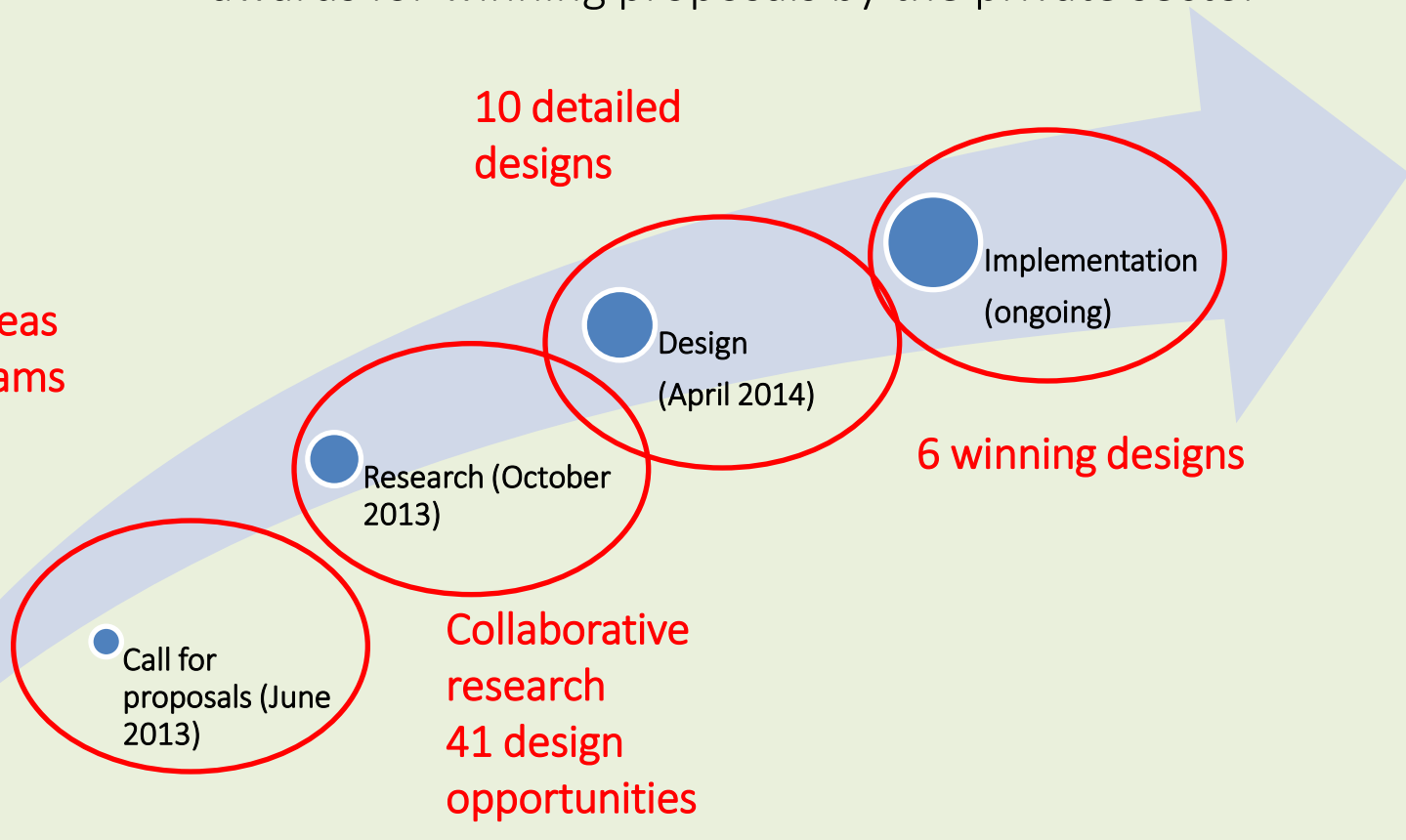


Idea of Rebuild by Design

REBUILD BY DESIGN

- Relief effort: President Obama's Hurricane Sandy Rebuilding Task Force
- Collaborative effort: government, private sector, academia, philanthropy, civil society
- Allocated funds for implementation by the federal government; awards for winning proposals by the private sector

148 teams
presented ideas
10 design teams



Case study: Hoboken



(www.cdn.thinkprogress.org, 2015)



RBD solution for Hoboken

RESIST



→ Hard infrastructure

DELAY



→ Green infrastructure

STORE



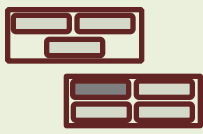
→ Storage areas

DISCHARGE



→ Discharge pumps

- Team OMA (OMA, Royal HaskoningDHV, Balmori Associates, HR&R)
- Allocated federal funds \$230 million
- RDSD presents solution to multifaceted problems



Green Infrastructure in Hoboken



City Hall

Park 12 Southwest Resiliency Park

Common characteristics

- Planning stage
- Community input
- Publicly driven



Hoboken is just starting!



How RBD influenced the planning agenda?

BEFORE SANDY & RBD

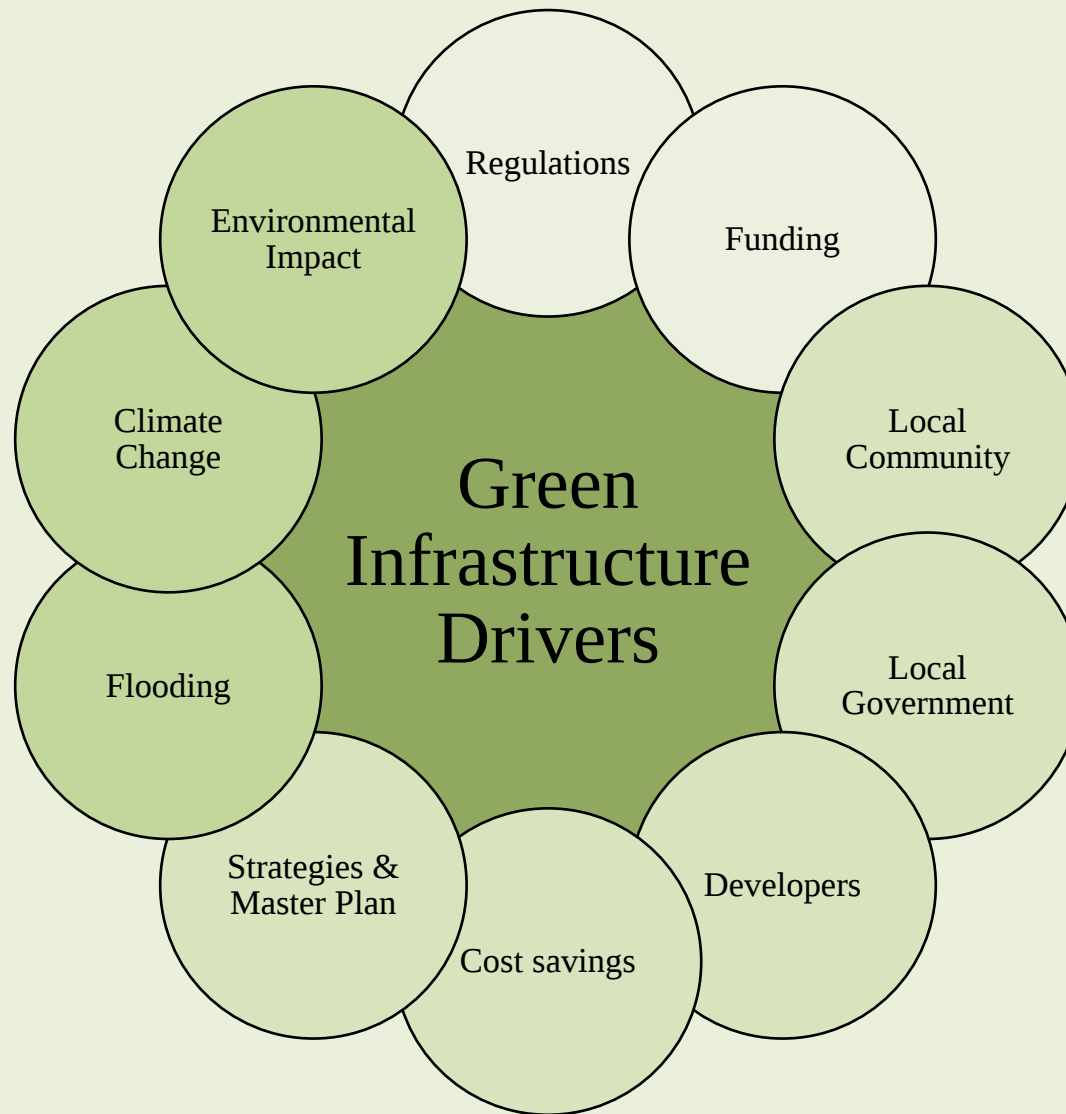
- Flood risk management based on “wet weather” discharge pumps
- Master Plan in 2004 sees green infrastructure as a way of providing more green space + additional benefits
- Master Plan Reexamination Report in 2010 sees greening as a priority
- However, only narratives are offered

AFTER SANDY & RBD

- Impuls for ongoing planning processes: Community Resilience Plan, Green Infrastructure Strategic Plan, plans for redevelopment areas, Green Element of the Master Plan
- Structured long term vision and new visual identity
- Nexus between key stakeholders
- Green infrastructure as a preferred solution for multiple issues
- Direct financial “injection” and alternative funding sources
- Recognition: Role Model City by the UNISDR Making Cities Resilient Campaign



What is driving the process forward?





Let's talk about barriers

Technical

Operation and maintenance

Insufficient data availability

Novelty of proposed techniques

Design guidelines

Physical

Available space

Property ownership

Magnitude of intervention

Financial

Insufficient data availability

Land value

High design & construction costs

Absence of incentives

No steady funding source

Institutional

System ownership

Education

Legal & regulatory

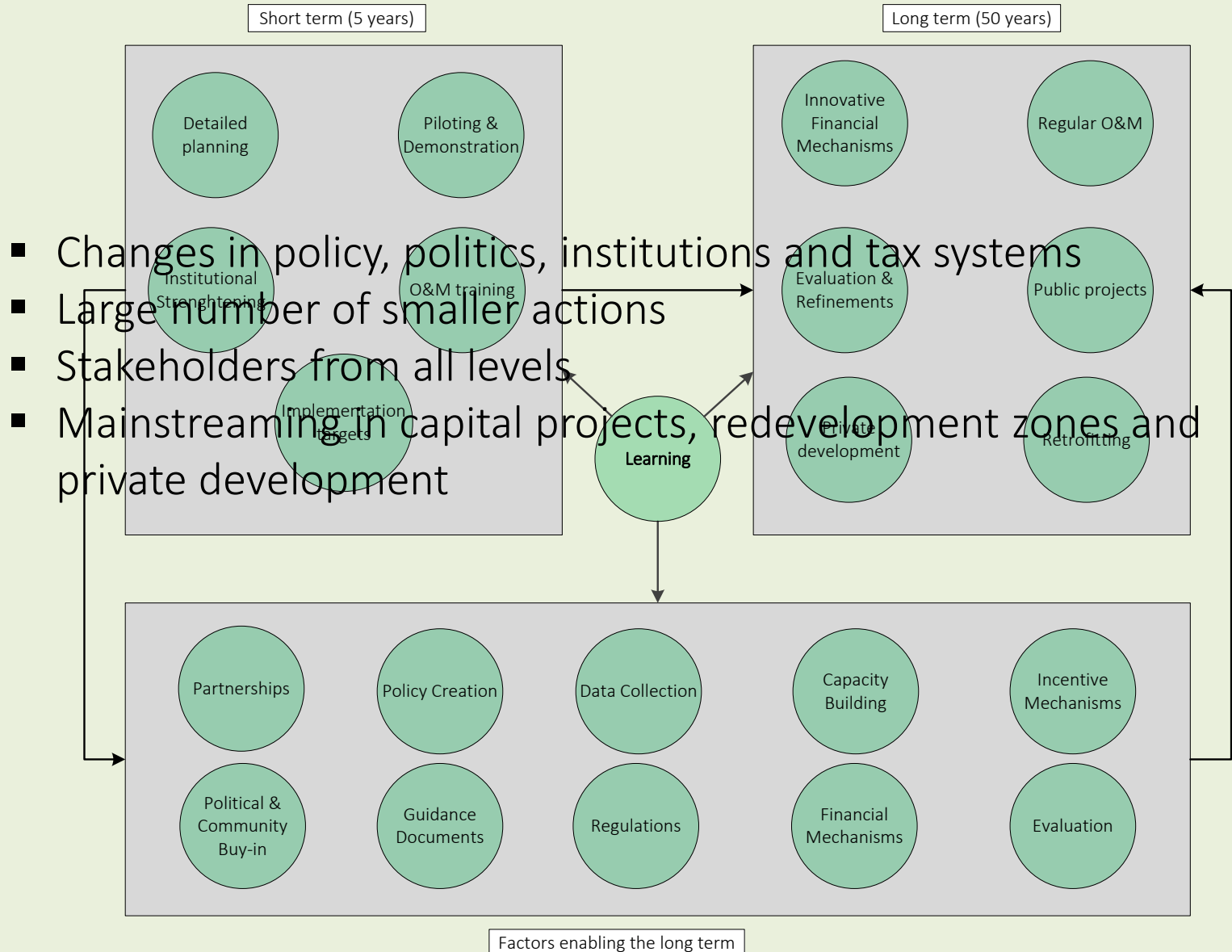
Outdated ordinances

Lack of legal requirements

No authority for stormwater fee



What is needed?





Lessons from RBD in Hoboken

STRONG POINTS

- Leadership (local/ federal)
- Participation
- Funds availability
- Recognition and PR
- Co- production of knowledge
- Holistic problem analysis
- Encourage change

CHALLENGES

- Significant investments needed
- Expensive designs
- Dependence on local context
- Changes on different fronts- cascading effect

CONCLUSIONS

- Sandy: trigger and accelerator for finding a solution
- Rebuild by Design provided a platform
- Implementation of a new approach is a long term, dynamic process
- RBD is being replicated in different context → learning from the experience and adapting the approach

An aerial architectural rendering of a waterfront development. The scene features a large body of water in the foreground with several small boats. A wide, multi-lane road or bridge crosses the middle of the image. To the left, there are several rectangular buildings with green roofs. In the center, a large, curved area contains a swimming pool, a circular pond, and a building with a large, flat roof. To the right, there are more buildings, some with green roofs, and a parking lot. The background shows a hazy cityscape with more buildings and greenery.

Thank you for the attention!