THE Rockefeller Foundation

EVALUATION OFFICE

Evaluation: Rebuild by Design Phase I

June 2014

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URBAN INSTITUTE

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About the Rockefeller Foundation Evaluation Office

For more than 100 years, the Rockefeller Foundation's mission has been to promote the well-being of humanity throughout the world. Today, the Rockefeller Foundation pursues this mission through dual goals: advancing inclusive economies that expand opportunities for more broadly shared prosperity, and building resilience by helping people, communities and institutions prepare for, withstand and emerge stronger from acute shocks and chronic stresses. Committed to supporting learning, accountability and performance improvements, the Evaluation Office of the Rockefeller Foundation works with staff, grantees and partners to strengthen evaluation practice and to support innovative approaches to monitoring, evaluation and learning.

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Acronyms

ACE	Army Corps of Engineers (US)
BCA	Benefit-cost analysis
BIG	Bjarke Ingels Group
CAU	Center for Advanced Urbanism (MIT)
CDBG	Community Development Block Grant
CDBG-DR	Community Development Block Grants for Disaster Recovery
DB	Deutsche Bank Americas Foundation
DHS	Department of Homeland Security (US)
DOT	Department of Transportation (US)
EPA	Environmental Protection Agency (US)
FEMA	Federal Emergency Management Administration
FTA	Federal Transit Administration
HMG	Hazard Mitigation Grant
HUD	Department of Housing and Urban Development (US)
IPK	Institute for Public Knowledge at New York University
MAS	Municipal Art Society
MIT	Massachusetts Institute of Technology
MOU	Memorandum of Understanding
MTA	Metropolitan Transit Authority
NEA	National Endowment for the Arts
NJRF	New Jersey Recovery Fund
NOAA	National Oceanic and Atmospheric Administration
NYU	New York University
RBD	Rebuild by Design
RFP	Request for Proposal
RFQ	Request for Qualifications
RPA	Regional Plan Association
SIRR	Special Initiative for Rebuilding and Resiliency (New York City)
US	United States
VAI	Van Alen Institute

Acknowledgments

This report was prepared by the Urban Institute for the Rockefeller Foundation's Evaluation Office. The primary authors of this report were Dr. Carlos Martín, Pamela Lee, Elizabeth Oo, Helen Ho, and Abigail Baum. We also want to acknowledge Diane Levy, Senior Research Associate of the Urban Institute, and Dr. Rolf Pendall, Director of the Metropolitan Housing and Communities Policy Center, for the tremendous assistance they provided in their roles as advisors to the project.

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The evaluation team would also like to thank the entire RBD Team both at HUD and within HUD's key RBD partner, the Rockefeller Foundation. We acknowledge the critical participation and assistance to the evaluators from the RBD Management Team which included Henk Ovink, Scott Davis, Marion McFadden and Kevin Bush from the U.S. Department of Housing and Urban Development as well as Amy Chester, RBD Project Manager, and the cohort of RBD support partners. We also note the insights provided by Dr. Nancy Kete and Sam Carter in support of the early framing of the evaluation work. Additional guidance from the Rockefeller Foundation executive staff, Dr. Zia Khan and Peter Madonia, and JPB Foundation's Dana Bourland, helped to steer the evaluation team towards appropriate questions. The evaluation team is grateful for their insight and questions.

Finally, this study would not have been possible without the cooperation of those RBD stakeholders – local community groups, local policymakers, resilience and recovery stakeholders, and especially the ten design teams – who took the time to answer questions in detail despite other pressures and RBD commitments. Their willingness to share information about the nature of their activities, so that others might learn from their experiences, was invaluable.

Preface

The unprecedented damage Hurricane Sandy caused along the East Coast of the US, especially to the densely populated New York and New Jersey coastlines, was a wake-up call to the threat that weather events pose to our communities. The world has always been plagued by severe and seemingly intractable problems, including storms, but today, we live with an unprecedented level of disruption. Things go wrong with more frequency and severity, greater complexity, and with more inter-related effects. No longer can we afford to simply rebuild what existed before. We must begin to rethink our recovery efforts, making sure the damaged region is resilient enough to rebound from future storms.

In order to better protect Sandy-area residents from future climate events the U.S. Department of Housing and Urban Development and President Obama's Hurricane Sandy Rebuilding Task Force initiated Rebuild by Design (RBD) to develop fundable solutions that address structural and environmental vulnerabilities throughout the East Coast region. Recognizing the enormity of this challenge, the RBD process has looked beyond traditional solutions, supporting new approaches in architectural design, regional planning and environmental engineering, all of which are set within an innovative process that combines public, philanthropic and private sector resources and knowledge with community participation in a design competition.

As a lead funding partner for RBD, the Rockefeller Foundation provided financial support for the Urban Institute to evaluate the RBD design competition and assess what worked well and what should be improved in the ongoing management, design implementation and collaborative approach of RBD. The evaluation also considered to what extent RBD can be regarded as a model for building national resilience. We are grateful to Carlos Martin and his team from the Urban Institute for the timely lessons from this evaluation which have helped to inform the Foundation's urban resilience work going forward.

We are pleased to share the evaluation with our partners and stakeholders, and to contribute to the broader learning in the field of urban resilience. By advancing this public-philanthropic collaboration, we hope to continue to strengthen our nation's resilience, enabling people, communities and institutions to be prepared for, withstand and emerge stronger from future shocks and chronic stresses.

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Executive summary

Rebuild by Design (RBD) was formally launched on June 20, 2013, to ensure that the rebuilding after Hurricane Sandy incorporated designs that built in resilience. RBD was launched with strong public leadership, philanthropic support and professional interest within the design community. The early enthusiasm for RBD came as much from curiosity about RBD's vision and ambition as from the substantial size of the implementation awards from the Community Development Block Grant Disaster Recovery (CDBG-DR) funds that Congress appropriated to the U.S. Department of Housing and Urban Development for Hurricane Sandy Recovery.

Phase I of RBD held true to the vision of iteratively responding to science-based evidence and to local citizens and community groups through open-ended design techniques. These activities unfolded in various ways and to different ends throughout Phase I's three stages – Stage 1: team selection, Stage 2: research, and Stage 3: community engagement. RBD managers also kept an eye on the feasibility of design proposals from technical, financial and political perspectives – parameters that have all been heavily shaped by RBD's post-Sandy New York context.

As part of its ongoing commitment to learn from the work it supports, the Rockefeller Foundation provided funding for the Urban Institute to evaluate the design competition component of Phase 1 of RBD, including its innovative aspects, partnerships and community engagement.

The highly positive findings of the evaluation indicate that even though RBD itself is limited in scope to the Sandy recovery area, it has the potential to be transformational in the way disaster recovery efforts are designed, funded and implemented at a broader scale in the US. With the caveat that the evaluation looked only at the design competition phase, RBD brings hope and inspiration that collectively communities and decision makers can 'build back better' by responding in innovative and creative ways and working as a region to become more resilient. In sum, RBD has moved the mark on resilience action in the U.S.

In particular, the evaluation found that RBD's design competition is an innovative strategy for meeting resilience goals. By successfully complementing traditional public procurement, RBD involved public-philanthropic financing, and produced an alternative organizational structure.

RBD has also laid the groundwork for producing innovation in the long term. It has done this through increased community awareness, a reconsideration of regional connections and shared needs among policymakers, and most critically, the engineering and environmental benefits from the proposed infrastructure improvements – though the final project outcomes are yet to be seen.

Though the overwhelming majority of findings were positive, the evaluation notes a few challenges in RBD's planning. For example, the model's creators did not establish a clear administrative plan prior to execution, leading to crisis-driven management during execution. Much of this challenge came from the fact that the original RBD vision was more aspirational than operational.

Both of these oversights and related challenges should be addressed in future attempts to replicate the RBD model. In this competition, however, the RBD executive team, support partners and design teams ultimately completed all tasks on schedule despite the challenges.

The following specific findings and recommendations are further detailed in the main body of the evaluation:

Findings

1. **HUD Secretary Shaun Donovan's leadership and the commitment of CDBG-DR funds were critical inputs.** Ultimately, the size of that resource commitment proved to be a critical motivator. HUD's innovative use of statutory authority for allocating CDBG-DR departed from the traditional method of fund outlays (i.e., formula allocations based on estimates of damage and unmet needs). In turn, the use of these funds to implement RBD-designed regional infrastructure projects departed from traditional activities for which these funds had been used in post-disaster scenarios (e.g. rebuilding of individual homes or public buildings or economic development activities).

2. **The charisma and vision of Henk Ovink, Senior Advisor to the HUD Secretary and guiding hand for the design teams, was essential,** and his vision was also innovative. RBD explored the role of design and the methods of design to address major social and environmental challenges. Most significantly, RBD presented a compelling vision for regional, evidence-based interventions – that is, "thinking big" – where current practices and players constrain those interventions.

3. **RBD's unique public-philanthropic funding and management departed from traditional federal solicitations typical of the infrastructure projects proposed.** The leveraged funds and guidance provided by key philanthropic partners was a third primary input, particularly from the Rockefeller Foundation, which had been leading work in resilience since well before RBD, and the other ongoing funders of community-based organizations in the region. The JPB Foundation's involvement in resilience topics and competition strategies was also critical, as was the knowledge of local community groups provided by other partners

4. **RBD administrative team staff's efficiency and grit played a key role** in the face of tight schedules and with little to no pre-existing management plan. Their individual dedication and collective endurance ensured that details were addressed.

5. **The self-interest and mission of the local officials and community groups and citizens that participated was key** and, in most cases, these groups supported the RBD teams' development throughout Phase I.

6. **The perseverance, goodwill and fundamental creativity of the design teams was an obvious contributing support to RBD's completion** despite the meager resources provided by the prizes for participation in the competition and the often minimal familiarity with either the nature of the eventual implementation awards or an understanding of the scope of expectations at the project's onset.

7. **RBD's vision attracted broad academic and professional interest,** particularly in the architectural and engineering design community. This interest was critical for providing ongoing attention and ensuring an ongoing creative motive for the design teams' participation.

8. **RBD demonstrated many of the best aspects of a design competition** even though several stakeholders described it as not representative of design competitions. RBD produced a tremendous volume of juried design analysis and plans whose value far exceeds the resources that were made available. RBD also improved upon traditional design competitions by introducing research, public engagement and practical implementation stages, often in collaboration across the teams – three key opportunities and one framework that are uncommon in traditional competitions.

9. **RBD demonstrated innovative departures from traditional federal practice in the execution of the competition through its unique public-philanthropic partnership.** In this partnership, foundations contributed resources for the competition's management and team prizes, and federal resources provided implementation awards to recipient communities.

10. **RBD staff produced an organizational structure that managed the detailed tasks with no preexisting blueprint**. RBD's unique management structure existed parallel to, but separate from, the traditional federal grant solicitation and award processes that are typically burdensome, highly regulated and lengthy.

11. **Lack of precedent and preexisting plans for RBD led to changing and growing requirements** for deliverables, participation in activities and, in some cases, reconfigured teams. While RBD responded to this by providing multiple channels for design teams to access information, there were increased opportunities for communications slippages and varying interpretations of deliverables and of the post-jury award criteria.

12. **The intensity of the compressed timeframe was taxing,** as noted by all stakeholder groups. In ten months, RBD activities were undertaken across competition, research, design development, jurisdictional negotiations, media outreach and community engagement – a process that typically would take a minimum of two years.

13. **The design teams' resource limitations exacerbated RBD's intensity.** The individual teams spent well more than the allotted funds, typically at a magnitude of three to six times over

14. **The inclusion of community engagement and outreach in a design competition with its typical constraints was innovative and ambitious.** As noted in the literature regarding design competitions, this activity is generally omitted altogether – which deters later implementation.

15. **The time constraints were particularly difficult for many community groups** because of the rush for support but also because of the concern that long-term engagement and a discussion of needs in the communities would not be possible. Despite this, most community groups willingly participated with an understanding of the potential benefits that would come from award. The primary exception to this sentiment was members of citizens' groups concerned with the execution of Sandy recovery efforts unrelated to RBD.

16. **Most design teams relied on tried-and-true techniques for community engagement given the time and resource constraints.** However, a few activities were particularly inventive within the variety of RBD community engagement events, workshops, charrettes, and outreach activities. The "Scale It Up" events--designed to promote RBD and resilience awareness--were particularly notable. Online and social media engagement strategies the design teams employed in reaching community groups and general citizens were also creative, though only partially successful due to the time and resource constraints.

17. **Ultimately, the community groups are mostly interested in the final outcomes of awards and the potential to continue engagement that will inform the designs while benefitting the communities.** This sentiment was echoed by members of the media, who noted that benchmarks and actualized projects will be the primary interest among the general public.

18. **RBD's inclusion of specific implementation planning and feasibility requirements is an innovative approach to design competitions.** Typical competitions for actual developments predetermine all of the implementation issues prior to issuing a call, while curated competitions do not address the implementation issues at all.

19. **RBD set out a novel relationship among federal, state and local governments in which federal resources were used in a way that meant national thinkers could address local problems.** Significant efforts were made on the part of the core RBD partners to introduce, negotiate and come to resolution on funding streams and appropriations between these public entities.

20. **The nature of HUD funding regulations and protocols for the eventual award has proven to be a significant challenge in both obvious and more profound ways.** The immediate challenge from the use of CDBG-DR comes from the specific nature of the funds' obligation and subsequent implementation. Typically, CDBG-DR grantees propose their own activities for HUD's approval and funding. In RBD, HUD played an obviously heavier role in helping to define the activities. Though flexible compared to almost all other federal disaster fund programs, CDBG-DR still involves regulated processes that prescribe any outlays from the federal government.

21. **Related procedural constraints** included determining:
    - the appropriate type of cost estimates and cost-benefit analyses
    - the eligible grantees' individual procurement regulations after receipt of funds that may preclude sole-source contracting with the original design teams
    - remaining national and local regulatory assessments and approvals
    - the persistent demands among the local and state governments for other Sandy-related recovery efforts that may compete with RBD projects for attention and resources.

RBD revealed opportunities that future similar endeavors may take on as additional challenges, such as: increasing popular awareness of resilience; instituting networks among communities for information sharing; establishing long-term collaborations between jurisdictions beyond specific RBD projects to identify shared problems and early political buy-in; and institutionalizing federal funding for innovative regional capital projects. These findings provide critical lessons for forming plans for RBD's Phase II (which calls for implementation of the winning projects in New York and New Jersey after grant awards) and for replicating the RBD vision.

Recommendations

1. **Even after funding agreements are made, continued investment is needed during the implementation phase** to ensure that RBD's current design projects remain innovative, that communities remain engaged, and that the wealth of knowledge gained from Phase I is gathered and sustained. For individual design teams, the transition from concept to project is still occurring. Similarly, other priorities and obligations that state and local authorities face may compete with and impede the long-term attention needed for RBD projects.

2. **Replication of RBD processes is possible in different post-disaster conditions as well as in contexts with resilience challenges that have not experienced recent disasters.** Some RBD activities – such as convening research advisors and websites – can be ongoing, fundamental resources to be deployed in other scenarios, while others – such as the solicitation and jury, timeframe and resources, and support partners – need adjustment. Still others – such as leaders, champions and partners – are specific to RBD's current context and would need to be replicated for each scenario. However, CDBG-DR implementation award funds would not be possible in scenarios that have not experienced disasters.

3. **Future or similar efforts should pay particular attention early on to setting the award value and assessing the local political, financial and regulatory terrain in order to anticipate final outputs clearly.** RBD has been unique in the world of design competition and resilience planning in two other noteworthy ways: the dollar value and source of the RBD awards. Both of these traits were highly influenced by the post-Sandy New York context and have played a significant role in motivating – and in some cases, thwarting – stakeholders. Securing the financial resources and anticipating or preventing local political challenges are both critical considerations for future replication of the model.

While the RBD projects remain “castles in the sky” for the very near future according to several informants, RBD’s successful completion of its expected processes suggest that design thinking is an innovative strategy for resilience challenges. Several municipalities involved in RBD projects are now including resilience in their formal planning processes. RBD-affiliated community groups have expressed a deeper awareness of local resilience challenges. The architecture, engineering and planning community is paying new attention to resilience strategies due in part to RBD’s well-placed professional media. All these achievements were documented outputs of Phase I alone.

At the time of the evaluation, the individual projects’ immediate fates were yet to be determined. This means that RBD’s most important output was conceptual – because it showed that regional discussion of ways to address problems that affect multiple jurisdictions through design is possible. With few exceptions among the respondents and other sources for this evaluation, there has been nearly unanimous support for this vision. RBD gives hope that large national problems such as resilience can be addressed with multidisciplinary knowledge, through design thinking, and with federal oversight.

As one design team lead summarized, RBD lets stakeholders imagine possibilities when the opportunity for “investments of large resources for big ideas is simply non-existent in the US now.” Despite its focus on Phase I alone, this formative evaluation found evidence that RBD moved the resilience boulder up the national hill.

1

Introduction

On the evening of October 29, 2012, Hurricane Sandy made landfall in southern New Jersey, with impacts felt across more than a dozen states. The storm battered the East Coast, particularly the densely populated New York and New Jersey coasts, with heavy rain, strong winds and record storm surges. During Sandy's immediate aftermath, more than 23,000 people sought refuge in temporary shelters, and more than 8.5 million utility customers lost power. The storm flooded numerous roads and tunnels, blocked transportation corridors and deposited extensive debris along the coastline.

Superstorm Sandy served as a reminder not only of possible future events, but also of our recent national history in relation to disaster. Prior to the Federal Disaster Act of 1950, the federal government played little to no role in assisting communities or individuals after emergencies. Survivors relied on charity and relief efforts from the American Red Cross or local public and non-profit entities (Mittler, 1996). Increased advocacy and incremental appropriations following subsequent disasters led to the passage of the Federal Disaster Relief Act in 1974, and the ensuing creation of FEMA, which was given responsibilities and staff formerly housed in the Department of Defense, Department of Commerce and HUD (Comerio, 1998).

During the next decade, federal appropriations for disaster assistance (in services, grants and loans) "increased by a factor of nearly ten times the growth of the value of disaster losses" (May and Williams, 1986). The increased investment was based on the premise that survivors needed to return to their pre-emergency conditions quickly – though not necessarily to a better condition. The Presidential directive to establish a National Preparedness Goal was issued December 17, 2003, though it took eight years to produce (DHS, 2011). It took Sandy to lead federal officials to realize that massive relief and recovery efforts can simply not be sustained.

The subsequent recovery efforts led by the U.S. Department of Housing and Urban Development (HUD) as outlined in the federal National Disaster Recovery Framework, were multi-pronged and timely. Beyond providing resources and support and, in some cases, performing direct physical work to assist the Sandy-affected communities, the collective response also looked beyond short- and mid-term recovery needs. Simply rebuilding what had existed prior to the natural disaster, it was argued, would be inadequate. With the increased likelihood of additional extreme storm events precipitated by the multiple and interlaced effects of global climate change, recovery would need to account for future risks. In

short, recovery would need to be resilient. As HUD Secretary Shaun Donovan noted in the Task Force's public report: "More than ever, it is critical that when we build for the future, we do so in a way that makes communities more resilient to emerging challenges" (Hurricane Sandy Rebuilding Task Force, 2013a).

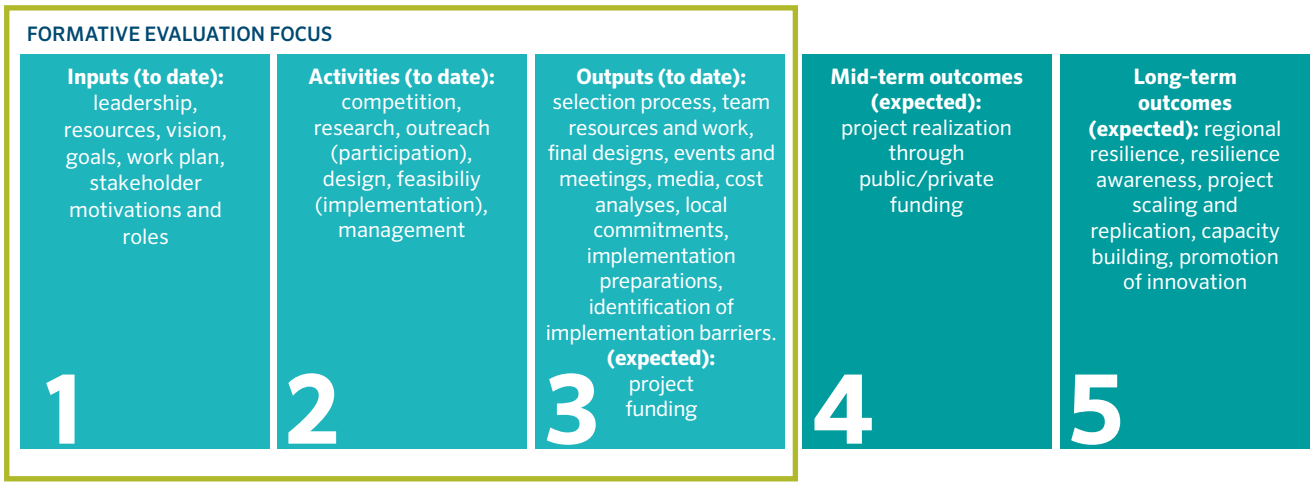
With the increased likelihood of additional extreme storm events precipitated by the multiple and interlaced effects of global climate change, recovery would need to account for future risks. In short, recovery would need to be resilient.

As one tool among many in the Hurricane Sandy Rebuilding Task Force's kit, HUD launched Rebuild by Design (RBD) with two goals in mind. The first goal was identifying a new product that would go beyond tradition and offer innovative approaches for preparing the region most affected by Sandy for future disasters through architectural design, regional planning and environmental engineering. The second goal involved a new process for tapping that product innovation. It called for integrating public, philanthropic and private sector resources and knowledge with community participation in a design competition to ensure efficient execution.

The evaluation team developed a thorough understanding of RBD's evolution and reviewed the history of design competition methods. Its investigation focused on the processes of RBD's formation and competition stages across four parameters or "domains of interest".

- **Intervention:** the inputs, including the vision, resources, motivations and actions of key stakeholders.
- **Competition:** the specific steps and sequence of activities and preliminary outputs associated with the RBD model as executed.
- **Participation:** the involvement of relevant community voices, as a separate area of interest based on its importance in the literature.
- **Implementation:** the challenges associated with future implementation, particularly governmental (regulatory and political) and financial (resource limitations).

FIGURE 1. RBD hypothetical theory of change

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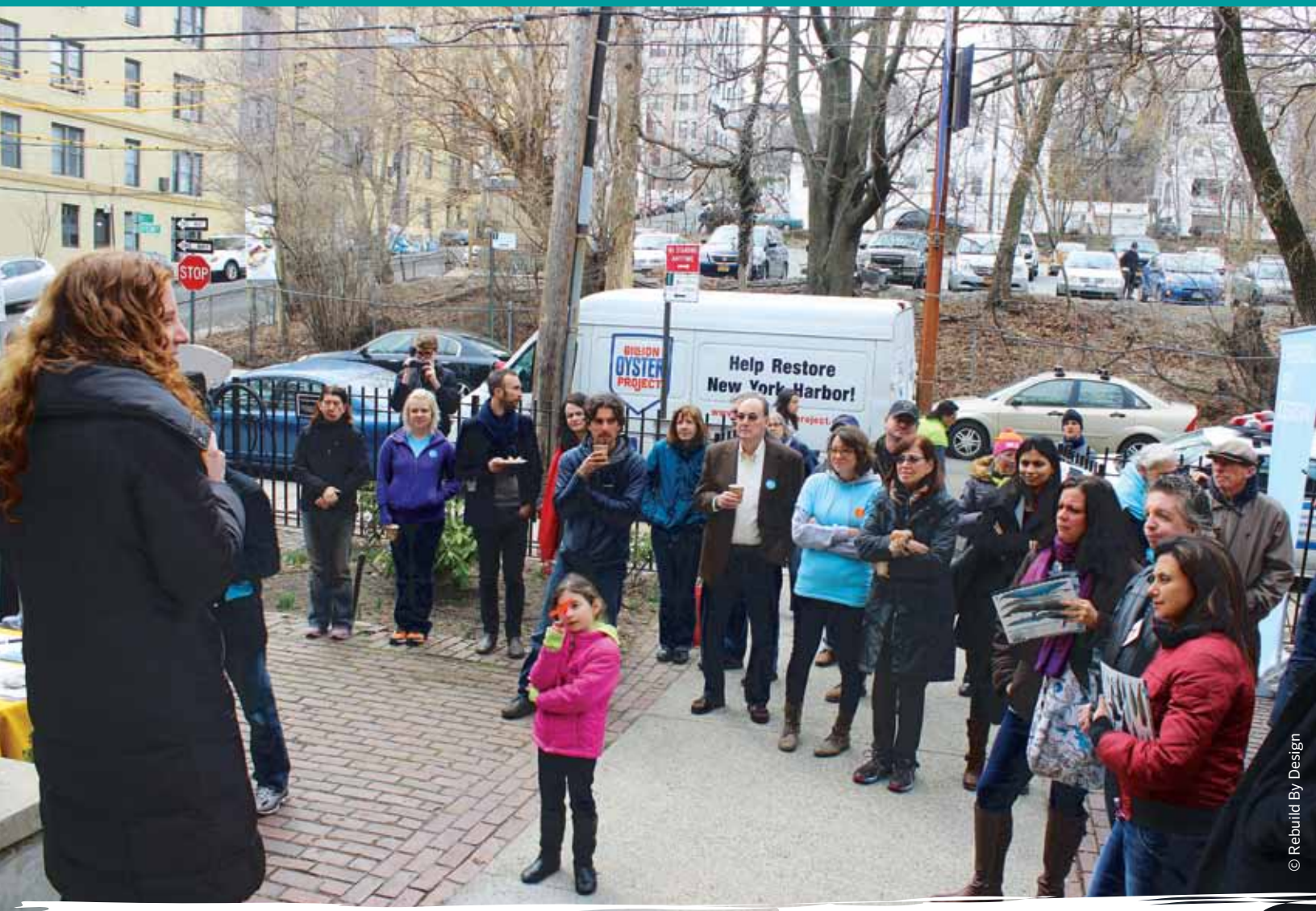
Three primary sources of data were tapped for this evaluation.

- **Documents:** formal reports available both publically and privately as well as informal communications and records.
- **Event observations:** made at community outreach events and meetings to which the evaluation team was given access.
- **Interviews:** with a non-representative sample of individuals from stakeholder groups.

Ultimately, the evaluation team was able to interview 113 individuals in all of the stakeholder groups during the six-week data collection timeframe. It also reviewed over 12,000 documents and recorded observations from 17 community and public events.

Data collection instruments were structured around the four domains of interest and their respective evaluation questions. Using all of the data collected, the evaluation team documented common patterns across the key domains of interest and noted points of contention among data sources. These were then mapped in relation to the domains of interest to determine findings and responses to the evaluation questions. The findings presented in this report include documentation of key facts, dates and activities, as well as the descriptions of responses, noting informant biases and sample response biases where applicable.

For this analysis, it was found useful to generate a model of RBD's central hypotheses about how its goals would be reached. This encompassed the individual inputs, activities and outputs that were noted in the evaluation as well as expected outcomes, objectives and goals – typically referred to as a logic model. Subsequently, the team was able to map out the expected sequence and relationship among them through a causal pathway referred to as a theory of change. A basic depiction of RBD's hypothetical theory of change is provided in Figure 1.



2

Intervention inputs

The first of the four critical domains of interest in this evaluation is the intervention itself. This means looking at the vision and formation of the RBD concept as an actionable model, including all of the aspects related to the evolution of its concept, the nature of its model with its expected goals and expected outcomes, and the key inputs required to shape the model, including the motivations and roles of key stakeholders. This does not include an assessment of the individual or collective activities and their outputs, which are covered in later chapters.

Questions for the subjects included:

- What other post-Sandy recovery strategies are in effect? Which were considered during the RBD concept development? Was RBD ever considered a strategy in relation to others? How does the competition differ from traditional infrastructure request for proposals (RFPs)? What other political and environmental contexts have surrounded Sandy recovery?
- What was the seed for RBD? Who planted it? How did the concept evolve to its present form? The goals and activities? How was the problem statement conceived?
- Do any outcome or performance targets exist? How are these articulated?
- How were different partners assembled? What formal and informal agreements exist? What are groups' funding obligations?

2.1. Findings

Based on the review of all inputs to the RBD process, the evaluation found the following seven key supports as being critical to the RBD intervention.

Finding 1: HUD Secretary Shaun Donovan's leadership and the commitment of CDBG-DR funds were critical inputs. Ultimately, the size of that resource commitment proved to be a critical motivator. HUD's innovative use of statutory authority for allocating CDBG-DR departed from the traditional method of fund outlays (i.e., formula allocations based on estimates of damage and unmet needs). In turn, the use of these funds to implement RBD-designed regional infrastructure projects departed from traditional activities for which these funds had been used in post-disaster scenarios (e.g. rebuilding of individual homes or public buildings or economic development activities).

Finding 2: The charisma and vision of Henk Ovink, Senior Advisor to the HUD Secretary and guiding hand for the design teams, was essential, and his vision was also innovative. RBD explored the role of design and the methods of design to address major social and environmental challenges. Most significantly, RBD presented a compelling vision for regional, evidence-based interventions – that is, "thinking big" – where current practices and players constrain those interventions.

Finding 3: RBD's unique public-philanthropic funding and management departed from traditional federal solicitations typical of the infrastructure projects proposed. The leveraged funds and guidance provided by key philanthropic partners was a third primary input, particularly from the Rockefeller Foundation which has been leading work in resilience since well before RBD and the other ongoing funders of community-based organizations in the region. The interest of JPB Foundation in resilience topics and competition strategies was also critical, along with the knowledge of local community groups provided by other partners.

A central early input and, in fact, the driving force of the work itself came in the form of leadership of two individuals, HUD Secretary Shaun Donovan and Special Advisor Henk Ovink, and two primary organizations, HUD and the Rockefeller Foundation.

Finding 4: RBD administrative team staff's efficiency and grit played a key role in the face of tight schedules and with little to no pre-existing management plan. Their individual dedication and collective endurance ensured that details were addressed.

Finding 5: The self-interest and mission of the local officials and community groups and citizens that participated was key and, in most cases, these groups supported the RBD teams' development throughout Phase I.

Finding 6: The perseverance, goodwill and fundamental creativity of the design teams was an obvious contributing support to RBD's completion despite the meager resources provided by the prizes for participation in the competition and the often minimal familiarity with either the nature of the eventual implementation awards or an understanding of the scope of expectations at the project's onset.

Finding 7: RBD's vision attracted broad academic and professional interest, particularly in the architectural and engineering design community. This interest was critical for providing ongoing attention and ensuring an ongoing creative motive for the design teams' participation.

Early in RBD's conceptualization, inputs identified as necessary and critical included the overarching model, the involvement and commitment of talented designers and related parties, and the funding for both the team competition and project implementation.[1] However, in its execution, more detailed requirements for the inputs emerged, such as defining the "model" as composed of vision, goals and work plan, and defining talent to mean a wide variety of involved stakeholders. Further, analysis of key sources uncovered one additional key input: leadership. In total, the evaluation team identified six key inputs:

- **leadership:** leadership of central RBD figures in government and philanthropy
- **resources:** financial and knowledge resources provided for the model's realization
- **vision:** RBD's central vision for change
- **goals:** goals, targets and expected outcomes for that vision
- **management plans:** management work plan for integrating inputs and executing activities
- **motivations:** the motivations and roles of stakeholder groups for participating in the RBD enterprise.

The following discussion details the individual inputs and provides evidence for the findings.

[1] The significance of these inputs was mirrored in the selection of themes for three "design debates" which accompanied the public roll-out of RBD's Stage 3 that were sponsored by the Syracuse University School of Architecture held on February 19, March 5, and March 19 on, respectively, "process," "talent," and "funding".

2.2. Leadership

A central early input and, in fact, the driving force of the work itself came in the form of leadership of two individuals, HUD Secretary Shaun Donovan and Special Advisor Henk Ovink, and two primary organizations, HUD and the Rockefeller Foundation. Secretary Donovan identified the need for an intervention such as RBD, and ensured that the resources were made available. HUD staff assisting Donovan, starting with Laurel Blatchford but primarily including Scott Davis and Marion McFadden, played critical roles through the execution of RBD as intermediaries between federal regulations and Ovink's conceptual vision. With this team and, later, staff from the HUD Office of Economic Resilience, Donovan identified CDBG-DR funds for RBD's goals.

Donovan has publically credited Henk Ovink, his Special Advisor on loan from the Dutch Ministry of Infrastructure and the Environment for the RBD vision (Shorto, 2014). Ovink's infrastructure expertise with the Delta Works projects in the Netherlands, his connections in the global design community, and his exposure to US infrastructure needs through involvement in efforts such as the 2008 post-Hurricane Katrina "Dutch Dialogues" positioned him professionally for the tasks at hand. Ovink served as an ongoing mentor to and "generator of goodwill" among the design teams, a driving force for RBD's outputs, and a public face for RBD's vision. Both Donovan and Ovink were repeatedly brought up by all stakeholder groups as being central drivers of RBD.

In addition to the resources unleashed at HUD by Donovan's commitment to Ovink's vision, the collective body of knowledge, networks and financial resources put forth by the Rockefeller Foundation for the effort have been notable. The opportunity presented by RBD extended well beyond investment and also placed the Rockefeller Foundation in the role of champion for the effort in the philanthropic community as well as key partner to HUD. The two entities codified this relationship in a memorandum of understanding (HUD and the Rockefeller Foundation, 2013).

2.3. Resources

The funds for the design competition itself were, of course, critical to making the RBD vision even remotely feasible, given HUD's resource limitations. The Rockefeller Foundation's commitment of more than $3 million supported the design team activities ($1 million) as well as the RBD project manager and supporting partners' roles in enacting the management logistics ($2.07 million).[2] The Rockefeller Foundation was instrumental in enlisting philanthropic organizations to support complementary efforts.[3] This effort resulted in an additional $1 million for the design team efforts (which allowed for the selection of ten design teams with $200,000 awards for each) and other funds for evaluation and stipends to community organizations involved in engagement activities on behalf of the design teams.

Critical among these groups were the JPB Foundation, Deutsche Bank Americas Foundation (DB), Hearst Foundations and Surdna Foundation. The Community Foundation of New Jersey also served as a clearinghouse of philanthropic funds through its New Jersey Recovery Fund (NJRF), which included many other funders with interest in RBD's activities, such as the Geraldine R. Dodge Foundation (Philanthropy New York, 2013). Aside from their financial resources, these organizations also gave critical feedback to the RBD team throughout Phase I (MAS, 2013).[4] As thought partners, their understanding of local community organizations in the region was instrumental in setting up a separate pool of funds through the support partners to cover those organizations' involvement.

However, the largest pool of funding came early on, when HUD identified and explicitly committed

[2] The Rockefeller Foundation Grant Agreements (2013). The New York University Institute for Public Knowledge (IPK) received $596,134, the Community Foundation of New Jersey's Recovery Fund received $250,000 in support of the RBD project manager, and $1,223,866 was granted to the MAS of New York to be shared with the RPA and VAI.

[3] In New York City alone, dozens of philanthropic organizations contributed millions of dollars to Sandy recovery.

[4] This feedback was somewhat anticipated and planned for by the RBD support partners.

CDBG-DR funding to incentivize implementation of winning projects and proposals. Identified by Donovan early in the RBD conceptualization, the legal authority to set aside these funds was established over the course of Phase I. The exact amount, as described in the original published request for qualifications (RFQ) and responses to subsequent questions, was not planned to "be known until Fall 2014, following updated damage estimates and allocation(s) of subsequent tranches of CDBG-DR," out of the "approximately $15 billion for [CDBG-DR]... for disasters in 2011, 2012, 2013" provided in the Congressional appropriations. Early on, however, HUD expected "a significant portion of the funds remaining following that allocation(s) [to] be dedicated to incentivizing the implementation of winning design solutions" (HUD, 2013b).

An innovation in policy operations itself, HUD also committed staff and management time to RBD in addition to future CDBG-DR outlays. This commitment of resources was sizeable, and included: i) managing the philanthropic funds for design teams; ii) designing and administering the competition; iii) establishing the selection committee for design teams with task force members; iv) identifying the jury members; v) developing a preliminary system to manage the competition; vi) monitoring the budget; vii) updating the Rockefeller Foundation, other foundations and the general public about RBD activities; and viii) soliciting those other foundations. These resources were critical inputs to the RBD model. To a much lesser extent, the in-kind contributions of other federal agencies in the form of general meteorological, geological and oceanic data, related staff review time, technical assistance time for a few key staff (particularly from the ACE), and other research assistance was also provided.

The problem, as the vision articulates, is not one of simple Sandy rebuilding and recovery. Rather, it involves preparing for future Sandies and as Nancy Kete, Managing Director for the Rockefeller Foundation's global work on resilience, noted, "We don't know what the future holds."

2.4. Vision

Though less visible than individuals and money, the concept of RBD served as a key input for the model in that it preceded the effort and enabled additional activities and outputs. Other components of the model have evolved, but the vision of harnessing design for regional resilience challenges has remained relatively consistent. The problem, as the vision articulates, is not one of simple Sandy rebuilding and recovery. Rather, it involves preparing for future Sandies and as Nancy Kete, Managing Director for the Rockefeller Foundation's global work on resilience, noted, "We don't know what the future holds." The challenge of resilience, then, is in finding innovative ways to recover and prepare that go beyond a "cut and paste" response similar to historical responses to disaster (Ovink, 2013a).

The designers of RBD approached this uncertainty by embracing a less direct process than those typical of post-disaster responses. Many observers have shown that the imperatives of recovery reduce opportunities to imagine what a more resilient city (or other system) would look like – that is, recovery is often simply rebuilding, and the same features that reduced resilience may be replicated. RBD's vision was to move resilience to the foreground and to do so in a purposefully ambiguous way in order to allow for interactions between geographies and topics.

The RBD designers embraced the "fuzziness" of the ideas, keeping both "resilient" and "region" unsettled and subjective terms. Ovink used the analogy of the "sabbatical detour" to distinguish the RBD process

from typical recovery efforts, with milestones in the detour meant to foster interaction between the design team and the community in which it is embedded, in order to yield a product superior to that produced by a "regular process" (Ovink, 2013b).

Design became a key component of this vision's innovation in both the product and this alternative process.

Although fuzziness was meant to infer openness (and thus creativity), the RBD process also called for enough engagement with science and the public, starting with the visioning process, to make these concepts more concrete. Ovink operationalized this process of infusing concrete community and scientific contexts of the often open-ended competition process into an actionable design competition with the following activities:

- Comprehensive regional analysis of mitigation challenges facing the Sandy-impacted region
- List of key projects where Federal and other (state/local/private) funds can be used to rebuild in a more resilient manner
- Implementation of a selection of these projects through CDBG-DR funding
- Collaborative process with Task Force Agencies, State, local and tribal partners for securing support for successful implementation of innovative designs for resilient rebuilding
- Federal strategy for national approach of regional resilient rebuilding (Ovink, 2013b).

This early vision of RBD, as articulated before its June 2013 launch, was purposefully not grounded in the realities of US disaster recovery funding or federal government processes, particularly in relation to state and local governments. Rather, it was meant to provide an alternative to those existing practices and constraints.

Thus design became a key component of this vision's innovation in both the product and this alternative process. To this point, Ovink noted the need for a different professional way of thinking that did not leap immediately to "problem solving". The added value that designers can create for society goes beyond the attractive and functional design of the actual physical intervention. Good design can help drive the cohesion, sustainability and earning capacity of the community at large." With this in mind, the "power of design" became an integral and indispensable component of the vision. Design's prominence in the vision would later be affirmed by both design teams – with a member of one of the teams defining RBD as a "rare opportunity for design to lead." Another stakeholder noted that traditional practice in disaster recovery was to "act like there's no time to design," but RBD was "piloting how thoughtful design can be used efficiently."

RBD's model of competition was originally envisioned as staged phases with several teams (5 to 10) working collaboratively in analyzing the region's issues but designing separately to yield projects that would be selected for implementation on their own merits. The RBD model would depart from traditional design competitions in one very significant way: even though focused on a specific region and its general recovery challenges, the program for the competition was largely open-ended. The RBD competition was structured to pick qualified designers with teams of experts who would then define the problems in question. As one stakeholder confirmed, Ovink's "main point was that they shouldn't issue an RFP because there's not enough information, the scale of the region is so great, and the interventions so diverse that the focus should be on getting teams to do this work, rather than having government do the research and issuing the RFP."

Thus, from its start, RBD was neutral with regard to program:

- four focus areas: coastal communities, high-density urban environments, ecological and water body networks, and a catch-all category of unidentified or unexpected focus

- site: the most-affected and most-vulnerable areas of the Sandy-affected region
- scope: no project cost maxima provided until informal ranges were given in Stage 3 (community engagement) (HUD 2013a; Hurricane Sandy Rebuilding Task Force, 2013b).

Combined with the lack of a clear project "prize" beyond the design team stipends, many design stakeholders wondered whether RBD could be classified as a competition.[5] This ambiguity was purposeful and designed to spur innovation. The intention of the design competition – to produce projects that would be judged on their own merits – deviated significantly from the norm, which usually calls for winnowing teams down to a winner.

The RBD vision for the design competition also departed from traditional practice by integrating collaborative research and community engagement squarely within the competition rather than as preexisting conditions or post-award requirements.

The RBD vision for the design competition also departed from traditional practice by integrating collaborative research and community engagement squarely within the competition rather than as preexisting conditions or post-award requirements. RBD provided intensive research and outreach assistance to formulate project problems and develop design solutions. In playing the role of project developer, RBD also helped coordinate local political outreach and required teams to engage local citizenry and community organizations. The level of resources and local government involvement differed markedly from other development endeavors. Though such ideas have been featured in other competitions, the RBD application combined with the other innovations noted above sketched a new model for design prizes. The expectation of potential implementation became a key element of the vision and shaped significant management and design team activities in Stage 3 (community engagement).

In sum, RBD's vision was to i) innovate, ii) use design as the channel for innovation, iii) develop a competition that ensured talented designers would be enlisted with broad room to maneuver, and iv) alter the nature of competition with activities that required the design projects to be informed by science, desirable for recipient communities and tenable for implementation.

However, some evaluation respondents criticized the RBD vision and its significant departures from comparable processes. For example, some local groups questioned the need to innovate when existing traditional recovery strategies such as home rebuilding had not been successfully rolled out. Several informants, including research advisors and other stakeholders in the region, questioned the focus on design as the chosen conduit, given the number of other community needs.

Stakeholders from the design world, including the teams themselves, expressed angst over the tension – "innovation versus clarity" – that the broad terms forced, leading some to wish that specific sites or problems had been designated *a priori* to allow for "focused creativity." For example, some members of the design community speculated that a "design task force" to establish problem statements and select sites for individual competitions could yield the same or even improved output. Most critically, several stakeholders described the vision as "top-down" and "not based in reality" despite the attempts to integrate community engagement and feasibility within the competition. Almost universally, however, respondents found the overall vision "refreshing" and "appealing."

[5] There is some evidence that the use of the term "competition" was primarily one of expedience in terms of both federal protocols and of generating interest in the professional design community.

2.5. Goals, targets and expected outcomes

As discussed earlier, RBD developers explicitly chose not to define a problem statement by either geography (e.g. a specific site) or program (e.g. storm surge protection or wetland conservation). This meant they set no quantitative environmental or social targets against which a design opportunity could be measured. Further, the scope of the final project budget and the competition award (or contract) value were unknown at the offset.

There were no identifiable measures, typical CDBG-DR monitoring plans or resilience performance outcomes beyond the mission of generating and implementing innovative designs as called for in the broad RBD mission.

The same purposeful ambiguity is noted in the formal documentation of RBD's goals, targets and outcomes. Specifically, RBD's developers listed two key goals to capture their expectations for innovations in product and process:

- promote innovation by developing regionally scalable but locally contextual solutions that increase resilience in the region
- implement selected proposals with public and private funding.

In essence, there were no identifiable measures, typical CDBG-DR monitoring plans or resilience performance outcomes beyond the mission of generating and implementing innovative designs as called for in the broad RBD mission. This lack of outcome specifics was purposeful because, according to Ovink, setting them would have defined the scope of the project too early in the process. The inability to openly describe the CDBG-DR outlays for the projects also made setting terms for outcomes untenable. This intentional ambiguity informally earned RBD the moniker of "vague by design" from some of the management team.

According to some informants, having unspecified outcomes allowed unorthodox and potentially unpopular ideas such as resident relocation to be considered. For other respondents, particularly those familiar with traditional development practices and policy negotiations, the lack of goals was more of a concern. They translated the lack of goals as potentially leading to less transparency, fewer actionable opportunities and a sense that RBD would speak primarily to a unique audience in the architectural profession. One respondent noted that having a more operational set of "RBD guiding principles" for the process could have been helpful in overcoming the goals' ambiguity.

2.6. Management plans

The establishment and later execution of management plans for operationalizing the vision and preparing all of the stakeholders for the activities provided integral input to the RBD activities that played a role in final outputs. There were two key management areas covered by the plans – those established for RBD in particular and those for the traditional operational requirements of public solicitations, such as CDBG-DR, from which RBD's organization and management plans departed.

In its earliest phases, the management plan for RBD was primarily based on staging the vision rather than comprehensive organization for managing critical paths. Plans made prior to the release of the RFQ were based on: i) the original vision for stages proposed by Ovink, ii) general discussions held during the May 8 Hurricane Sandy Task Force Resilience Incentive Prize Workshop and iii) assistance that the National Endowment for the Arts (NEA) offered from May through August for executing solicitation and reviews for design competitions. Many stakeholders noted that this last guidance provided critical insight into the logistics of competition management as

well as how those processes were allowable within federal solicitation regulations. However, the NEA's assistance focused only on Stage 1 (team selection), and not subsequent activities.

The NYU Institute for Public Knowledge (IPK) was tasked with developing and executing a management plan for the research process that would expose the design teams to critical research and scholars in the region, as well as guide preliminary engagement with communities. The goal of the plan was to help the design teams ultimately identify three to five design objectives in the region. Sam Carter, then with IPK, developed several work plans for Stage 2 (research). He worked with the RBD team that defined key benchmarks that would later be logistically executed with the assistance of the project manager, Amy Chester, and to a lesser extent, the other support partners. Though conceptually staged, the logistical plans were not fully prepared until Chester's hire (discussed in more detail in Section 3.2). At this point in Stage 2 and given the urgency of events and demands, planning often involved informal discussion between Carter and Chester.

For Stage 3 (community engagement), the management plan continued to evolve, though with more explicit documentation of short-term work plans. The Municipal Arts Society (MAS) noted that it "inherited the transition from Stage 2 to Stage 3" from IPK, though IPK staff served as design team liaisons. The three partners – MAS, Regional Plan Association (RPA) and Van Alen Institute (VAI), commonly referred to as the "troika" – established principles for the design and implementation of RBD that determined their specific roles and plans, namely: transparency and inclusivity, integration and comprehensiveness, and enduring impact (RPA *et al.*, 2013a; 2013b). One funder explained that support partners were meant to "provide the glue" for design teams administratively in the early months. MAS was charged with financial and legal administration, but many of the key work tasks involved all three organizations. Of the 24 deliverables listed in the final work plan in August, one-third were assigned to "all" organizations. Despite the original work plan and designated roles, partners found that their responsibilities remained vaguely defined until the hiring of Chester as RBD's project manager during the first month of the groups' formal collaboration.

Once on board in mid-August, Chester took the various conceptual and operational work plans from the RFQ, IPK and the three support partners. She began defining schedules and the logistical activities required for events and benchmarks, and set up a common communications protocol to oversee all of the support partners as well as report to the core RBD partners and, as needed, other stakeholders. She also incorporated changing requirements from RBD partners for events and deliverables, including calendar changes and new needs identified by design teams.

Combined with the intense timeframe by which RBD and the design teams were intended to produce deliverables, however, the formal management plans essentially became background guidelines – thereby, implicitly requiring project manager, Amy Chester, and the support partners to develop management plans on the go.

New needs included having design teams propose individual work plans, as well as instituting reporting requirements and deadlines for the support partners and design teams at the onset of both Stages 2 and 3. These were best articulated in biweekly memoranda for the design teams and weekly phone and email communications with the support partners documented as "liaison digests" – concepts which Chester's added to the original management plans. Her project management capacity was somewhat constrained by these pre-existing frameworks and with the established organizations and their grant-defined roles. Combined with the intense timeframe

by which RBD and the design teams were intended to produce deliverables, however, the formal management plans essentially became background guidelines – thereby, implicitly requiring Chester and the support partners to develop management plans on the go.

Even beyond management plans, RBD's innovative organizational and management structure also differed from the typical federal expectations and requirements. The management structure leveraged local expertise from well-known organizations with intimate knowledge of and ties to the region. The consensus among key informants across all stakeholder groups – including federal agencies – is that deviating from the status quo was not necessarily a negative, particularly with regard to deviation from federal management plans.

As many interviewees noted, the "government isn't innovative." RBD created a parallel management, or as Ovink described it, a "double track" structure, that needed to respond flexibly and "build the plane while it was being flown." The management structure was purposefully designed to be more efficient, more responsive and less restricted than formalized government processes. Many interviewees agreed that "there is potential out there for using [design competitions] in the world of innovation."

However, a significant divergence from normal protocol was the flexible use of CDBG-DR funds – grants distributed by HUD to help cities, counties and states rebuild and recover from federal-declared disasters – which then led to other flexible management of the funds. RBD's rapid pace also meant that many typical federal protocols for notices and managing transparency occurred at atypical times in the process.

Multiple interviewees cited the intense collaboration between philanthropic partners and federal government as another notable element of RBD. Federal employees noted that Secretary Donovan has pursued relationships with philanthropic organizations in the past, but the degree and dependency of the collaboration around RBD is unusual. It is clear that without the assistance of philanthropy, RBD would not have been possible. While the philanthropic funders' participation with RBD varied, several funders made unique contributions to RBD strategy and functioning; some funders, for example, insisted on increased public participation through microgrants. In this way, philanthropy also influenced the actual design process and perhaps the design products as well.

2.7. Stakeholder motivations and roles

Despite its management ambiguity, the vision presented by HUD was compelling and its leadership engaging. The key stakeholder groups all shared the overall vision but also maintained their own motivations for participating. In some cases, these motivations helped them define their roles beyond the obvious (such as funding) while in others the roles were dictated by contractual agreement (support partners), legal restrictions (local elected officials) and later management exigency. The evolving motivations and roles for key groups are described below, and a visual depiction of the RBD organizational roles is provided in Figure 2.

Funders

As noted earlier, support for Stage I of RBD came from a combination of funders. HUD provided staff and support to guide RBD's evolution, and ultimately, will provide the CDBG-DR funds to implement the projects. The Rockefeller Foundation was the central funding and administrative group after HUD, and supporting funders were the JPB Foundation, DB, Surdna Foundation, Hearst Foundations and the NJRF. RBD funders had three main roles: i) provide financial support, ii) serve as advisors, providing guidance to the RBD management team on the process and resilience and iii) leverage their resources to create awareness about RBD in the media and among their relevant community constituencies.

The core funders were Rockefeller and HUD, with HUD playing a lead role in designing the RBD framework and writing the RFQ soliciting design teams. Both organizations dedicated resources and staff, secured buy-in from funders and political officials, and provided award funding. As a funder, the Rockefeller Foundation played and continues to play a vital leadership role, funding the RBD concept, engineering support from additional funders, and managing relationships among funders, core partners and design teams. One organization expressed confusion over its own role in RBD beyond providing funds, though it speculated that the fast pace of the competition naturally led to communication lapses.

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Several funders contacted by HUD Secretary Donovan indicated that having someone of the Secretary's stature approach them for funding played a key role in securing buy-in. Most organizations were motivated to participate due to their prior expressed interest or work in the field of disaster recovery or resilience. Some were motivated by a desire to use design as a mechanism for improving society and improving long-term recovery and resilience efforts. Of the funders especially interested in community participation, some expressed disappointment with RBD's community participation efforts and sought additional resources to ensure robust community involvement. Investments from partners ranged from basic early support in Phase 1 for the RBD "piloting" to interest in long-term implementation of both the RBD final projects and replication of the model.

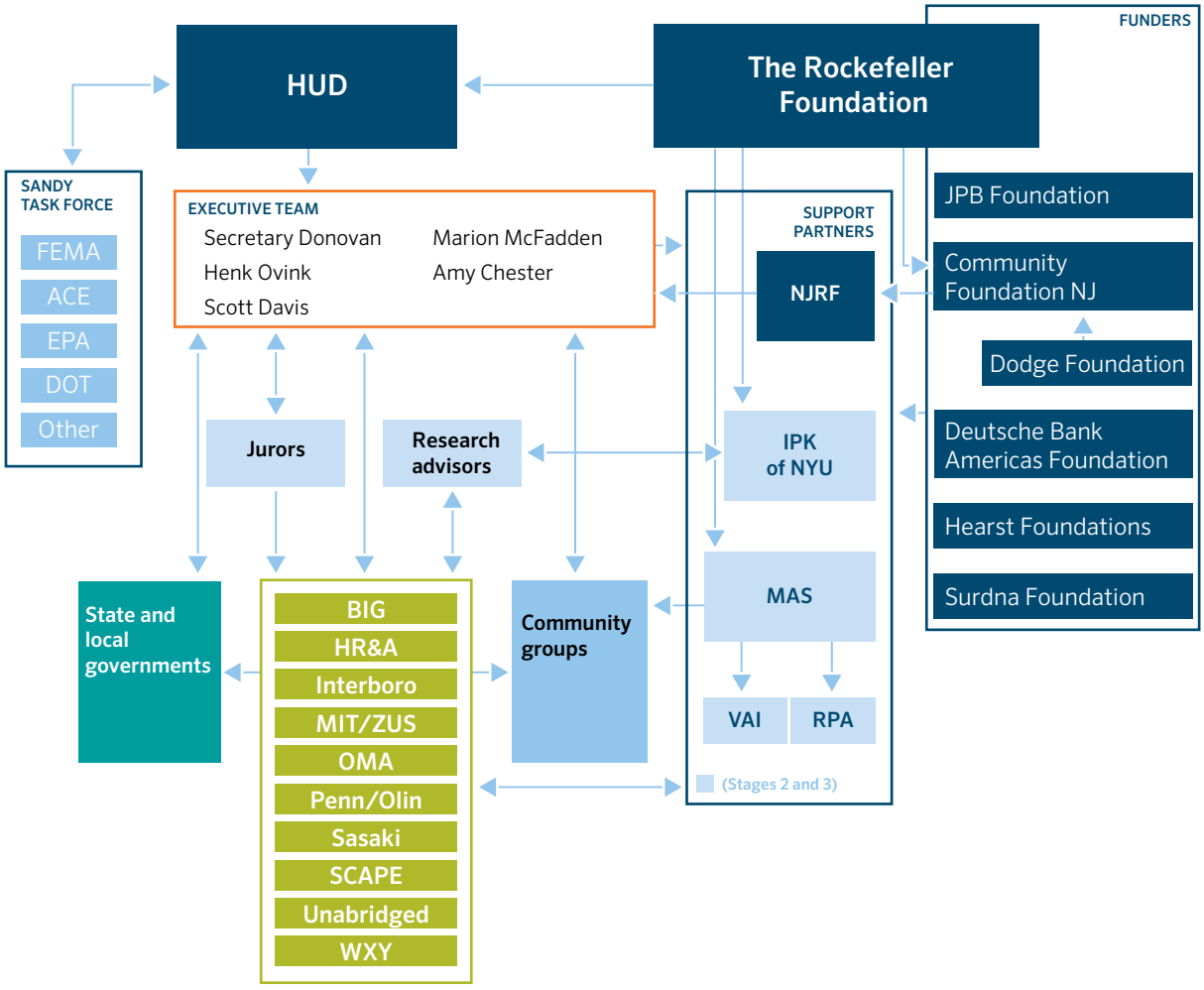
Though they did not provide funds to the effort beyond in-kind staff and travel time, other federal agencies were also involved because of i) their interest and expertise in federal design competitions, e.g. NEA, ii) their traditional role with regard to coastal infrastructure, e.g. Army Corps of Engineers (ACE), or iii) their interest in post-Sandy environmental and development needs, e.g. Department of Transportation, Federal Emergency Management Administration (FEMA), National Oceanic and Atmospheric Administration (NOAA). These agencies also contributed general data and research findings during RBD's early days, though calls for more detailed data at the project level were not answered on the whole.

Support partners

Four organizations were asked to help steer the RBD process: IPK, MAS, RPA, and VAI. IPK oversaw the Stage 2 research phase, while the other three partners were tasked with different responsibilities in Stage 3, which called for the development of design solutions and a community/partner engagement period. For the most part, support partners cited organizational benefits and the relationship of RBD to work they were already doing or were interested in doing as their primary motivations for participating in RBD.

IPK had been active in post-Sandy research and felt that it was important for the university to play more of a role in the larger community in which it is situated, which encompasses the Sandy-affected region. IPK's director, Eric Klinenberg, had extensive knowledge of post-disaster social conditions. Additionally, IPK viewed RBD as an opportunity to expand its research profile through new work that built on its own resilience/post-Sandy work around climate change and urban resilience. IPK also felt that RBD would be an opportunity for its work to develop regional significance, and that it could lead to future projects and interest from foundations that want to fund resilience/post-disaster work.

FIGURE 2. RBD organizations



MAS, RPA and VAI collectively participated in RBD because of their "familiarity with local community responses, agencies and recovery groups active on the ground since Sandy; connections across the region with stakeholders from diverse sectors ... local, regional and international experience in fostering complicated design competitions ... and knowledge and experience in developing and implementing public programming and engagement" (MAS *et al.*, 2013a). For RPA and MAS, the opportunity to forge new relationships between technical and community groups and to build regional resilience was a major motivating factor for participating in RBD.

Ultimately, their respective interests mapped onto their roles with tasks and geographic jurisdictions allotted across New York City and public events (MAS), the States of New York, New Jersey and Connecticut and existing and pending planning efforts (RPA), and visual identity and architectural design (VAI) (the Rockefeller Foundation, 2013b). MAS also noted that part of its underlying role has been to "ensure that RBD doesn't become a design-dominated process." With a strong capacity to assimilate and translate research as well as to solicit additional support, RPA was motivated by the potential planning benefits that RBD presented for the region.

Along with its primary focus on community engagement strategies, VAI took on the tasks of managing RBD's visual identity and website. VAI also harnessed some of the lessons learned from running competitions over a century. Collectively, the three support partners had been involved in design competitions to various degrees, and attempted to bring their different perspectives to the structure and operations established by the core partners.

Research advisors

IPK identified and selected the research advisors towards the end of Stage 1. They provided intellectual support and guidance to RBD staff and design teams early on. For example, RBD staff and leadership relied on research advisors to weigh in on criteria for evaluating design opportunities. Additionally, staff solicited advisors for guidance on whom to invite to public events or what sites in the Sandy-affected region would be suitable for RBD. Their formal involvement concluded at the end of Stage 2.

Advisors noted that while their roles were initially unclear, things crystallized as events unfolded, a reflection of RBD's rapidly evolving nature and the varying levels of advisor time availability. For example, some advisors chose to respond to personal invitations from design teams to discuss their ideas after Stage 2. Select research advisors made presentations during the Stage 2 kickoff, and many attended the regional workshops and most RBD meetings. Many advisors felt they had a responsibility to ensure that design teams relied on evidence and that the high-level design interventions focused on vulnerable populations. Depending on their schedules, some research advisors participated in the October jury review of design opportunities.

Reflecting the synchronicity of their research interests and RBD, a few research advisors first participated in RBD as members of design teams that did not advance to Stage 2. Their involvement reflected a deeper interest in fields relating to climate change and design interventions. Other research advisors were affiliated with research centers focusing on issues relating to RBD and felt that not being involved would be a missed opportunity. For example, one advisor saw the potential for RBD to contribute to his own work on climate change.

Other sites, such as Hoboken, Bridgeport, Ocean County and Nassau County, used RBD as part of internal efforts to develop special plans around resilience and now plan to use RBD ideas in their future resilience plans regardless of whether or not they are awarded CDBG-DR funds through RBD.

Many advisors already were doing work related to Sandy and disaster recovery, so RBD aligned nicely with their interests. For example, one advisor had been researching Sandy's impact on housing stock. Several advisors participated because they had been asked by IPK's Eric Klinenberg, whose work on post-disaster scenarios they respected. Many advisors cited a general dissatisfaction with the status quo of disaster relief and rebuilding efforts, and viewed RBD as a proof-of-concept for a new method of resilience work. Advisors also were motivated because of dedication to their respective fields and their hope that things they viewed as important – such as housing, scientific rigor and community input – would play a role in RBD.

Jurors

Jurors, similarly, were motivated based on personal invitations to participate as much as their interest in RBD's contribution to their individual areas of expertise. Jurors' commitments were primarily for the conclusions of Stages 2 and 3, and they had little interaction with design teams or RBD staff otherwise. The jury members were appointed by the HUD Secretary and were required to show there was no conflict of interest (HUD, 2013b). The RBD jury was chaired by Secretary Donovan and co-chaired by Ovink.

The role of RBD jurors was advisory. They gave feedback at two key transition points – the ends of Stages 2 and 3 – only to inform the final decisions which were to be made by HUD. Jurors were not involved in the Stage 1 selection of design teams. Members of the jury were given schedules and asked to appear at certain events to evaluate the quality of design opportunities, basing their evaluations on their professional experience and knowledge.

Several jurors noted that they had limited interactions with design teams (though one exception may have been Eric Klinenberg). Jurors also mentioned that familiarity with the general work of the design teams and with the architectural design world were motivating factors for their involvement in RBD. Many jurors had previously participated in competitions, and while they initially agreed to participate, they found that RBD was different: they would not make final decisions, and the process extended over a long timeframe.

State and local governments

Elected officials from many of the state and local public jurisdictions interacted with design teams and provided them with letters of support, demonstrating to HUD and RBD leadership that their municipalities or states were willing to serve as grantees for awarded CDBG-DR funding. They participated in site visits and worked with teams to respond to questions, highlight important issues, represent their jurisdiction's point of view, and compare RBD projects to existing plans (such as current master plans, redevelopment plans, and/or special post-Sandy recovery or resilience plans). State governments and New York City had already established early plans for their first two obligations of CDBG-DR funds, including home rebuilding programs and, in New York State's case, a grassroots planning effort in the form of the New York Rising Community Reconstruction Program (New York Rising, 2014).

Further, some cities already had plans, such as New York City's PlaNYC and its Special Initiative for Rebuilding and Resiliency (SIRR), and simply compared them to proposed projects or used them as a way to provide feedback to design teams. Other sites, such as Hoboken, Bridgeport, Ocean County and Nassau County, used RBD as part of internal efforts to develop special plans around resilience and now plan to use RBD ideas in their future resilience plans regardless of whether or not they are awarded CDBG-DR funds through RBD. Some cities have been actively involved in building community support for projects, recognizing that community input will strengthen the quality of products.

Many elected officials mentioned fiscal realities as a major motivation for participating in RBD: jurisdictions with funded projects will receive significant CDBG-DR funds that will augment existing or desired resilience efforts. Because their municipalities are in Sandy-affected regions, many of these officials also supported RBD because they want to strengthen their communities prior to the next storm. Many view RBD as a foundation for future urban resilience efforts.

Some elected officials viewed RBD as a mechanism for strengthening pre-existing relationships with key agencies and for catalyzing interest in resilience from other agencies. For example, one city leveraged RBD to coordinate resilience plans with adjacent cities, overcoming what had been significant political and fiscal boundaries. Similar to motivations cited by research advisors and other content experts, elected officials viewed RBD as an opportunity to overcome the status quo disaster-recovery response and to develop better funding models. One city official cited the lack of a prototype for an urban resilience model as a motivation for participating in RBD, speculating that RBD could produce urban resilience models for the rest of the country.

Community-based organizations and citizen groups

The community organizations purposely involved in RBD were diverse and represented different geo-

graphic areas, segments of the community and advocacy angles. They assisted the design teams in three main ways. First, community organizations provided background information on their communities, sharing knowledge of their communities' needs, the physical and political landscapes of the region, and content knowledge in specific issue areas. In the initial stages of the process, they shared knowledge through presentations of their work to the design teams and then offered advice to the design teams as they formed their ideas. Second, community organizations used their networks and infrastructure to help design teams further engage the community by directing them to other important organizations and leaders with whom they could consult. Third, they helped organize and publicize community engagement events through, e.g. hosting events, facilitating discussions, knocking on doors and, in some cases, attending the RBD jury presentations.

"We wanted to make sure our most vulnerable communities had a voice."

RBD teams identified the community organizations through various avenues. Some organizations were referred to the design teams by other community organizations or working groups, e.g. a community organization would host the initial meeting between a design team and another community organization. Other times, one community organization would provide another organization's contact information to the design teams. Some organizations made connections with design teams when the teams presented at the meetings of working groups they were a part of or when organizations attended RBD-specific events. In one instance, a design team attended a workshop hosted by a community organization and reached out to that organization afterward. Of those that received grants from other RBD funders concerned with comprehensive engagement, most noted that the funds were helpful but not particularly a motivating factor since their costs exceeded grant values.

The community organizations that were involved in RBD chose to be involved for similar reasons. Generally, they felt that RBD could provide benefits to their communities and that the initiative was in line with their missions, such as promoting economic development or protecting homes from severe weather. One organization described the alignment between RBD's mission and its own: "We jumped in because this was something that was already part of my organization's DNA." Another organization thought RBD was "a really good opportunity for us to share [our] work" and "amplify our message."

Obviously, the community organizations supported RBD's emphasis on community engagement. They wanted to ensure that the design teams were truly listening to community voices since the teams came from outside the community. A few community organizations that worked with low-income communities and/or communities of color emphasized this point. One organization said, "We wanted to make sure our most vulnerable communities had a voice." For one organization, the RBD team's commitment to incorporating community feedback made the organization think it was worth its time to assist the team.

The community organizations that were not involved in RBD (and responded to the evaluation team) chose not to be involved for a variety of reasons. One group disagreed with the mission of RBD because it supported long-term projects as opposed to short-term relief. One organization was skeptical of the benefits of RBD after witnessing numerous stalled post-Sandy relief efforts. That organization and two other organizations that participated in RBD perceived a sense of "Sandy fatigue" or "Sandy overload" in the community because of the sheer volume of Sandy-related projects. Other organizations supported RBD, but simply could not devote time to it.

Design teams

All of the lead organizations in the design teams that were motivated to participate in RBD had already worked in and/or wanted to expand their portfolios in projects pertaining to climate change issues and resilience. In addition to the business opportunity of expanding the firm's proposals, many key informants expressed personal interest in climate change issues and resilience. Key informants also expressed a desire to work on a project associated with experts and leaders, including those in federal, state and local governments.

Per Secretary Donovan's and Ovink's original intent, the design teams were able to represent different perspectives on water management. In fact, many of the teams from outside of the northeast region of the US were eager to share their local/regional knowledge about water issues and flood management in the Sandy-affected areas, e.g. the Bjarke Ingels Group (BIG) and the Massachusetts Institute of Technology (MIT) teams were co-led by European architects. Both these teams expressed a desire to share their "European sensibilities" because they felt the US "has a tendency to be really atomized", and they found Sandy-related projects to be an opportune start to discuss regional strategies.

Most of the lead teams also had offices in the New York region, although several had offices outside of the region, including Boston (Sasaki), New Orleans (Waggonner and Ball/unabridged), the Netherlands (MIT Center for Advanced Urbanism (CAU) + ZUS + Urbanisten), and Philadelphia (PennDesign/Olin). Naturally, lead organizations assembled teams based on past work experiences and anticipated work plans and designs. As design interventions, issues and RBD deliverables such as cost benefit analysis became clearer, collaborators were sometimes added to the team. A number of teams included Dutch collaborators who lent expertise in engineering and architecture (e.g. OMA and MIT).

The design teams can be organized into four categories based on each team's lead organization: universities (MIT, PennDesign/Olin); large firms (Sasaki, OMA, BIG, Waggoner and Ball/unabridged); small firms (SCAPE, Interboro, WXY); and one professional real estate advisory firm (HR&A). Larger firms such as Sasaki, OMA, and Waggonner and Ball tended to have fewer organizations represented on their design teams, mainly because the large firms have large staff capacity, including architecture, urban planning and community development/outreach, and research and analysis. The selection of team members involved in different events and public meetings and presentations varied per team, often with partners or junior staff attending more operational or less public opportunities.

3

Competition activities and outputs

Competition, the second of the four critical domains of interest in this evaluation, refers to the individual and collective activities of the stakeholders as well as some of the key outputs of the RBD model.[6] Since its inception, RBD has blurred the lines between process and product innovation and the realities of traditional design competitions and infrastructure development. This ambiguity has been intentional and tense. In Stages 1 (team selection) and 2 (research), RBD harnessed the lack of parameters to generate open-ended questions and foster radical thinking about the real environmental, social and economic challenges faced by Sandy-affected communities. While the final verdict on the projects' innovativeness – as well as the evaluation of whether the final state of the projects yield significant and positive impacts compared to other resilience strategies – is yet to be delivered, the products of Stage 2 have generated excitement.

3.1. Findings

Key positive findings regarding the competition aspects of RBD include the following.

[6] Note: This chapter does not discuss the two key activity areas of "participation" (engagement of local community groups and citizens), and "implementation" (solicitation of support from state and local policymakers). Rather, these two subjects are fully analyzed in Chapters 4 and 5, respectively.

Finding 8: RBD demonstrates many of the best aspects of a design competition even though several stakeholders described it as not representative of design competitions. RBD produced a tremendous volume of juried design analysis and plans whose value far exceeds the resources that were made available. RBD also improved upon traditional design competition by introducing research, public engagement and practical implementation stages often in collaboration across the teams – three key opportunities and one framework that are uncommon in traditional competitions.

Finding 9: RBD demonstrated innovative departures from traditional federal practice in the execution of the competition through its unique public-philanthropic partnership. In this partnership, foundations contributed resources for the competition's management and team prizes, and federal resources provided implementation awards to recipient communities.

Finding 10: RBD staff produced an organizational structure that managed the detailed tasks with no preexisting blueprint. RBD's unique management structure existed parallel to, but separate from, the traditional federal grant solicitation and award processes that are typically burdensome, highly regulated and lengthy

The evaluation also noted the following key challenges that constrained the execution of the competition.

Finding 11: Lack of precedent and preexisting plans for RBD led to changing and growing requirements for deliverables, participation in activities, and, in some cases, reconfigured teams. While RBD responded to this by providing multiple channels for design teams to access information, there were increased opportunities for communications slippages and varying interpretations of deliverables and of the post-jury award criteria.

Finding 12: The intensity of the compressed timeframe was taxing, as noted by all stakeholder groups. In ten months, RBD activities were undertaken across competition, research, design development, jurisdictional negotiations, media outreach and community engagement – a process that typically would take a minimum of two years.

Finding 13: The design teams' resource limitations exacerbated RBD's intensity. The individual teams spent well more than the allotted funds, typically at a magnitude of three to six times over.

Analysis of the activities and challenges associated with the competition resulted in two overarching recommendations regarding Phase I's competition processes and their execution, should they be employed in an entirely new competition. As with all innovations and pilot efforts, adjustments in plans and activities are possible. These range from staggering the stages to allow for longer design development and research to having management staff, plans and clear parameters early – an adjustment that will be necessary especially for Phase II.

Replication of the RBD Phase I competition is possible but will depend on specific activities. Some RBD activities can become ongoing, fundamental (such as a research advisory group and other networks), while others can be replicated with some of the management adjustments described here. Still others, such as leadership, sustained vision and funding partners, are specific to this post-Sandy context and could prove beyond the reach of other cases in which replication is envisioned.

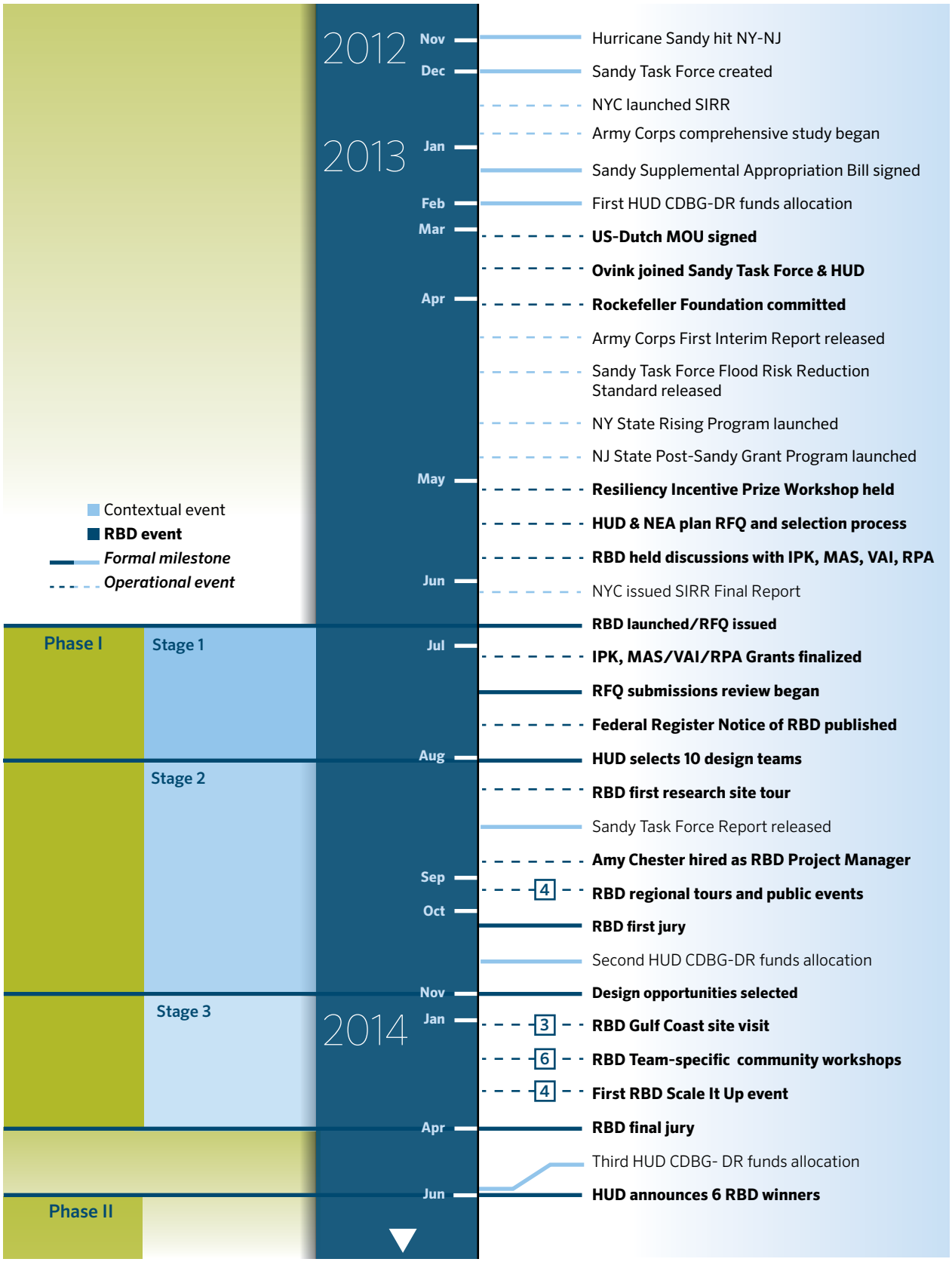
3.2. Competition activities

Numerous activities transpired across the formal stages of the RBD competition's history, from Stage 1 through Stage 3. A visual timeline is provided in Figure 3 of both RBD and contextual events. The management plans also evolved from conceptual stages with milestones early on. Henk Ovink was the primary thought leader behind RBD after joining the Task Force in March 2013 (officially on April 1, 2013). During Stage 1, Ovink and Kevin Bush of HUD were the primary organizers and advocates for RBD, with assistance from Task Force staff Marion McFadden and Laurel Blatchford. RBD staff had the massive logistical assignment of managing multiple support and funding stakeholders, assisting design teams and reaching out to community and political stakeholders. As such, Ovink proposed hiring a full time RBD project manager before the RFQ and, ultimately, Amy Chester was hired at the start of Stage 2.

Since she did not begin officially until a week after the ten design teams were announced in August, full management plans, including communication protocols and coordination, were not inscribed early on. RBD's rapid pace necessitated an evolving management structure but could have benefited from more robust logistical paths, schedules and preparations earlier. In part due to the innovative nature of the RBD vision in general as well as the nature of those early plans, Chester was constricted in her ability to forge a comprehensive plan.

However, upon arrival, she developed a regular communications schedule with RBD administrative staff and design teams, instated regular correspondence with liaisons from each of the RBD administrative teams, created channels for feedback between Ovink and the design teams, and created a mediation

FIGURE 3. Post-Sandy and RBD timeline



platform with community organizations and local policymakers. The development of the team liaisons proposed by the MAS project leads, Alexis Taylor and Courtney Smith, with input from Chester and Ovink, was also instituted to ensure that shared roles among the support partners (IPK, MAS, VAI, and RPA) would be executed efficiently, would apply the individual liaison skills and interests appropriately, and would benefit from the collective knowledge of all four organizations.

As events and deliverables piled on, reality set in. There was very little time for rumination and adaptation of even the best practices that were shared orally, particularly among design teams that were balancing design development with community participation efforts.

Staff from all four support partners also served as site liaisons for each of the RBD sites. Each site had two liaisons (one senior and one junior, from different organizations) along with additional participation by the VAI staff for Scale It Up activities. The roles of the liaisons were multifold and ranged from coordinating logistics of public meetings and planning events to assisting the design teams with introductions to local policymakers and community groups.

There were many informal opportunities for liaisons to correspond with one another and for design teams to meet at events and meetings, as well as the potential to formally share best practices during weekly calls. However, there was no excess capacity or time to execute best practices across the sites, and there was little documentation of these. As events and deliverables piled on, reality set in. There was very little time for rumination and adaptation of even the best practices that were shared orally, particularly among design teams that were balancing design development with community participation efforts.

Constrained by requests from funders and restrictions from HUD, support partners as well as the design teams had to deliver logistically, helping plan events, set up meetings and provide crucial resources to design teams with the same short notice that the design teams experienced. All stakeholders noted this as an unenviable management assignment. During the research phase, RBD and IPK staff had to make quick decisions about speakers, issues to highlight and workshops to host. The frequency of the requirements in Stage 2 also meant that the RBD administrative team had to be responsive to the demands of the RBD design teams. RBD management staff had to be malleable and responsive to HUD's regulatory restrictions, and this had to be translated to the RBD administrative team. One stakeholder noted that "the collaboration [of the RBD administrative staff] had to overcome the chaos" of the RBD process.

Even though many of the regional meetings and site visits were organized in haste, they appeared to be executed clearly and seamlessly with only a few exceptions. For example, a performance survey by IPK suggested that many of the key activities held early on were helpful to the teams. The RBD administrative team was also able to fulfill many of the main goals in the final work plan proposed in the support partners' plan. While RBD administrative staff had drawn up a work plan delineating duties, the massive logistical operation with a myriad of details required every organization, at every level, to contribute whenever possible. Remarkably, the design teams and RBD staff and administrative team met all the procedural deadlines and milestones.

The size of the RBD team, which was composed of the main staff and the administrative team, was also sometimes distracting. As one stakeholder at a community group declared, "There were so many of them." The eventual increased communication

among the RBD administrative team members, design teams and RBD staff did not account for parallel conversations taking place among the many players involved, including HUD. Some RBD administrative staff reported learning of RBD decisions or requests from design teams, after the design team members heard from RBD staff.

Furthermore, interviews suggested that there was inconsistency in the involvement across design teams with their liaisons in the RBD administrative teams, as well as between the design teams and research advisory group, RBD staff or HUD. The relationships among, and personalities of, the design teams and the liaisons from VAI, MAS and RPA varied and affected the amount of guidance and help the design teams requested or received. One stakeholder referred to the liaison position as a "glorified errand boy," though most viewed logistical management as a godsend.

The main overall comments from interviewees concerned the frenetic pace of the RBD stages and their consequent expectations. The pace of the RBD process required making hard and fast decisions, which unsurprisingly meant that the process and management was determined by dictum and crisis.

Funders were not necessarily kept updated of the everyday happenings of RBD, nor did they request to be. However, some funders relied on intelligence from community groups, which presented the potential for inconsistent or inaccurate reports. Funders did impose extra management requirements by requesting that community groups be funded to increase public participation. The management and need for approval of microgrants became a logistical nightmare that could have been done in many other ways – with a more formal selection and funds distribution process – had the funders' expectations been identified earlier and community engagement plans described sufficiently to meet their concerns.

However, the main overall comments from interviewees concerned the frenetic pace of the RBD stages and their consequent expectations. The pace of the RBD process required making hard and fast decisions, which unsurprisingly meant that the process and management was determined by dictum and crisis. In order for all the many pieces to fit together, RBD had to be micro-managed, with oversight ranging from RBD website development to changes in event schedules – a level of management that was not something many of RBD administrative and design team members were used to.

The lack of a clear work plan from the beginning and the quick pace of the RBD process affected what the RBD administrative team was able to accomplish and when. While IPK began work during Stage 1, it had to galvanize its community of experts and begin preparing for Stage 2 even before its final grant agreement with the Rockefeller Foundation was formalized. In fact, RBD's administrative team did not finalize and fully execute grant agreements with the Rockefeller Foundation until mid-August, after work had begun. As with the design teams, the RBD administrative staff had to incur costs before payment.

Many key informants felt that MAS, VAI and RPA served more as logistical coordinators for the community events instead of having more substantive, content-related technical assistance roles in facilitating the development of the designs. Potentially because of time constraints, motivation or lack of prioritization, the RBD administrative team altered many expected deliverables. As it was, though, RBD involved a massive logistical undertaking with myriad details that needed staffing and short-term coordination. By the time of the final jury, ultimately, this coordination successfully met the planned and emerging demands.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One noteworthy contributor to the management execution of RBD was the fortuitous good personal working relationship between the visionary (Ovink) and the implementers, including Chester and Davis. On the whole, a similar camaraderie was established between Chester and the support partner staff. Without these working relationships, RBD would not have been able to accomplish all of its goals in the short time available. Furthermore, the management execution suggests that replication of RBD Phase I is feasible.

3.3. Outputs

Though the volume of activities produced a tremendous number of outputs, four key categories of outputs are noted because of their bearing on the design teams' ultimate products, and because they proved to be innovative supports as well as challenges. The outputs – selection, jury and award benchmarks, design team resources and deliverables, design development, spillover activities – are discussed below.

Selection, jury and award benchmarks

The gateway events at the end of each Phase I stage that determined the content and activities of the following stage were important components of the RBD activities. The original RFQ, the design team selections of August 2013, the design opportunity jury of October 2013, and the final jury in April 2014 were all critical determinants of the final designs. A less obvious aspect of these events was how they shaped the RBD design teams and processes.

Eligibility. The first example of this output was the effect on the compositions of design teams with regard to legal entity eligibility, conflicts of interest and the range of professional needs within the teams. Though very specific with regard to professional expertise and disciplinary background in design, the RFQ was relatively neutral with regard to the legal characterization of the entities. Non-profit design and community development entities also applied.

As a consequence, the selected teams' leads were from university-based research centers or traditional for-profit architectural firms. The principals in architectural firms commonly serve as architectural faculty, including many of the selected design teams that were not officially based in a university setting. Those teams that specified their university affiliation were able to enlist other resources from their academic colleagues, including students. This lack of clarity put them at an advantage.

Multiple entries. A related eligibility issue was the description of requirements regarding submissions across multiple teams of a single entity. In the event of such a scenario, the organizations in question would have to recuse themselves from all but one team. These terms, however, were flexibly applied after selection. Regardless of intent, the lack of specificity allowed for certain competitive advantages that could be perceived as unfair.

Professional qualifications. A final concern noted by design stakeholders was the lack of specificity regarding the professional qualifications that would ultimately be required during the competition. This was particularly true of cost estimating skills, certain community engagement specializations, and knowledge of political negotiations and CDBG regulations. Many of these general areas of work were defined in the RFQ (except cost estimating), though the degree to which they would be needed for completion of the requirements for these areas was not.

RBD also established the federal team selection panel and jury members. The diverse expertise among both groups was noted positively by all stakeholders. Having federal employees serve on the selection committee allowed RBD to avoid conflict of interest requirements, and final selections generally matched the panel's recommendations. Other factors that were not clearly identified in the RFQ may have played a role in selection such as adequate representation from regional firms or international composition. Similar comments were made for the jury deliberations regarding design opportunity selections, with several jurors and design teams opining that factors such as geographic diversity or pre-existing commitments from cities played a role in the choices. Ultimately, the RFQ was very broad and purposely open-ended though some minor specification of eligibility and requirements of submissions and selection criteria may have clarified perceptions of preferences or conflicts. Such clarity is typical and, for many reasons, necessary in formal public solicitations.

Panels and juries. Several comments regarded the logistics and execution of the selection panels and juries. Representatives from other federal agencies, who were surprised by the speed with which the solicitation, response and review processes were held, casually noted that they wished their traditional solicitations could be equally speedy. Those involved with both processes commented on the clarity of instructions and procedures for the selection panel, but expressed some concern regarding the lack of prepared materials and sufficient advance time for review in the juries. Jury members were also concerned about the lack of clarity regarding their roles vis-à-vis final award, and recommend a conference call or other discussion prior to jury presentations and deliberations.

For the teams, the first jury was particularly positive because of the amount of interaction both with jury members and other teams. Ultimately, though, there was limited feedback from the panels and juries: i) to the design teams, which they felt would have been helpful for improving their designs, and ii) to the declined teams who received no final scores or comments that are typical of federal competitive grants. Teams relied on informal discussions held with RBD after the selection.

Design team resources and deliverables

Not surprisingly, the most common comment among the design teams had to do with the amount of work involved in the short time frame, particularly with regard to the award grants that were provided. Competitors rarely profit from design competitions, but in this case, the teams had costs that reached three to four times the award value, not accounting for their team partners' expenses. Several teams estimated their cost burden at up to six times the award value – a rate that many stakeholders referred to as "exploitative." For example, travel expenses increased significantly because of constant changes in travel schedules, a burden especially noted by design teams whose primary offices were not located near their selected sites (including Dutch firms) and by the smaller design firms that lacked other resources.

Deliverables. The primary contributor to the perceived burden, beyond time constraints, was the fundamental volume of, and changes in, requested deliverables. Even with the information provided in the RFQ, not one of the interviewees anticipated the extent of the workload, including deliverables,

engagement with the community or CDBG-DR grantees, or the pace of the RBD process.

Design teams and their expert partners were also concerned that the description and specification of deliverables did not use professionally accurate descriptions of design documents or cost-benefit analyses.

The final design team grant award agreements called for deliverables and participation in many activities that were not necessarily anticipated early on, and not explicitly described in the original RFQ and Federal Register notice. Common responses to the discrepancy between resources and scope were: "insane amount of engagement," "never-ending" and "ever-changing" requests, and "scope creep."

Design teams and their expert partners were also concerned that the description and specification of deliverables did not use professionally accurate descriptions of design documents or cost-benefit analyses. Described by one team member as "detail misalignment," most teams suggested some of the angst regarding increasing requests could have been mitigated if they had had better description of deliverables to match professional practice regarding level of detail, professional terms of art, and technical assumptions.

Scope of projects. Due to the informality of many discussions, there was confusion as to the scope of projects or likely CDBG-DR award outlays. Design teams' understanding of the available funds for project awards ranged from $1 billion to $15 billion, even in the final weeks of Stage 3, while the more likely estimate was in the $2 to $3 billion range. Even though it was possibly due to their own misinterpretation, design teams' confusion could have been reduced with explicit documents as they entered Stage 3.

Management planning. Design teams and their expert partners were also concerned about the description and specification of deliverables, such as not using professionally accurate descriptions of design documents or cost-benefit analyses. Described by one team member as "detail misalignment," most teams suggested that using better descriptions of deliverables to match professional practice regarding level of detail, professional terms of art, and technical assumptions may have mitigated some of the angst regarding increasing requests.

Ultimately, these expectations and increasingly limited resources and time to address them had an effect on the management planning for individual design teams as well as expectations of CDBG-DR recipients. Even with a summary of some of the deliverables in the RFQ, such as the regional meetings and site visits, the actual day-to-day requirements and the rapid announcements of when the deliverables would occur proved challenging. Some teams noted they had curtailed some design activities and innovative community engagement strategies out of a fear of requests for new deliverables that could limit the resources for those activities.

Award uncertainty. The fact that CDBG-DR funding had never been used in this way before caused confusion for a variety of stakeholders. State, local and federal officials were uncertain of the exact process by which CDBG-DR funds could be appropriated to winning RBD designs or even the amount of funding available for these designs. The RBD team was unable to provide a definitive value to the final awards, though a general cap of $200 million was suggested by HUD. This ambiguity was also partially intentional, since RBD did not want to limit innovative design concepts at this stage. Consequently, the design teams had to develop designs and cost-benefit analyses without clear financial parameters and pitch their ideas to community and government stakeholders when a great deal of information was missing.

The argument was that innovation should not be constricted by costs too early. Surprisingly, this sentiment was shared across the design teams, including those that were most vociferous about their resource burdens. Not one design team acknowledged that it had ever considered curtailing its design development or not meeting its main deliverables.

Many firms noted that the intensity helped spur innovative thinking about their designs, and also may have had the added benefit of pushing community groups and officials to sign on more quickly. One team leader described her team's management of expectations as "exciting and frustrating at the same time." Despite trepidations about resources and expectations, the teams became, in the words of more than one design team, RBD's greatest "cheerleaders."

Design development

Time persisted as the greatest pressure for almost all stakeholders. This concern took two forms: the limited overall time available in Stages 2 and 3, and the sequencing of the stages.

Insufficient time. While the design teams and research advisors found the events and information of Stage 2 helpful, they also noted that time constraints limited their ability to further engage the research or the advisors for their specific projects. This was exacerbated by the fact that requested federal data was never delivered, and the IPK digital research report materials posted in January were of a more general nature (Rockefeller Foundation, 2013b).[7]

The solicited research papers covered a range of relevant topics from coastal risks, regional ecology and social vulnerabilities – focusing on the post-Sandy context of the metropolitan region but also on scholarship based in other scenarios (Been and Ellen, 2013; Jacob, 2013; Waldman and Solecki, 2013). Combined with the waning "working groups" that were unsuccessfully fostered in Stage 2, these materials were insufficient for the teams to engage in to finalize the research for their planned sites. This meant teams were obliged to conduct additional research – an intentional strategy of RBD but one that challenged most design teams.

Ongoing research advice. Virtually all of the design teams noted that an additional limited amount of time to continue Stage 2 would have been invaluable. Several research advisors may have wanted to engage longer to provide guidance, and the process may have been assisted by involving research advisors for the long-term such as more traditional research panels or advisory groups to "better carry over" the research discussions. Advisors, some community groups and other resilience experts felt that certain resilience strategies, such as focusing on housing resilience opportunities or relocation, were not fully considered because of that rapid transition.

Overload. With the turn to Stage 3, the teams attempted to continue their own research efforts, but were simultaneously addressing their new engagement and policymaker outreach mandates while developing their designs. The parameters associated with RBD's specific funding (namely, HUD's CDBG-DR outlays) and political considerations (CDBG-DR eligible grantees' desires) became more apparent to design teams in Stage 3, and effectively prohibited certain innovations from moving forward at worst or tweaked other innovations at best. There is no evidence that Stage 3 reduced or diminished any of Stage 2's innovative concepts according to the design teams or jury members. One design team, though, speculated that it only devoted 20 percent of its time to design innovation in Stage 3.

[7] Other federal documents, including the first two CDBG-DR notices of funding availability and the DOT Sandy competitive grants referred to "RBD collaborative risk analysis," as well, though representatives from both agencies noted that they never received any documentation or products of this work. (HUD, 2013e; FTA, 2013). The teams' own research reports are expected to be released in June 2014.

Regional vs site specificity. Stage 3's project implementation focus had an effect on the teams with regional geographic scopes – that is, design opportunities for the entire, literal Sandy-affected region – as opposed to site-specific projects that could be replicated throughout the region. Early on, design teams were exposed to research resources that shed light on regional challenges, and met representatives from communities and governments across the Sandy-affected region. However, the transition to project-focused opportunities generally resulted in site-specific (or single-jurisdiction) design opportunities.

This was particularly true given the unique nature of CDBG funding's grantee eligibility and dispersal requirements. Federal funding sources that can be more readily employed on the regional scale have been less forthcoming, such as those from ACE and the DOT. This limitation provoked one stakeholder to note that RBD should have "RDBG" funding – that is "Regional Development Block Grants." Yet, designs with larger, regional geographic scopes have effectively been discouraged.

Scaling down. Various interpretations of this pivot in attention were expressed, from noting that some things "got lost in the translation" from strategy to sites to questioning why the RBD model wanted to start "silo-ing what they didn't want to silo before." One support partner, referencing the Scale It Up community engagement strategy, referred to the transition to Stage 3 as the process of "scale[ing] it down" for design development. A research advisor who continued involvement after Stage 2 noted the risk of losing the "visionary and transformative aspects" identified in Stage 2. In sum, the transition to Stage 3 did not "result in less innovation, just not more" of it.

Spillover activities and outputs

Several spillover products of the RBD Phase I activities were noted repeatedly by many stakeholders. Though not necessarily intended, these outputs ultimately served many other purposes, such as keeping design teams engaged. In particular, the networks and goodwill established among the design teams in Stage 2 secured their ongoing commitment to the RBD vision. This often translated into personal commitments to the communities in which the teams worked. Starting in Stage 2's regional tours, the sense of common purpose generated by shared discussion and inquiry was described by one observer as a "brilliant" strategic move on the part of the RBD team. All teams said that the preview of sites on the tours prejudiced their selection of project sites, because they understood where politically open locations were but also because they became professionally interested in what they were seeing.

This intellectual curiosity and professional commitment was also noted in the many university-based design studios and lectures that blossomed around RBD. These activities – which contrasted sharply with most other design competitions in which competing teams are purposely guarded – promise longer-term significance, especially the creation of complementary design discussions, public forums and architectural pedagogical studios.

One outcome of this goodwill is ongoing interest in resilience among these designers and the design community in general – a similar outcome to the ongoing interest in affordable housing that occurred after the New York New Housing design competition. As one stakeholder noted, "it's easy to get caught up in logistics and funding, but the network will be an important legacy."

4

Participation activities and outputs

The requirement for engagement with local citizens and community groups in the areas devastated by Sandy has proven a key innovation of RBD. According to the literature, this practice had not only been traditionally omitted, it had resulted in less-than-appropriate design products. In non-competed design efforts – for example, on an actual public facility or large-scale development – community engagement is a prerequisite to decision-making. To that end, typologies of engagement have been developed in the literature and professional practices have been developed by conscientious designers and community planners.

As with actual development efforts, RBD projects do not exist in a vacuum. Community groups – most of which have organized around post-Sandy efforts but also longer term master planning and development projects and economic challenges in their communities – were consulted despite the significant potential that the projects would not be implemented. As noted early in the RBD planning process: "without dedicated resources to support community engagement, the RBD process runs the risk of becoming an abstract, impractical process, detached from the real concerns of local people and deprived of the benefits that diverse participants provide to create effective, implementable solutions" (MAS, 2013).

Community groups – most of which have organized around post-Sandy efforts but also longer term master planning and development projects and economic challenges in their communities – were consulted despite the significant potential that the projects would not be implemented.

However, this noteworthy attempt to integrate community voices opened the opportunity for criticism that the engagement would be partial. In all cases, the attempt to include community participation in the specific communities in question as well as generate awareness of resilience challenges in the broader American populace involved many activities and resulted in numerous outputs, not the least of which were explicit statements of support by local organizations.

4.1. Findings

The key community participation findings reinforce previous findings that were made.

Finding 14: The inclusion of community engagement and outreach in a design competition with its typical constraints was innovative and ambitious. As noted in the literature regarding design competitions, this activity is generally omitted altogether – which deters later implementation.

Finding 15: The time constraints were particularly difficult for many community groups because of the rush for support but also because of the concern that long-term engagement and a discussion of needs in the communities would not be possible. Despite this, most community groups willingly participated with an understanding of the potential benefits that would come from award. The primary exception to this sentiment was members of citizens' groups concerned with the execution of Sandy recovery efforts unrelated to RBD.

Finding 16: Most design teams relied on tried-and-true techniques for community engagement given the time and resource constraints. However, a few activities were particularly inventive within the variety of RBD community engagement events, workshops, charrettes, and outreach activities. The "Scale It Up" events--designed to promote RBD and resilience awareness--were particularly notable. Online and social media engagement strategies the design teams employed in reaching community groups and general citizens were also creative, though only partially successful due to the time and resource constraints.

Finding 17: Ultimately, the community groups are mostly interested in the final outcomes of awards and the potential to continue engagement that will inform the designs while benefitting the communities. This sentiment was echoed by members of the media, who noted that benchmarks and actualized projects will be the primary interest among the general public.

4.2. Activities

Both the RBD management team, particularly through the Stage 3 support partners, and the individual design teams embarked on community engagement and participation efforts.

RBD management team

The Stage 3 support partners were identified early on as the lead organizations for engagement activities. In particular, MAS was identified as the group that would "assemble contact lists of diverse stakeholders in New York City neighborhoods affected by Sandy, including community leadership and local recovery groups," based on its experiences with convening Resilience Roundtables. RPA would assist in identifying community stakeholders from the broader region, as well. VAI also would play a critical role – given its expertise in innovative community engagement strategies developed through the hiring of community design organizer, Jerome Chou – particularly for the planned Scale It Up efforts, as well as the general information and public relations campaign associated with the website and visual identity of public events.

Despite the expectations, much of the support partners' work focused on managing the sheer quantity of logistics for these activities over the substance of their execution. While the support partners assisted with early community contacts, they often became assistants to the design teams who, according to many team leads, "did most of the thinking on events ourselves." With the additional complication of funding for community groups that committed to participate in design team outreach, the myriad operational requirements expanded. This further decreased the opportunity for additional reflection on engagement activities. The procurement of an external public relations firm limited the support partners' internal commitments to engage public campaigns and broad media strategies. Combined with the lost opportunity for harnessing the website and other online media for engagement, the public engagement opportunities for the RBD teams were strictly limited to assisting design teams

over a tight timeframe that was effectively less than three months long.

Design teams

During Stage 2, IPK and RBD staff organized activities to encourage inter-team collaboration and engagement with community stakeholders.

Site visit agendas. Setting up site visits gave design teams the opportunity to see the communities impacted by Hurricane Sandy, giving them first-hand insight into communities' vulnerabilities, opportunities and values. At each of the site visits, IPK and RBD staff organized meetings with city leaders, including mayors and staff from city/town agencies and community-based organizations. Several of these site visits were accompanied by community lunches, enabling design teams and RBD organizers to interact informally with residents.

RBD research advisors and other experts provided additional context, highlighting different issues for each of the site visits, such as wastewater treatment, emergency response, housing or economic development. The design teams completed five regional meetings – Lower Manhattan, New Jersey Shore, Staten Island and Jamaica Bay, Long Island and Bridgeport – each of which ended with a public event, where design teams met with community members in small group sessions, workshops or open fora. The design teams also had an optional tour to visit post-Hurricane Katrina New Orleans, which all ten teams chose.

Community event requirements. In Stage 3, design teams were required to organize at least two community events: an initial event to put forth design concepts for criticism and input, and a second event to demonstrate how the design concepts responded to the input. Many of the teams organized more than the two required events, in order to increase community buy-in and awareness and also because weather and the rapid pace of the RBD process sometimes made it difficult to populate events. Some design teams had the advantage of


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existing contacts held by management or support partner staff prior to RBD. Many set up informational events with panelists (e.g. WXY's Finance Colloquia) or traditional design charrettes. HR&A was able to combine its RBD community outreach with events held for the New York Rising Community Reconstruction Program, the state's post-Sandy community participation program.

Contact with community groups. Design teams varied in their interpretation of the purpose of community engagement, from "rally[ing] support and confirm[ing] designs" to receiving community feedback on design concepts to assessing long-existing community needs in detail. This interpretation generally correlated with the presence of active community organizations in the specific sites, while sites with minimal pre-existing community groups focused on making community presentations.

Those with a few active citizens held charrettes, while those with many active organizations and activists held multiple and extensive discussions. Some of the teams expressed the need for RBD to be more flexible regarding community definitions and meeting requirements, such as HR&A's focus on business communities and WXY's interest in

fostering a community of activist scientists. Most teams also developed informal contacts with local groups. Community groups noted having multiple meetings or phone conversations with design teams throughout Stage 3 for teams' better understanding of the community.

The community organizations were diverse in terms of geography, mission and involvement in other post-Sandy projects. Their geographic coverage areas ranged from one street to the entire city, although most often, they represented single or multiple contiguous neighborhoods.

Attendance at group meetings. In almost all cases, the teams put on events, sent out invitations and developed input strategies on their own. Design teams noted that they were not all clear on how engagement would be used or what its later purpose was. As a consequence, they often made decisions themselves regarding focusing on design feedback, resilience awareness, community organizing or even hiring their own community liaisons. In some cases, the seasonal timing of RBD (for example, reduced populations in New Jersey beach communities during the winter months) hindered significant turnout and attention. The holidays further complicated the attempts to engage communities.

Diversity of organizations and events. The community organizations were diverse in terms of geography, mission and involvement in other post-Sandy projects. Their geographic coverage areas ranged from one street to the entire city, although most often, they represented single or multiple contiguous neighborhoods. Many of the groups were civic associations whose members were residents of the area. While most organizations were not specifically focused on the environment, some had environment-related missions, such as river cleanup or sustainability promotion, while others represented businesses in the area or were economic development corporations. A majority of the community organizations that responded were involved in other major post-Sandy efforts, such as New York Rising or SIRR.

Organized by the RBD support partner VAI, Scale It Up provided less conventional opportunities for RBD staff and design teams to engage with the public and educate community members about RBD and resilience. Overall, the design teams, and RBD and its support partners organized at least 37 public events and meetings – ranging from a bike tour and parade to an art program and a celebration of resilience.

Team research. During Stage 2, when design teams were still conducting their own research into the region's main issues, and design work plans were very much in their infancy, state and city-sponsored post-Sandy-related community engagement activities such as New York Rising were occurring simultaneously. Thus, in an effort to minimize "resilience fatigue" and manage expectations among residents and community organizations, RBD staff discouraged design teams from conducting their own outreach with local stakeholders at that time. However, in Stage 3, design teams were tasked with demonstrating that their designs were implementable, and with convincing CDBG-DR grantees to support the design interventions, particularly through incorporating public participation in the RBD process. The public participation requirement was met through formal, often public events hosted by the design teams with the help of RBD staff and its partners.

4.3. Outputs

On the whole, stakeholders noted key challenges in RBD's community engagement strategy.

Short time frame. The first challenge involved the simple logistics of raising awareness and subsequent

attendance at events within the short timeframe. As one community group stakeholder noted, "I don't see how anyone can come up with a solution in six months to a problem we face for the next 50 years." Many design teams felt that this speed was the reason for smaller turnout at events: "requests didn't allow for thoughtful comment and led to confusion about the purpose of engagement."

One engagement expert familiar with the RBD teams noted that the fast timeframe could be perceived as "not being a deep enough dive," leading communities to view the engagement as conspiratorial at worst and consultative at best. One of the more involved community groups explicitly found the RBD design team engagement as more consultative than participatory. Events themselves were described as "fairly conventional," "typical urban charrettes," and "pretty standard" by groups that were supportive of their RBD design teams. Funders and other stakeholders noted their concerns regarding the robustness of participation – leading to the creation of a separate pool of funds for groups.

The groups were grateful that community participation was even included in the RBD process. They understood the constraints and were willing to participate and support regardless. As one group director noted, "we knew what we were getting into."

Disaster fatigue. Some design teams and other stakeholders worried about exhausting communities already experiencing "disaster fatigue," or creating false expectations among communities about the tentative nature of RBD projects. However, most community groups did not see either of these concerns as being prevalent: "We're big boys and girls and understand that this is a competition." As such, and despite the timing challenges, all design teams successfully held community events along with many other strategies in their designated communities. A few teams hired or appointed a team member to serve as a community liaison, leading to clear additional support from the local groups.

Community perceptions

Most community organizations agreed that there were limitations, explicitly noting that the process was rushed, not deep and somewhat perfunctory. However, the groups were grateful that community participation was even included in the RBD process. They understood the constraints and were willing to participate and support regardless. As one group director noted, "we knew what we were getting into." Their primary criticism was logistical – that they should have been involved earlier to help define the problem and engaged more robustly in order to take as much advantage of the limited timeframe as possible.

Overall, the organizations interviewed had positive feedback about the community engagement effort and felt that community participation was of great importance to RBD. However, a few noted that the level and quality of engagement varied by team. One respondent felt that the only difference between RBD and other development projects in terms of community engagement was that RBD had a shorter time frame, while another observed that RBD's community engagement component was more meaningful than that of other development projects only because the conversations were localized.

Respondents highlighted a number of features of the community outreach effort that made it particularly useful, especially that community engagement was an ongoing and intensive process. A few respondents said that their design team asked for feedback from them and the community multiple times and at different points in the process, with one commenting that the design team was "very thorough in their

approach, more so than other groups have been in the past." Although the design teams provided many opportunities for the community to learn about the projects and give their feedback in a short frame of time, one respondent observed that "longer term processes [would be] more successful in getting more feedback" and capturing feedback more formally.

The brevity and intensity of the community outreach effort complemented the design teams' responsive approach. Organizations felt that the design process was a "two-way dialogue." In one location, where the design process was collaborative from the beginning, a respondent remarked that "people were taken aback" by the invitation for input at such an early stage because it was "not typical with development projects," that in fact, usually "come in with a pretty rendering of what they want to build."

One respondent said that the design team "was unusually responsive to the feedback" it received from residents, nonprofit organizations and business representatives. Multiple respondents noticed that design teams incorporated feedback they received on a presentation into their subsequent presentations. One organization said the design team introduced the community to ideas from around the world and, in turn, incorporated community voices so that the imported ideas "took on a local flavor."

Another successful feature of the community engagement effort was that design teams sought feedback from many different segments of the community. One engagement event had attendees discuss the science behind the proposal and involved teachers and children which, according to one respondent, "really made it a community effort in a great way." In another location, the design team sought feedback from business interests and residents through community engagement events that created "synergy between business and residents," which, according to one respondent, "doesn't happen very often here."

One respondent reported that rather than only seeking input from organizations and community representatives, the design team sought feedback from individuals themselves. According to that respondent, prior to RBD, there had never been "this broad of an outreach effort to get the guy on the street's input." Many community groups saw RBD as an additional resource opportunity for their ongoing missions or their Sandy-specific projects (including a few New York Rising efforts).

A number of the community organizations had a longstanding history of redevelopment, community development and social/environmental justice work in the communities. For many of them, Hurricane Sandy expanded their scope of work, compelling them to "rethink" their work through resilience lenses.

On the whole, these events followed traditional community presentations and urban charrettes. All of the groups involved noted that they had sponsored similar events prior to Sandy and for other development or community-based projects. Examples of more innovative engagement methods include the Scale It Up events, including an Asbury Park parade, Bridgeport tours and Staten Island manuals. Expertise from VAI staff was particularly noted, but the design teams' own creativity and commitments to the communities led to these exceptional events.

Some community groups that did not participate actively in RBD expressed concern about RBD's focus on infrastructure design projects when other critical major resilience and recovery issues had not been addressed. This sentiment was exacerbated by the fact that so many other post-Sandy recovery efforts had not been well implemented – leaving a "gap" between current recovery and RBD's "castles in the

sky." Some individual citizens even thought RBD was a FEMA program.

Design development

Through formal and informal activities, RBD staff and design teams provided community leaders and residents with multiple venues to share community concerns, learn about proposed design interventions and provide feedback. A number of the community organizations had a longstanding history of redevelopment, community development and social/environmental justice work in the communities. For many of them, Hurricane Sandy expanded their scope of work, compelling them to "rethink" their work through resilience lenses.

Community organizations learned about RBD by word of mouth or through direct contact with RBD administrative staff, research advisors and design teams that were familiar with the community group through past collaborations or events. Residents learned of RBD activities through outreach conducted by RBD staff and design teams, or assisting community organizations. In Stage 2, community engagement had occurred through formal events designed by RBD staff and IPK but, in Stage 3, each design team embarked on its own strategy for further engagement and eventual explicit support from community organizations.

Funding allotment. RBD supported the allotment of funds to support community organizations of the design teams' choice. Through the additional pool of funds provided by the philanthropic partners, each team was eligible for approximately $25,000 in funds to be used for the logistical costs of events and for subgranting among local community organizations. The subgrants, commonly $5,000 microgrants, were given to community organizations to conduct outreach and promote public participation, specifically targeting stakeholders traditionally removed from public participation processes. Motivated by their own mission to improve communities, many of the organizations receiving microgrants volunteered more services than the microgrant supported.

Community events. Based on observations at public events and interviews with key informants, the community events organized by design teams were often standard neighborhood design charrettes or planning events, typically presenting an overview of the RBD process (sometimes with the assistance of RBD staff), small workgroups where participants, RBD staff and design teams explained or collected feedback, a final overview of takeaways from community desires/priorities, and a question-and-answer session.

Time and capacity pressure. The expeditious process placed intense time and capacity pressure on community organizations to conduct outreach in a very short period of time. Several community organizers wished they could have conducted a more intense effort in reaching out to residents. Moreover, the technical nature of the topics discussed, such as flood protection plans or green infrastructure, as well as the design interventions, required education for both the community organizations helping with outreach and the general public. Again, the intense time period only permitted abridged educational opportunities. The speed of the process also affected public participation.

Community feedback. Some stakeholders observed that public participation activities were in the middle spectrum of the "ladder of engagement," so members of the public were more often than not consulting and providing feedback, as opposed to a more empowered and enfranchised role in the RBD process. Nevertheless, some observers appreciated that some design teams explicitly incorporated community feedback into their design, e.g. "Part of the challenge is that part of the community is not knowledgeable about the technology or ecology and don't understand what it takes to make these interventions happen. The teams have done the best they could to explain the options." Many community

groups noted that design teams significantly changed some elements of the initial design proposals as a result of community input: "I felt heard."

Even with the large size of the available staff, the engagement between RBD support partners and design teams was uneven. Some support partner staff members were more involved than others.

Even though RBD's public relations consultants helped create a communications strategy and developed talking points, interviews with key staff suggested that there was still insufficient staff capacity for media outreach and relations.

Media coverage

RBD generally prohibited individual design teams from speaking to the press, although some exceptions occurred towards the end of Stage 3 (Associated Press, 2014). Despite the centralized control, RBD received fairly extensive press coverage from a range of outlets including local and national newspapers, television, radio and online blogs (Associated Press, 2013; Gregory, 2013; Shorto, 2014). Many press articles came from direct personal contact between a journalist and an RBD stakeholder (such as Ovink or a funder), while others came from journalists who simply covered community events as part of their local beat or were working on an ongoing post-Sandy series. In almost all cases, the coverage was positive.

Scope of coverage. The evaluation team interviewed several informants representing various media outlets, including print journalism, online newspapers and radio. Media outlets that have covered Hurricane Sandy fall into six main categories: national popular press (e.g. New York Times, CNN); national trade press for specific industries or topics (e.g. Atlantic Cities, Next City); regional popular press (e.g. Long Island Herald, WHYY); local popular press (e.g. Asbury Park Press); local blogs (New Jersey Shore Hurricane News Facebook page); and niche press (e.g. Curbed). RBD staff, partners and design teams often made themselves available for interviews and information sharing with reporters.

Communication strategy. A public relations firm was hired as part of Stage 3 to develop a communications strategy, conduct media outreach and distribute materials such as images and press releases. RBD successfully implemented the recommended communication tactic of "taking advantage of milestones" (SKD, 2013), such as media coverage of the announcement of the design competition, the selection of the ten design teams that would proceed to Stage 2, the unveiling of the ten design opportunities that would be further developed in Stage 3, and the final design proposals presented to the public and RBD on April 3, 2014. Some reporters also attended community events to cover the event or to research longer articles for the milestone events.

Journalists' focus. Several local news outlets were devoted to Sandy-related stories since many of their readers were affected by Hurricane Sandy. Naturally, many of these reporters were eager to learn more about RBD, particularly about specific design proposals for communities in their coverage areas. RBD's narrative stood out from other Sandy-related stories. In addition, while much of the post-Sandy news was about immediate or short-term rebuilding efforts at the local level, RBD was focused on long-term resilience, an angle that many reporters found intriguing. However, the fact that design teams were focused on research and analysis during much of RBD's process, meant journalists did not have tangible designs to report on until the later stages of RBD. At the same time, editors and writers were also concerned about the logic, appeal and implications of reporting on design concepts that might not come to fruition.

Lack of clear understanding. Some reporters expressed a desire for clearer communication of design proposals, the design competition and the funding mechanism, CDBG-DR, so they could better translate technical terms and concepts for a general audience. According to many reporters, the presentations and renderings often provided attractive visuals and compelling narratives, but the potential impact of the projects was sometimes difficult to convey. The challenge was translating RBD's abstract designs and architectural concepts to a level understandable by audiences that are less or not at all familiar with architecture or resilience terms.

Even though RBD's public relations consultants helped create a communications strategy and developed talking points, interviews with key staff suggested that there was still insufficient staff capacity for media outreach and relations. The rapid pace of the design competition also affected website production, creating a web resource that many, including reporters and RBD staff, found unintuitive and counterproductive to public participation.

5

Implementation activities and outputs

This chapter describes obstacles to the Phase II implementation of RBD projects and provides specifics about formal and informal actions taken to facilitate the transition from design concept to shovel-ready project. Phase 1: Stage 3 was meant to identify barriers to implementation. RBD leadership and staff had worked with design teams throughout Phase I to anticipate and begin addressing potential barriers to implementation – a critical step towards realizing the projects. The specifics of Stage 3 provided a clear departure from the open-ended inquiry and design conceptualization of Stages 1 and 2.

In spite of the anticipation of potential barriers, the transition into Stage 3 (project development and community engagement) was strenuous for many stakeholders, not just the ten design teams. Stage 3 involved an evolving directive to quickly and effectively generate projects that were physically, financially and politically feasible, while based on concepts that had only been developed a few weeks earlier.

For the design teams, this final development stage tempered some of the early thinking about design solutions to resilience challenges in both productive and ineffective ways. Support from CDBG-DR grantees was also influenced by the trade-offs grantees would have to make with other expenditures they wanted for non-RBD designs. As such, some grantees were hesitant to speak vocally or show support for RBD designs without having more information.

With the transition, many of these constraints were inevitable and, according to some stakeholders, entirely expected. Despite them, RBD made a mark across all of the areas targeted by the core partners, even for those stakeholders that had either curtailed their expectations or delayed judgment.

5.1. Findings

Key findings regarding the implementation aspects of RBD's Phase I include:

Finding 18: RBD's inclusion of specific implementation planning and feasibility requirements is an innovative approach to design competitions. Typical competitions for actual developments have predetermined all of the implementation issues prior to issuing a call, while curated competitions do not address the issues at all.

Finding 19: RBD set out a novel relationship among federal, state and local governments in which federal resources are used in a way that meant national thinkers could address local problems. Significant efforts were made on the part of the core RBD partners to introduce, negotiate and come to resolution on funding streams and appropriations between these public entities.

As with other contextual factors around RBD, several key challenges faced in Phase I will likely persist in Phase II.

Finding 20: The nature of HUD funding regulations and protocols for the eventual award has proven to be a significant challenge in both obvious and more profound ways. The immediate challenge from the use of CDBG-DR comes from the specific nature of the funds' obligation and subsequent implementation. Typically, CDBG-DR grantees propose their own activities for HUD's approval and funding. In RBD, HUD played an obviously heavier role in helping to define the activities. Though flexible compared to almost all other federal disaster fund programs, CDBG-DR still involves regulated processes that prescribe any outlays from the federal government.

Finding 21: Related procedural constraints included determining:

- the appropriate type of cost estimates and cost-benefit analyses
- the eligible grantees' individual procurement regulations after receipt of funds that may preclude sole-source contracting with the original design teams
- remaining national and local regulatory assessments and approvals
- the persistent demands among the local and state governments for other Sandy-related recovery efforts that may compete with RBD projects for attention and resources.

A review of the activities and outputs related to implementation yield two critical overarching recommendations for the Phase II activities as well as for setting the context for replication of the RBD vision and processes.

- Continued investment is needed during the implementation phase to ensure that RBD's current design projects remain innovative, that communities remain engaged, and that the wealth of knowledge gained from Phase I is gathered and sustained.
- Advocacy regarding regional resilience funds is needed to ensure that the lessons from RBD are institutionalized. RBD presents a unique opportunity to consider how public entities respond to and provide resources for regional problems that exist beyond the boundaries of individual jurisdictions.

5.2. Activities

Many jurisdictions had preexisting strategies for resilient recovery, such as New York City's Special Initiative on Rebuilding and Resiliency (SIRR) and New York State's New York Rising grassroots outreach plans, in addition to having multiple plans for rebuilding as proposed in CDBG-DR Action Plans (Fischbach *et al.*, 2014). Several jurisdictions had long-term regional and local planning efforts into which resilience could squarely fit (New York-New Jersey Harbor Estuary Program, 1996; NYS 2100 Commission, 2013).

Design teams struggled with defining how much of the pool of funds could be reasonably applied to their projects. They wanted to define their project scopes.

Some of the RBD jurisdictions, such as Bridgeport and Ocean County, were undergoing scheduled master planning processes during the course of RBD or were soon to embark on them, while other entities were reconsidering planning or municipal operations (such as revising tax sharing agreements with other jurisdictions). In all cases, all of these cities

have plans, activities and programs that existed well before RBD, particularly in relation to Sandy. In these places, RBD was charged with proposing designs and convincing officials of their worth.

RBD management

Generally, RBD staff and design teams prepared for implementation in the following ways:

- arranging for meetings with key local officials to get informal support
- identifying and seeking out other officials and agencies that would need to be involved in formal and informal development approvals during implementation
- identifying the regulations that would shape designs and the regulatory processes that needed to be addressed during design approvals
- introducing the projects to key community organizations and building support
- familiarizing the general public with the projects.

These activities were intended to help design teams overcome major obstacles to successful implementation, including state and local procurement regulations, the need for further design development, navigation of the permitting and zoning process, lack of reliable benefit-cost analyses (BCA), need for additional funding sources and identification of policy issues. Some activities were more substantive than others, and many design teams felt that RBD's role in identifying contacts varied by project.

In addition to helping identify and contact local policymakers, the RBD team contributed to implementation planning by clarifying the use of CDBG-DR funds. In a January 2014 legal opinion, HUD clarified its own authority to retain a pool of the funds for RBD projects. RBD had kept project scope and problem statements broad to catalyze out-of-the-box designs unimpeded by constraints. Yet, it also had to do so because it simply did not know the amount of CDBG-DR funds that would be available.

Yet even before the legal opinion was issued, design teams struggled with defining how much of the pool of funds could be reasonably applied to their projects. They wanted to define their project scopes. Early in Stage 3, HUD attempted to give general ranges of possible scope funds, and encouraged the design teams to divide their projects into phases. Yet, as with other aspects of the Stage 3 pivot to feasibility planning, the scope was still unclear to both design teams that were grappling with right-sizing their ambitions and the implementing eligible grantees that still felt uncomfortable with perceived outlays to unknown commodities.

Design teams

For the design teams, the transition to Stage 3 also meant regular (or, in some cases, "endless") meetings with selected sites' policymakers in the hope of receiving support commitments. Many design teams had happily delayed this activity, noting that they were "purposely trying to avoid politicians early on because they skew expectations." Though RBD staff told design teams from the beginning that anything they did "would be more than CDBG grantees do now" with regard to action plan statements, gaining local and community support as a requisite exceeded traditional requirements. Yet, the local officials had trepidations. With concerns about pulling CDBG-DR funds as well as their limited capacity in post-Sandy conditions, many of the jurisdictions in question had been reticent to participate with RBD teams. Others, that had identified RBD as both the funding and resilient opportunity it is, were far more open.

In some cases, this engagement was seamless and the design teams were met by supportive mayors and county executives, council members and city offices, and, when existing, regional governmental organization. These groups have noted two critical actions: i) that the design teams were "well prepared" and "had done their homework" towards presenting concepts that were compelling, and ii) that the RBD process had informed or would inform master planning or special planning efforts in those jurisdictions.

In essence, RBD helped many local policymakers better understand their resilience challenge, gauge

opportunities for resilience and leverage current public planning efforts. While design teams considered the commitments required to get buy-in within such short timeframes to be excessive and exhausting, many local officials (at least among those who were actively engaged and participating) felt the compressed timeframe was actually helpful in making the support request more urgent and cutting through red tape. However, other local governmental entities were less engaged and forthcoming and their representatives were often unavailable for interviews for this evaluation.

RBD introduced another strategy for gaining this approval – developing cost estimates and BCA – as a requirement early in Stage 3 (approximately November 2013) but received significant focus and technical assistance in February and March, which were the final months of Phase I. The design teams viewed this requirement as particularly onerous because the design projects exist in a preliminary state with innovative scopes for which costs are difficult to assess.

Further, RBD gave insufficient guidance about key assumptions for monetizing benefits as well as a clear structure or purpose for the benefit-cost ratio that would enable cross-project comparisons. Despite this concern, several federal stakeholders noted that understanding of costs would be critical to moving projects forward and some said the requirement should have been introduced earlier. Numerous other activities were requested as part of the implementation planning, including developing feasibility plans, understanding procurement concerns among grantees, and identifying potential regulatory barriers and other funds sources. In short, the design teams were charged with preliminary, comprehensive development plans.

5.3. Outputs

Design development

Design teams acknowledge that, even at the end of Phase 1, their projects will require further refinement and development. All of the projects are several steps away from construction, and funding from any public agencies generally requires that projects be in more advanced stages of development. Project sites must go through extensive feasibility studies, surveying, title work, costing, environmental studies and geological studies (such as soils analysis), among other things, before they are shovel ready. Several teams may be better equipped than others to address these issues, since their members include coastal and infrastructure engineers.

RBD made tentative steps to address these issues during the federal workshop held at the end of Stage 3. The Army Corps of Engineers (ACE) presented at the workshop, and one of its engineers served as a consultant to design teams throughout Phase 1 (only two teams followed up with ACE about implementation issues). Further design development will likely lead to significant project changes, but also will require additional funding from uncertain sources. While philanthropy has been suggested as a potential funding source, it is unclear whether potential donors have been approached in this manner.

In the meantime, several local officials (especially those in technical offices) still have concerns about engineering quality but are waiting for further design development and the permitting processes. Despite their projects' current limitations, many local officials expressed gratitude for the professional guidance regardless, and expressed interest in pursuing the projects at least in concept if their respective teams were not selected for final award.

Benefit-cost analysis

At the outset, design teams were not clear as to whether they would be responsible for performing BCAs of their projects. They considered the BCA requirement an afterthought – one added to their list of required deliverables partway through the process. In reality, BCAs are critically important for the development of implementation plans, but they require intensive resources (for example, firms typically hire cost estimators) and standardized assumptions for

comparability. BCAs that cannot be compared across teams might obscure the lines that separate projects that look good from projects that look good but also have a chance of being realized.

On February 18 – slightly more than one month before final design submissions were due – RBD leadership held a BCA workshop in New York, inviting representatives from FEMA and several firms with BCA experience to present an overview and demonstration of BCAs. At the workshop, several tools were presented, something that might have proven confusing to design teams with little BCA experience. Moreover, RBD offered no guidance at the time about basic standards that should be used for cost estimation. Dutch firms Rebel and Deltares were asked to provide a more uniform framework that was more appropriate to the proposed design opportunities. Teams and jury members noted that this guidance provided some consistency in terms, but many core parameters were still unclear. Ultimately, this meant that teams developed many of their own assumptions, which contributed to comparability challenges in BCA ratios at the final presentation. Cost comparisons will be an ongoing challenge as plans, and their projected cost details, develop further.

Procurement opportunities

State and local procurement laws present substantial impediments to implementation. Government spending decisions are bound by regulations designed to ensure that procedures are standard and consistent and applied in a fair and impartial manner. Once a design is selected as a winner, state and local procurement rules may delay implementation and, in an extreme case, may require lawmakers to open the project to a competitive bidding process or RFP. This last case has the potential result of preventing a winning design team from implementing its project.

HUD foresaw these challenges during Phase I, and worked behind the scenes to develop potential solutions. For example, there are waivers, but they vary by state and locality, and are difficult to demonstrate. By the end of Phase I, many local officials were still taking a "wait and see" approach, pushing off dealing with this issue until they knew whether their projects had been selected to move forward into Phase 2. While city councils and mayors have met with design teams, and in some cases, coordinated joint meetings with state lawmakers, these meetings largely have been for the purposes of information sharing and securing general or formal letters of support. There has been little to no formal discussion of how design teams will address jurisdictional procurement regulations beyond positioning themselves as likely contractors. Further, many local civil servants in the RBD communities in question have not heard of RBD, even among planning and zoning departments, suggesting complications in expediting local procurement.

A central concern for design teams in these transactions is the status of their intellectual property should state and municipal grantees receive the funds and go through open procurement. As noted in the Federal Register notice announcing RBD but not in the RFQ itself: "HUD may in its sole and absolute discretion choose to negotiate with any entrant to acquire, license, use or convey any other intellectual property developed in connection with this contest." The grant agreements issued to each team in the fall of 2013 gave the federal government the legal option to exercise rights to the designs within 180 days after HUD awards. Assumedly, the exercise of this option will ensure that the original designs are shared with the local governmental entities and assist with the ongoing involvement of their design team creators.

Regulatory assessments

As with most urban development projects, RBD projects will face significant permitting and zoning challenges, including environmental impact assessments. In the fall of 2013, RBD leadership began working with state and city officials to determine how to make them comfortable with RBD's direction and to underscore how real projects would emerge from the process. In some cases, Secretary Donovan reached out to governors, mayors and other elected

officials. RBD staff also urged states to prioritize the projects they would like to see implemented and, in that way, line up relevant agencies. Design teams have been urged, though not very forcefully, to engage relevant agencies for, e.g. permitting and zoning, but this guidance has not been evenly followed by all design teams, especially since many of the projects were conceptual from the start. In all likelihood, the projects will alter significantly.

Many of the jurisdictions are also grappling with other post-Sandy efforts and demands, including executing their homeowner rebuilding programs from early CDBG-DR outlays (such as New York City's Build It Back) and implementing other planned needs (such as those identified by New York Rising committees).

During Phase 1, teams were directed by RBD leadership to keep a running list of policy issues that they identified as barriers to implementation – a list which might include many of the topics listed above, such as zoning, permitting and funding. It is unclear what became of these lists and what purpose they will ultimately serve.

Local commitments

As noted earlier, several jurisdictions in question are at different stages of master planning in a post-Sandy scenario. New York City had existing plans that referenced resilience strategies, while several others have master plans that are currently being rewritten. In three instances, local officials have said that RBD is helping inform their new plans with project specifics as well as by foregrounding resilience as a long-term development issue.

Just as significantly, many of the jurisdictions are also grappling with other post-Sandy efforts and demands, including executing their homeowner rebuilding programs from early CDBG-DR outlays (such as New York City's Build It Back) and implementing other planned needs (such as those identified by New York Rising committees). Other civil sector groups, including many environmental advocates, are also pushing for planned retreats rather than the proposed RBD alternatives.

Federal-local negotiations

The relationship between HUD and its CDBG grantees is a particularly complex one, though not operationally complex. For jurisdictions that view their funds as entitlements, the use of funds for activities other than those they propose in their action plans is suspect. Jurisdictional boundaries and self-interest, especially for those RBD projects working across multiple jurisdictions, complicates agreements locally and in the search for HUD funding. The strength of home rule laws in New Jersey and New York hardens these positions. Due in large part to HUD's efforts to communicate with state and local jurisdictions, many of the more difficult implementation challenges associated with local acceptance are currently being resolved.

According to one state stakeholder: "limited resources means being creative with funds." Many jurisdictions have been open to, if cautious about, discussions with HUD. Federal stakeholders view these agreements as critical: "If everyone isn't on board, then these aren't going to happen, because we lose control once we say these are the winners and give the money."

Federal commitments and institutionalization

As noted by stakeholders who participated in post-Katrina efforts, another key innovation of the post-Sandy response has been making the central role of a federal coordinator that of a clearinghouse and "champion." For Sandy, HUD has been the obvious champion, and it has filled this role with relative success. However, a key implementation activity and, eventually, output has been the solicitation of

commitments from other federal sources of funds. Presumably, these efforts would yield institutionalization of funding or model duplication.

Recognizing the limitations of CDBG-DR funds, at the end of Stage 2, RBD organized a meeting between potential federal funders and design teams, with representatives from the Federal Transit Administration (FTA), FEMA and ACE, among other agencies. FEMA discussed its Hazard Mitigation Grant (HMG) program, which provides states with aid to rebuild following natural disaster. New York has used less than 10 percent of the roughly $800 million it received following Sandy, and still has plenty of funds available to allocate to relevant projects.

The agency noted, however, that it is ultimately up to states to decide where and how they will use these funds. While FEMA has been involved in RBD, it does not have the ability to force states to fund local RBD projects. This may prove problematic since nine of the ten projects are located within specific localities, and it is unclear whether these localities have secured buy-in from states to dedicate specific funding pots to winning RBD projects.

Other federal agents discussed potential sources of funds that design teams could apply for, though they would have to line up support from a grantee (a public authority, for example). Their funds are available only to projects with a transportation component. A representative noted that, recently, only one to two funding applications referenced the RBD process in their narrative applications for Sandy-specific discretionary funds. These officials noted that they cannot make commitments. The ACE, responsible for coastal preparations, sees RBD as an interesting pilot for innovation and has internal champions for both the RBD vision and a few individual teams.

However, the vast majority of staff in that agency has pursued standard rebuilding engineering efforts in its 150 projects for the Sandy-affected area to date (ACE, 2013a; 2013b). Though many federal stakeholders sympathize with RBD's efforts: "80 percent of field staff know nothing about RBD and will not change their practices, 19 percent are staff who may be interested in RBD but have said or would say 'we'll never do that,' and only 1 percent are people like me who say 'maybe.'" This attitude was reflected by another federal stakeholder who remarked: "It's too soon to tell. We need to see the end result of the process … Everyone's withholding judgment."

Within HUD, there is little evidence of ongoing commitments beyond the currently negotiated CDBG-DR funds. Typically, as noted by one disaster planning expert: "CDBG-DR is typically used for fairly conventional disaster recovery like home rebuilding," facility rebuilding and economic development programs. Though the use of CDBG has been clarified and the eventual value of funds for RBD will be soon presented, the institutionalization of this kind of commitment is likely to end with this RBD unless additional championing occurs.

The concept of resilience may be incorporated into other federal recovery and development efforts, but not with the kind of funding made available to RBD, as it is currently in the National Mitigation Framework drafted by FEMA. Other funds beyond CDBG-DR (such as traditional CDBG) could conceivably be utilized for other competitions, though there is likely less leadership interest in this. The use of CDBG-DR proved to be an innovation, but could ultimately be an anomaly.


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Conclusion

Significant innovations are often the product of open-ended problems, unrestricted methods of inquiry and imprecise goals. The processes employed in the RBD Phase I effort have been no exception. Referred to almost universally by stakeholders as "flying the plane as it is being built," the RBD executive and administrative team's efforts to catalyze design teams' innovations while exposing them to environmental, regulatory, financial, political and social realities have resulted in many proposed advances for resilient infrastructure design in general and for Sandy-affected populations in particular. Moreover, the entire work was completed in less than ten months.

Referred to almost universally by stakeholders as "flying the plane as it is being built," the RBD executive and administrative team's efforts to catalyze design teams' innovations while exposing them to environmental, regulatory, financial, political and social realities have resulted in many proposed advances for resilient infrastructure design.

Since its inception, RBD has intentionally blurred the lines between process and product innovation and the realities of traditional infrastructure finance, design and development. In Stages 1 (team selection) and 2 (research), RBD harnessed the lack of parameters to generate open-ended questions and foster radical thinking about the real environmental, social and economic challenges faced by Sandy-affected communities. While the final verdict on the projects – as well as their subsequent implementation and impacts compared with other resilience strategies – is yet to be delivered, the products of Stage 3 (project development and community engagement) have generated excitement.

With the exception of a few stakeholders who were either opposed to any recovery strategy beyond rebuilding and those that are withholding judgment, almost all respondents were enthusiastic about the RBD vision and have been intrigued by the Phase I activities and output. All stakeholders appreciate the amount of management effort that has gone into all of the components and the desire to include so many components (especially research, community participation and implementation planning) in design competitions. These activities also generate awareness regarding resilience challenges in the communities in question as well as the broader national discussion.

These achievements are notable and suggest that Phase I has moved RBD to preliminary outputs that

could, with additional resources and efforts, produce outcomes. Yet, much more remains to be seen before those outcomes are realized and measured – not the least of which is preliminary funding. As a staff member of a key support partner noted, "How do you sustain innovation during implementation?" Indeed, how do you continue the networks for innovation without the formal network, the intensity and the model of RBD?

6.1. Summary of findings

This formative evaluation collected significant volumes of data through document reviews, event observation and interviews with key stakeholders in order to assess whether RBD's Phase I execution met the original RBD vision, and to gauge how RBD compares with other design competitions. This included analyzing the inputs and activities that could be classified as supporting factors or challenges, as well as the ultimate outputs.

Supporting factors

This review of RBD's early model and developmental processes sheds light on several key factors that have clearly contributed to the innovative nature of outputs described above. Analysis of the data collected for the evaluation notes the following factors as being positive contributors to the Phase I outputs.

- **HUD Secretary Shaun Donovan's leadership and HUD's resource commitment in the set-aside CDBG-DR (Finding 1).** RBD pioneered the use of federal resources to provide "award" funds to a select group of projects that did not fit squarely within the designated funds' traditional purposes. HUD's innovative interpretation of CDBG-DR authority for potential use in awarding RBD design solutions for regional infrastructure projects departed from the traditional activities for which those funds had been used in post-disaster scenarios, e.g. rebuilding of individual homes or public buildings or economic development activities.

- **The charisma and vision of Henk Ovink, Senior Advisor to the Secretary and guiding hand for the design teams, was essential (Finding 2) .** He promoted the vision and championed the entire effort between the teams and with the popular press.

- **Leveraged funds and guidance provided by key philanthropic partners were key determinants (Finding 3).** This was particularly the case with the Rockefeller Foundation, which has led work in resilience since well before RBD and the other ongoing funders of community-based organizations in the region. The JPB Foundation's involvement in resilience topics and competition strategies was also critical, as was the knowledge of local community groups provided by other partners. This emerged as a unique public-philanthropic partnership in which foundations contributed resources for the competition-related activities as well as knowledge of local community groups while government provided the "prize". Beyond grant-funding contributions, though, this partnership also involved the commitment of staff time and sharing the research and knowledge of local communities across organizational lines.

- **RBD administrative team staff's efficiency and grit in the face of tight schedules and with little to no pre-existing management plan played a key role (Finding 4).** RBD produced an efficient, streamlined organization that managed the overall effort as well as detailed tasks with no preexisting blueprint while on a fixed schedule. The team's responsiveness to information requests as well as flexibility in accommodating change was noted by all stakeholder groups. In forging a shared enterprise of individuals from government and with philanthropic resources, RBD demonstrated a nimble operation.

- **The self-interest and mission of the local officials and community groups and citizens that participated in and, in most cases, continue to support**

RBD teams' Phase I development was key (Finding 5, 17). This was a key input to the RBD process, but also demonstrated the community groups' willingness to suspend disbelief about the funding ambiguity until awards were made.

- **The perseverance, goodwill and fundamental creativity of the design teams despite meager resources and often minimal familiarity with the competition "awards" or understanding of the scope of expectations at the project's onset was an obvious contributing support to RBD's completion (Finding 6).** This support was consistent even during the most demanding times of RBD's stages.

RBD set out a novel relationship among federal, state and local governments in which federal resources were used so that national thinkers could address local problems.

- **Broad academic and professional interest in RBD's vision was critical (Finding 6).** The interest of the architectural and engineering design community was particularly important for providing ongoing attention (especially when popular media interest was not there) and for ensuring an ongoing creative motive for the design teams' participation.

- **RBD's unique take on design competitions and prizes helped to continue generating this interest (Findings 8, 14, 18).** Competitions and resulting prizes are tools used to procure the best output in the quickest and least expensive ways. In many ways, RBD demonstrates the best aspects of a design competition. It has produced a tremendous volume of juried design analysis and plans whose values far exceed the resources that were made available. In other ways, RBD improved upon traditional design competition by introducing research, public engagement and practical implementation stages often in collaboration across the teams – three key opportunities and one framework that are uncommon in traditional competitions.

- **RBD departed from traditional funding and management structures. The use of competitions also departed from traditional practices in public funding and in public procurement, especially for capital projects (Finding 9, 19).** The staffing, communications, legal agreements and monitoring typical of federal agencies are typically burdensome, highly regulated and lengthy, but also generally transparent and documented. Federal agencies increasingly use prizes and competitions due to the 2011 America COMPETES Act Reauthorization, though most of the design prizes related to building or infrastructure design were student competitions or competitions for specific building technologies. In RBD's case, this departure not only contributed to the state of competitions it also departed from traditional federal practice.

  RBD set out a novel relationship among federal, state and local governments in which federal resources were used so that national thinkers could address local problems. This relationship-building has also contributed a new chapter to the history of federal pursuit of design excellence which, until now, focused only on land development and capital projects owned directly by the federal government. RBD, then, has added a federal incentive to design excellence in state and local projects.

- **RBD developed immediate organizational and management structures out of need as much as plan, if not more so (Finding 10).** Beyond grant funding contributions, this partnership involved the commitment of staff time and sharing of

knowledge of local communities across organizational lines.

Challenges

The supporting factors combined to ensure that critical components of RBD's aspirational vision were addressed to the maximum extent possible given the constraints. The following identifies constraints that challenged RBD stakeholders across Phase I.

- **The lack of precedents and preexisting plans for RBD led to changing and growing requirements for deliverables, participation in activities and, in some cases, reconfigured teams (Finding 11).** For many stakeholders, including RBD management staff itself, this uncharted territory contributed additional stress to already demanding work. While RBD responded to this by providing multiple channels for design teams to access information, there were increased opportunities for communications slippages and, more exactly, varying interpretations of expected deliverables and of the ultimate post-jury award criteria. Lack of clarity also led to a hesitancy to participate in some communities, a few of which were also unfamiliar with broader resilience challenges or were concerned about the execution of other federal post-Sandy recovery efforts.

- **The compressed timeframe played a key challenging role (Findings 12, 15).** In ten months, RBD accomplished activities across competition, research, design development, jurisdictional negotiations, media outreach and community engagement – a process that typically would take a minimum of two years. The intensity was noted as taxing by all stakeholder groups and, in some cases, offsett some stakeholders' wishes for longer-term community engagement. Paradoxically, this efficiency also yielded the expedited delivery of explicit support from many communities for the purposes of the final jury. Other benefits from the timeframe came in the form of the successful completion of deliverables by design teams and execution of tasks by federal agents, and of increased goodwill between design teams and their communities.

- **Resource limitations were noted as contributing to RBD's intensity (Finding 13).** Available and expected resources played significant roles for the design teams in two distinct ways. First, the individual teams spent well past the allotted team grant funds, typically at a magnitude of three to six times over. Many teams accepted the short-term cost of participation in RBD as being recouped in benefits to their mid-term knowledge base and their long-term business development. Yet, the effects of this burden were felt disproportionately by smaller, non-university-based design team members. Second, the indefinite value of the final award led to concerns about the fit for appropriate scopes in teams' undertakings.

The design challenge that these implementation constraints posed has served as a collective tempering agent for RBD design innovations.

- **Reliance on traditional practices, particularly with regard to community engagement, was a consequence of the time and resource constraints (Finding 16).** Most design teams relied on tried-and-true techniques given the time and resource constraints. Several activities were particularly innovative within the variety of RBD community engagement events, workshops, charrettes and outreach activities. The Scale It Up events were particularly notable. Creative social media engagement strategies employed by the design teams in reaching community groups and general citizens were also partially successful due to the time and resource constraints.

- **The nature of funding regulations and protocols for the eventual award has proven to be among the most significant challenges in both obvious and more profound ways (Finding 20).** The immediate challenge from the use of CDBG-DR, for example, came from the specific burdens for funds obligation and subsequent implementation that these funds carry. These requirements resulted in the need to resolve practical issues, such as the negotiations with state and local entities to support and formally request projects for CDBG-DR funds for HUD's approval and outlays, and soliciting legal opinion on HUD's authority to designate appropriated funds for projects.

  The design challenge that these implementation constraints posed has served as a collective tempering agent for RBD design innovations. For example, CDBG-DR funds are generally disbursed across individual political jurisdictions – not geographic regions or even areas with shared interests. RBD's regional aspirations, then, have evolved into more site-specific projects. RBD projects, by design, are intended to become reality at some point. Yet, this realization process for RBD design teams has been shaped by the particular context of CDBG-DR funding and local, state and federal players involved.

- **Related procedural constraints tied to both the CDBG-DR constraints but also to the need to expedite implementation plans were a final challenge (Finding 21).** These included determining the appropriate type of cost estimates and cost-benefit analyses at early stages of design development, and the eligible grantees' individual procurement regulations after receipt of funds that may have precluded sole-source contracting with the original design teams. Though flexible compared with almost all other federal disaster fund programs, CDBG-DR still involves formal and regulated processes that pre-exist RBD and prescribe the outlays from the federal government to jurisdictions.

6.2. Phase II implementation

For teams whose CDBG-DR grantee supporters receive even partial funding for further design development and project feasibility exploration, the real RBD work has only just begun. As RBD enters implementation, a central concern involves maintaining the innovation in individual projects as they become further influenced by local regulatory, public participation and funding constraints. Indeed, Stage 3 activities have already started to eliminate interesting but impractical aspects of some of the designs though the projects are nowhere near contract document quality.

Concerted and credible advocacy is needed to promote the original innovations and to continue the other innovative activities from Phase I. Additional funding sources must be identified and rallied to bring the original innovations to reality, and resources and time must be allocated to create meaningful community engagement. These Phase II efforts require a keen knowledge of the current stakeholders and design teams.

Without ongoing support, the long-term innovation from projects – along with RBD's legacy – may be jeopardized. As significant spillover outputs from the work, these are as critical as the more obvious design solutions because of their potential for producing long-term sustained innovations where funding and leadership may not be available.

Capitalizing on as many of the individuals and activities from Phase I as possible is the most efficient option, including using Phase I management staff. There also may be a need to identify other resources for well-defined projects recommended by the jury that do not receive HUD

funding. Likewise, many other innovative outputs of Phase I – such as the research resources, the effective administration that maneuvers between public and philanthropic entities, and the collaborative network of design teams – may also atrophy during implementation.

Looking toward replication requires consciously considering how the context of the current RBD competition enabled many of the inputs to be accessed. In particular, RBD was designed in a post-disaster scenario in a global metropolis.

Without ongoing support, the long-term innovation from projects – along with RBD's legacy – may be jeopardized. As significant spillover outputs from the work, these are as critical as the more obvious design solutions because of their potential for producing long-term sustained innovations where funding and leadership may not be available. Phase II provides an opportunity to apply the lessons learned from Phase I for the purpose of moving the projects towards successful outcomes. This includes:

- establishing a long-term management plan that allots resources and sets milestones
- defining future deliverables and progress with professional skill
- maintaining communications with community groups in both awarded and declined communities to engage in a longer-term process of resilience challenge definitions
- refining the public face of RBD and RBD projects through a revamped website, release of the various research reports including the final compendium, and additional possible media and scholarly channels
- continuing to engage the philanthropic community for knowledge sharing, including contributing to their knowledge bases
- instituting goals and targets that are clear and based on resilience metrics in order to measure and compare RBD projects to other recovery efforts
- convening the research advisory panel and jurors periodically to further establish a state of the art, particularly with regard to implementation challenges
- maintaining regular communications with the policymakers in question to better understand how resilience factors into their decision-making process
- support and document the RBD design teams' needs and progress
- perhaps most significantly, advocating for the replication of the RBD model in other circumstances as well as the institutionalization of funding streams such as the Obama administration's proposed Resilience Fund to ensure that there are funding awards for future RBD design solutions.

In summarizing, this analysis offers the following recommendation for RBD Phase II.

Recommendation 1: Even after funding agreements are made, continued investment is needed during the implementation phase to ensure that RBD's current design projects remain innovative, that communities remain engaged, and that the wealth of knowledge gained from Phase I is gathered and sustained. For individual design teams, the transition from concept to project is still occurring. Similarly, other priorities and obligations that state and local authorities face may compete with and impede the long-term attention needed for RBD projects.

6.3. Long-term replication and scalability

There is discussion about replicating the RBD model in other resilience contexts given its apparent success in generating innovative design solutions and local attention. Replication of the RBD model is possible in different post-disaster conditions but

also in contexts with clear resilience challenges that have not experienced disasters or shocks in the immediate past. RBD's original goals were aspirational. As such, there was much interest in how the vision could be employed in designed facilities beyond infrastructure such as housing, transportation or public spaces, and to other resilience topics beyond the built environment such as health, governance or finance.

As with all innovations and pilot efforts, adjustments in plans and activities are possible. Potential alterations in future applications of the RBD model are both conceptual and managerial. For the former, multiple variations on the theme of early open-endedness that could make the implementation transition easier are imaginable. These could involve changing the timing of stages, preselecting sites and assigning competing teams. With regard to execution, RBD's goals were not operational, yet milestones and deliverables were met in spite of the ambiguity. However, the quantity of logistical and communication activities needed to execute them was massive. Having management staff, plans and clear parameters early could help reduce the intensity and provide opportunity for content development.

Some RBD activities can become ongoing, fundamental resources that are deployable in individual cases, such as research advisory groups, the network of federal agents, and the website and other technical resources. Others can be replicated with some adjustment, such as the solicitation and jury processes, the overall work plan and timeframe, and enlisting of site-specific management and support partners. However, if RBD is to be repeated, several activities and deliverables noted earlier in this discussion must be redesigned, such as the quality of community engagement; the transparency of communications; and the resources and timing available overall for the teams.

Looking toward replication requires consciously considering how the context of the current RBD competition enabled many of the inputs to be accessed. In particular, RBD was designed in a post-disaster scenario in a global metropolis that is among the world's leading centers of architectural and design innovation with significant knowledge and financial resources, including a strong philanthropic community.

However, two of the defining factors – the funding and the champions – are less replicable, even with the provision of supporting resources. The magnitude of funding provided by philanthropy to coordinate RBD innovative capacities and by the federal government to award RBD innovations are explicitly tied to post-Sandy commitments and appropriations. The urgency of these may not exist in other contexts, particularly where a disaster has not recently struck. In the long-term, the model must also involve replicating HUD's commitment within other federal agencies. As for the champions, this is tied to two key individuals associated with the effort: HUD Secretary Shaun Donovan and Henk Ovink. Without their leadership and guidance, the urgency and spirit of goodwill may not be replicated. Regenerating or substituting for the financial supports in particular – in this case, the allocation of $1 billion in HUD disaster recovery funds – could prove beyond the reach of other cases in which replication is envisioned.

This analysis for RBD's future replication or scaling is summarized in the following two recommendations.

Recommendation 2: Replication of RBD processes is possible in different post-disaster conditions as well as in contexts with resilience challenges that have not experienced recent disasters. Some RBD activities – such as convening research advisors and websites – can be ongoing, fundamental resources to be deployed in other scenarios, while others – such as the solicitation and jury, timeframe and resources, and support partners – need adjustment. Still others – such as leaders, champions and partners – are specific to RBD's current context and would need to be replicated for each scenario. However, CDBG-DR

implementation award funds would not be possible in scenarios that have not experienced disasters.

Recommendation 3: Future or similar efforts should pay particular attention early on to setting the award value and assessing the local political, financial and regulatory terrain in order to anticipate final outputs clearly. RBD has been unique in the world of design competition and resilience planning in two other noteworthy ways: the dollar value and source of the RBD awards. Both of these traits were highly influenced by the post-Sandy New York context and have played a significant role in motivating – and in some cases, thwarting – stakeholders. Securing the financial resources and anticipating or preventing local political challenges are both critical considerations for future replication of the model.

6.4. Summary

This report presents key observations and findings, ranging from the intervention concept to the operational model for innovation design competition. It also introduces the key activities of community engagement and implementation planning. In particular, the evaluation assesses RBD's performance compared to its original goals and to similar design interventions. However, it should be noted, the evaluation looks only at the RBD processes to date and embedded within it are several key suppositions including the possibility of design, the nature of competition, the regional scale and the room for innovation. The core theme in the vision and, indeed, the entire purpose of the RBD enterprise, has focused on the need for increasing resilience as one of the most critical social and environmental challenge of our day. Numerous stakeholders posited some profound, if pithy, tenets: "Social cohesion makes resilience, not dykes," and "If we only build a physical defense, we're losing an opportunity for resilience."[8]

The Sandy Task Force Report foregrounded resilience not just in disaster policy but also as a binding catalyst for reconsidering our individual relationships to our environments. The May 2013 National Mitigation Framework confirmed this need, but also squarely put the burden on a collective effort: "Working together, risks can be recognized and addressed through a culture of preparedness and mitigation that is built and sustained over time" (DHS, 2013). As noted by one RBD stakeholder in an unsolicited response: "Disaster response is chaotic. RBD is helping change attitudes about how to work together."

[8] Both comments were made during the February 19, 2014 Syracuse debate "on process."

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