



# ENVIREnew

RESILIENCE  
Part 1 Report:  
*Creating Resilient Communities*



The Salvation Army - Southern Territory

The Salvation Army, Area Command of Greater New Orleans | EnviRenew

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The opinions expressed in the EnviRenew Resilience Report, Part I do not necessarily represent the views of The Salvation Army, FedEx Global Citizenship, or any other sponsoring or participating organizations or agencies.

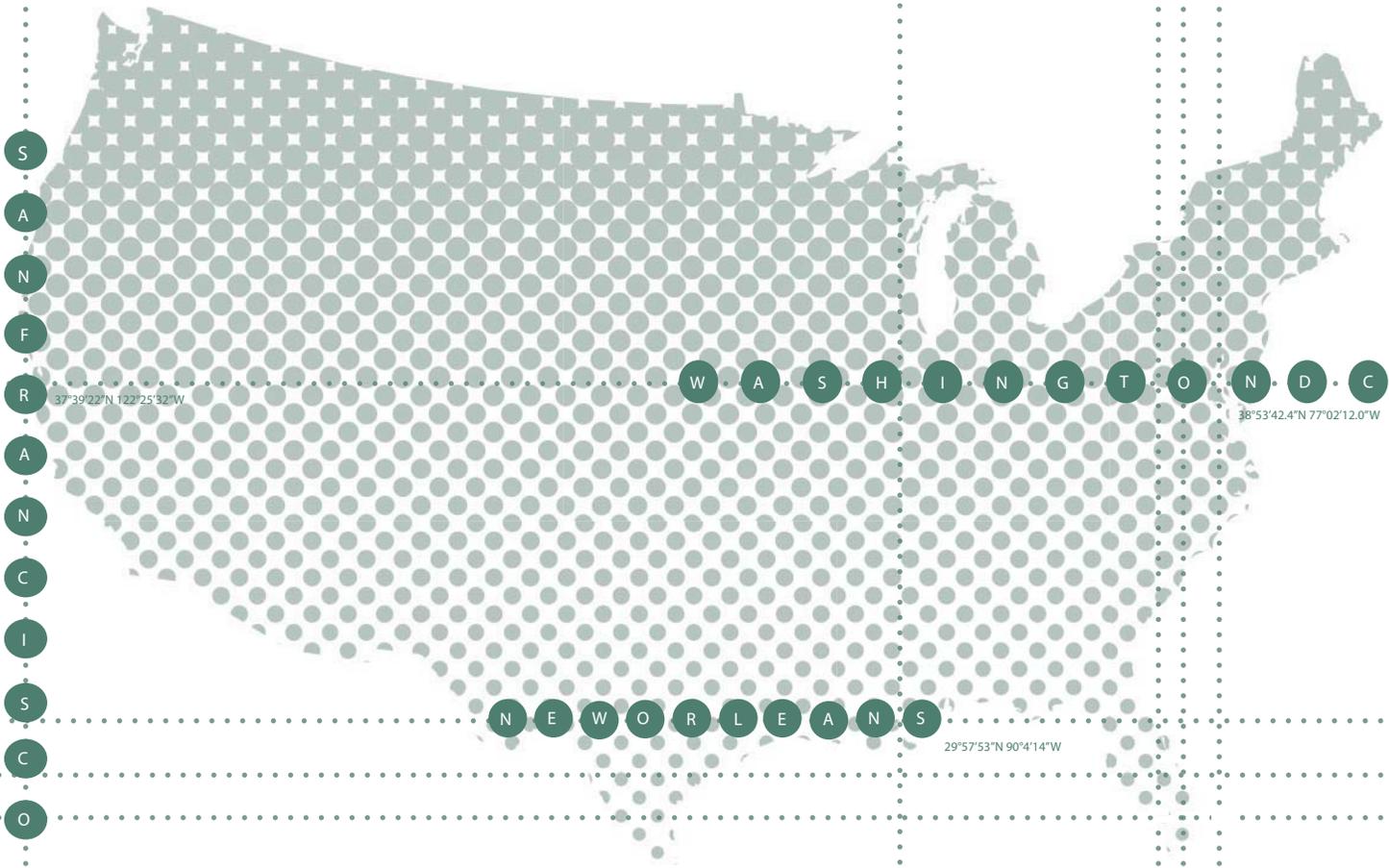


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# ENVIREnew RESILIENCE

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## Preface

*From Three-Walled Homes to Building Back Better*



Shane O'Connor,  
FedEx Global Citizenship

I clearly remember a conversation I had with Major Ethan Frizzell of The Salvation Army in New Orleans. We were discussing ongoing recovery efforts in New Orleans after Katrina and he referred to “three-walled homes.” He explained that in many cases, teams of well-meaning volunteers were coming to town, throwing up the front and side walls of a house, and then going back home. Perhaps not literally, but the quality of many of the homes going up were substandard to say the least.

In the midrange, homes were being built that were solid and OK, basically putting back what was there before. But, Major Frizzell was pricked in his heart with the notion of “building back better.” This concept was especially important to him in light of the work of The Salvation Army and their “ministry of Presence,” where they aim to be in the community the “hands and feet” of the caring Creator. How could he not consider ways to restore devastated communities in ways that would best honor Him?

In that context, EnviRenew was born. The Salvation Army began working with leaders from the US Green Building Council, Harvard University, the national-award-winning BNIM architectural firm, and other

thought leaders from around the country. I “lucked into” the conversation when I called Major Frizzell to see if FedEx could help The Salvation Army commemorate the fifth anniversary of Katrina and help bring recognition to the fact that the recovery continues. That connection led to FedEx sponsoring The Salvation Army Resiliency Summit in August 2010. Leading up to, during and after the Summit, I learned about The Salvation Army’s EnviRenew initiative.

After the Summit, I had the unique opportunity to serve as a judge on a panel selecting four finalist architectural drawings for four 800 square-foot LEED Platinum Certified homes that would be built in a New Orleans neighborhood that had been hard hit by Katrina. The Salvation Army worked closely with the US Green Building Council in concert with their annual Natural Talent Design Competition to generate the architectural plans. Then, The Salvation Army helped convene an esteemed panel of expert judges from across the US. They were mostly from the worlds of architecture and academia (I was there as the “corporate sponsor” judge...not an expert!). They also vetted the plans with the local community to ensure they were in keeping with

the look and feel of the neighborhood and included a local community leader as a judge. What was different about this particular competition was that the winning designs were actually going to be built. In addition to the sustainable homes component, The Salvation Army EnviRenew initiative had a range of other sustainability components (more low cost and simple to apply) that would help homeowners in the community lower their home operating costs while also increasing their “environmentally friendly” factor and the level of comfort they would afford their occupants.

With nearly 700 airplanes and tens of thousands of trucks, FedEx has been assisting disaster relief agencies with complimentary transportation services in response to disasters around the world for decades. In recent years, we have begun helping with some disaster preparedness initiatives. One dollar invested in preparedness has been shown to equate to seven dollars saved in recovery. The one area that is most daunting to consider in disaster response is long term recovery. With limited resources, where can FedEx invest them where they will make the most impact?

One answer has been EnviRenew. This initiative is one of the most creative and innovative I have seen in the long term recovery space. EnviRenew was recognized with an Innovation Award in 2011 by

National VOAD, a leading national affiliation of organizations and volunteers working in all phases of disaster preparedness, response, relief, recovery, and mitigation. The work done in New Orleans was so impressive and impactful that FedEx offered to provide funding for this report. We wanted to help capture the lessons learned and forward thinking that has been demonstrated to date by the leaders of this initiative.

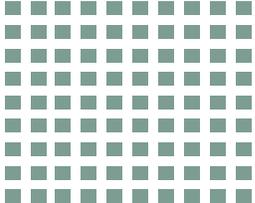
EnviRenew was launched by Major Frizzell and carried forward by Lindsay Jonker, Alexandra Miller and a team of outstanding interns and principals. My vision is to see the EnviRenew approach replicated across the country and around the world, raising the bar in long term recovery from three-walled homes to building back better. This report will help provide the basis for doing just that.



Shane O'Connor

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# Executive Summary

## *"Create a Compelling, Actionable, and Inclusive Process for Sustainable Community Resilience and Recovery."*

- EnviRenew Resilience Mission Statement Developed by Principals and Interns, Memphis, June 2011.

The EnviRenew Resilience mission statement was created by the EnviRenew Resilience principals and interns to articulate the need for immediate engagement in developing a consistent and sustainable long-term recovery approach to disaster. This report focuses on the results that EnviRenew Resilience has achieved in developing a process that addresses advanced long-term planning for resilience. Developing a better understanding of the resilience field will enable short-range recovery efforts to focus on long-range goals, and allow institutions, public agencies and private organizations to better allocate their resources to support long-term as well as short-term reconstruction in post-disaster communities.

The key driver noted in the mission statement is action. The success of pre-disaster resilience and of post-disaster recovery is entirely reliant on action. Unlike emergency disaster plans that can lie relatively dormant on shelves, with a periodic drill to ensure awareness, resilience and long-term recovery require sustained actions to ensure the maximization of long-term benefits.

The other key aspect to ensuring resilience and a sustained recovery is inclusion. Inclusion needs to be addressed in two areas – firstly, it is about ensuring as much of the population in the social pyramid is part of these process and secondly, inclusion addresses the need for local communities to be open to new ideas, new visions for their future, and new ways of doing things to recover their aspirations. Both these aspects are critical to delivering robust resilience and recovery actions.

This report provides tools for strategically pursuing long-term recovery. Section I of the report is devoted to “tools for thinking”; these are big-picture methods for deciding how to focus long-term recovery efforts and funding. These tools include typical timelines, funding strategies, and geographical methods for making recovery as effective as possible and building resilience for the future. Section II of the report looks at specific methods for achieving resilience by dividing potential responses based on the triple bottom line: the social, economic, and physical characteristics of communities. Section II includes numerous specific recommendations for building resilience, as well as case studies that show how communities have implemented similar strategies.

The goal of building resilience during long-term recovery is to restore the relevance and competitiveness of a community in order to improve quality of life for all residents. Long-term recovery and resilience is not about rebuilding exactly what was in place before a disaster; instead, achieving resilience requires a community to think about future plans that change the community’s trajectory and restore it as an asset within the national or regional constellation of urban environments.

### **Goal of this Document**

This publication is the result of a discussion and research effort undertaken in mid-2009 by The Salvation Army following a generous research gift from FedEx Global Citizenship. The discussion followed from an invitation from The Salvation Army to a select multi-disciplinary group to discuss and exchange new ideas and experience to better understand post-disaster long-

term recovery and pre-disaster resilience building for communities. The invitation and roundtable discussion was inspired by the ‘on the ground’ long-term recovery work The Salvation Army was undertaking in New Orleans through its EnviRenew fund and program supporting neighborhood recovery efforts. The group was comprised of individuals, Resilience Principals, who either in their own right or as part of their organizations are nationally acknowledged to have a deep professional and human concern with post-disaster long-term recovery of the communities and neighborhoods that we are all a part of. The group’s background spanned the public, private and non-profit sectors, and drew from across the social, economic and environmental areas of activity. Over the course of the summer of 2011, a set of sponsored Resilience Interns hosted in the three cities of New Orleans, San Francisco, and Washington DC, researched and engaged in meaningful and lengthy discussions with their host organizations and those organizations’ networks. The goal of this publication is to distill what was learned through those conversations and the discussion with the Resilience Principals.

The effort to establish this platform of discussion followed the FedEx-sponsored Resiliency Summit held in New Orleans in August 2010, on the fifth

anniversary of Hurricane Katrina. The intent of the Resiliency Summit was to have a serious and searching discussion across neighborhoods and communities about what was learnt from the recovery efforts after the tragic events that followed August 29th, 2005 and what had followed over the past five years. There are two big insights that have followed from these frank discussions. The first insight is that post-disaster long-term recovery is a separate and parallel field, and is at least as important as emergency disaster response and preparedness for a disaster. The second is that pre-disaster resilience building must be a conscious and deliberate policy and practice, in the same way that disaster preparedness is becoming its own field, to deliver on the resilience promise to better enable community recovery following a traumatic event.

The intent of this publication is to describe both the big guiding principles and the nuances that can be understood following these two key insights. Therefore, please read this document not as a comprehensive framework, but rather a start point for better understanding how as neighbors and residents we can better prepare those in our immediate surroundings, whether at home or at work, for the big shocks that can occur without warning.

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# Tools for Thinking: Big-Picture Ideas about Disaster, Resilience, and Long-Term Recovery

*"Resilience is the capacity of a system to be able to prevent, withstand, absorb, adapt to, or bounce back from a shock (whether the shock is sudden, evolving or cascading). It is, in part, reaching a point where a community is able to mitigate, absorb, and manage its vulnerabilities."*

- Doug Ahlers, "Acting in Time Initiative," Harvard Kennedy School of Government

In light of the increased scale and occurrence of disasters over the last decade, increased discussion and awareness has followed on how communities and neighborhoods can better prepare themselves for the unexpected. Much of the discussion has revolved around the term "resilience" and how it can be implemented. Increasingly researchers from across the private, non-profit, and public sectors have traveled widely, seeking out resilient communities in an effort to distill and implement their characteristics in both vulnerable and progressive communities seeking to mitigate potential future events.

Professor Ahlers' working definition of resilience above provides a superb start point to understanding how resilience as a policy and practice can provide a lens to better prepare communities for the unexpected. Critically, the description recognizes that disasters are different in nature, and that not all are immediate and sudden. This point helps explain that resilience and disasters can be seen as part of a cycle (see Diagram 1) of both real activities and policies that can be implemented based on the existing condition of a community, pre- or post-disaster. Is the community recovering after a sudden traumatic event, or is it caught in a slowly evolving and compounding series of crises resulting in a negative long-run outcome for the given community? The cycle in Diagram 1 is instructive because, in the same way that the field of emergency and disaster

response has recognized that disaster preparedness is a vital pre-disaster component for communities and cities, long-term recovery experts have realized that resilience building and mitigation before a disaster can significantly improve the effectiveness of post-disaster long-term recovery activities.

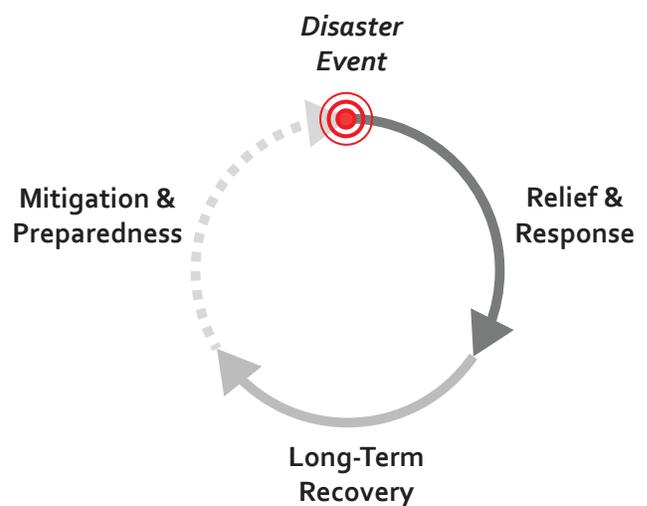


Diagram 1. The Resilience Cycle

In this following section we will introduce a proposed framework for the different types of disasters, and further explore the connections and transitions between long-term recovery and mitigation and resilience building, and preparedness and emergency response. Most importantly, this section is a compilation of several overall lessons learned, and not a comprehensive toolkit. Instead we wish to offer a range of proposed tools and frameworks to spur deeper discussion that (we hope) can translate into real-time activities and policy positions that will assist that our neighbors and fellow citizens can better manage their vulnerabilities to better absorb and overcome potential traumatic events or existing negative states within their communities.

*Note:* Though we will be addressing long-term recovery and overall resilience in this section, we will not approach it chronologically. With the benefit of hindsight, it is easier to understand the value in the model when examining communities that have already experienced a disaster. To this end we will address long-term recovery first, before mitigation and preparedness, as a policy and range of practices that can reduce the negative consequences of a disaster.

*Communities can experience "fast" disasters, characterized by a sudden shock to a thriving community; "slow" disasters, characterized by an ongoing process of disinvestment and decay; or "hybrid" disasters, which include both sudden and ongoing features. Understanding where a community falls within this framework helps to define ideal long-term recovery actions.*

As the emergency response field has matured, it has become increasingly noted and recognized that the definition of a disaster can and must be widened. Disasters are increasingly measured by their long-term outcomes, rather than by simple measurements of the direct damage caused by a disaster event itself<sup>1</sup>. Though this position remains somewhat controversial, widening the definition of a disaster to encompass long-term outcomes will help communities to understand and manage the cascading consequences that can result from the initial systems failure after a traumatic event. Disasters represent a mix of both the direct effects of the extreme event, and the fact that these effects can compound previously existing problems and vulnerabilities within a city, town, or region.

Today, "emergency response" is the well-developed field and industry that focuses on responding to the immediate effects of extreme events. By recognizing that disasters also include the long-term effects of these events, localities will be better able to address the blend of different temporal and spatial characteristics that long-term recovery must address to effectively deliver genuine recovery of an impacted community. Long-term recovery can be more difficult and controversial than emergency response, because it requires communities to be brutally honest with themselves - plans for a strong, resilient recovery can only be determined if a community knows where it

stands and where it wants to go in the future. To help with this difficult audit, we propose a framework to categorize disasters into three different types: Fast, Slow and Hybrid Disasters. This categorization uses a community's pre-disaster trajectory to help define how residents, planners, funders, and government officials should think about creating a high-quality, competitive city or town for the future. The matrix below provides a brief summary of these disaster types, while the following pages will elaborate on each type's particular characteristics.

The disaster framework offered in this section is both scalable and can occur as simultaneous scenarios within a town or city. By scalable, we mean that a hybrid and a fast disaster condition can occur at the neighborhood, suburb, city or county level. Similarly, the degree of resilience present in a specific community means that within a given city experiencing an extreme event, one community can experience the event as a "fast" disaster, while an adjacent community can experience the same event as a "slow" disaster.

By recognizing that long-term recovery is a complex task, which is separate from (but related to) emergency response, we can start to work with long-term recovery as a set of tools that represents a protracted commitment to delivering the quality and future prospects of our community lives and the built environment we inhabit.

Table 1. Fast, Slow, and Hybrid Disasters

	<i>"Fast" disaster</i>	<i>"Slow" disaster</i>	<i>"Hybrid" disaster</i>
Pre-disaster trajectory	Upward (increasing population, economic growth)	Downward (decreasing population, economic decline)	Downward (decreasing population, economic decline)
Nature of event	Sudden (e.g. earthquake, tornado)	Long-term (decline and disinvestment as a kind of disaster)	Sudden and long-term (traumatic event compounds previous problems)

<sup>1</sup> Business Civic Leadership Center. A Critical Role: Top Ten Policies That States Need to Recover from Disasters. 2009.

**Fast Disasters**

“Fast” disasters are characterized by communities that are on an upward and relatively stable improving trajectory of long-term economic, social and environmental outcomes – until a sudden, damaging disaster event occurs. After a fast disaster event, local residents and officials may incorrectly presume that a strong rebuilding effort will get the city back to where it was in a few years. In fact, the post-event crisis yields a strategic investment opportunity to put a community or city on an improved path.

‘Fast’ disasters may be natural disasters, such as earthquakes or tornadoes, but they can also be caused by human actions – the oil spill in the Gulf of Mexico and the attacks on September 11 also represent this type of disaster. These disaster events represent an abrupt shock to a community, which results in a significant and immediate decline in short and long-term opportunities for the affected community.

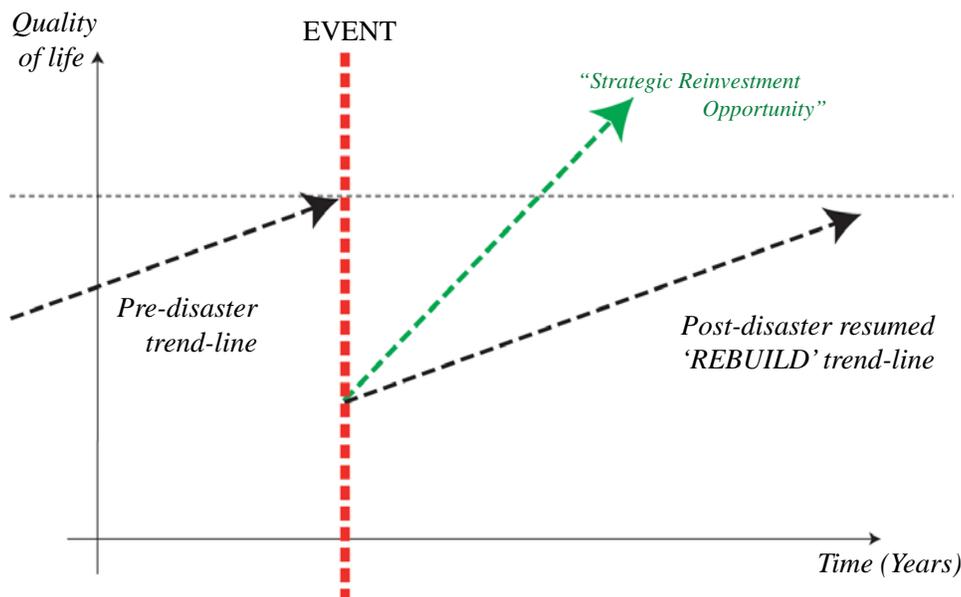


Diagram 2. “Fast” Disaster - Rebuilding vs. Strategic Reinvestment

Source: Developed with Bob Berkebile, BNIM.

**Sidebar: Ongoing Disasters**

Fast disasters have another potential characteristic: they can be unending in nature. Two current examples are Fukushima, Japan, and Christchurch, New Zealand. While both were fast disasters requiring evacuation, the ability for residents to return is still a significant question. While the inability to return in the foreseeable future is largely accepted by victims of the nuclear disaster in Japan, New Zealand continues to confront the very difficult question of whether the strong, continuing aftershocks to the 2011 earthquake will ever allow local residents to fully recover. This is a very difficult discussion to have, and for groups engaged in direct emergency response it may be emotionally unbearable. This strengthens the evidence of the need for a separate long-term recovery group that can grapple with tough ethical and moral questions regarding the recovery of a community.

**Slow Disasters**

‘Slow’ disasters are more elusive to characterize than the discrete “fast” disaster events like tornadoes or earthquakes. Slow disasters are characterized by protracted decline and are usually recognizable by a slow series of downward “tipping points” (a later section will discuss tipping points in more detail). This results in a long-run decline in opportunities for a community and its residents.

Examples of cities affected with slow disasters are those with high amounts of foreclosure, depopulation and disinvestment, and also those whose daily lives are increasingly and erratically interrupted due to increased extreme weather. While the debate about ‘climate change’ continues, evidence from re-insurance and insurance claims over recent years bears out that some metro areas and their communities are

subject to increasing climate volatility that negatively impacts the opportunities and overall quality of life of its resident communities. Some metro areas have recognized “climate change” in their policy actions of “climate adaptation and mitigation” and have embarked on direct policy and actionable community measures to counteract the expected threats to their communities. It is here where the role of resilience building within communities, as a mitigation measure to long-run decline and potential emergent threats, is most similar to the role that preparedness measures plays out with post-disaster emergency response.

Once there is a conscious awareness of the a protracted and likely volatile decline in a community’s long-term prospects, this trend can be countered by the engagement of a “strategic reinvestment opportunity.”

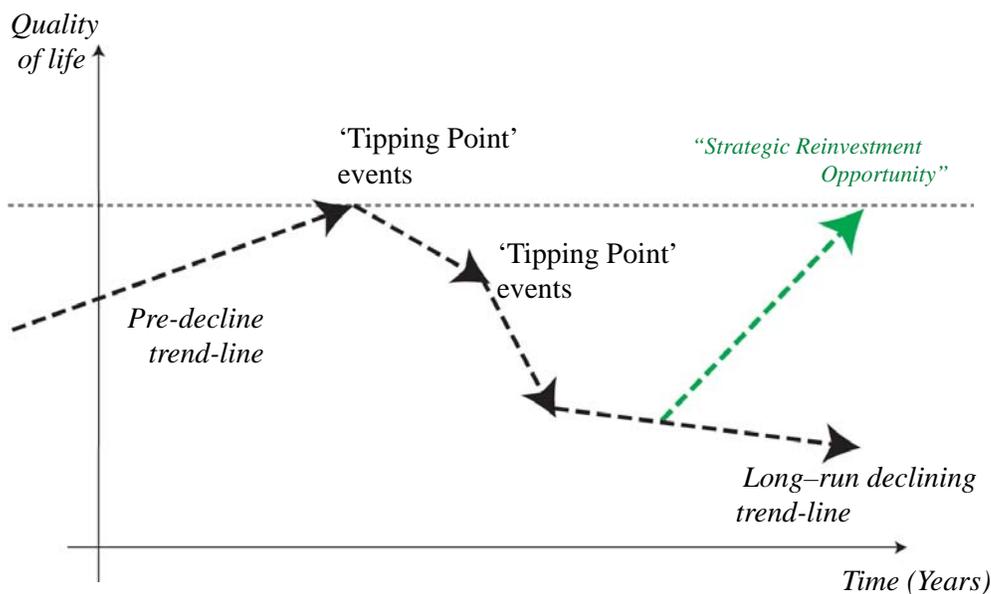


Diagram 3. “Slow” Disaster - Rebuilding vs. Strategic Reinvestment

Source: Developed with Bob Berkebile, BNIM.

**Hybrid Disasters**

“Hybrid” disasters represent a combination of slow and fast disasters; they can be construed as a dual shock, or “one-two punch,” to the long-run fortunes of a community. Hybrid disasters are in many respects the most vicious and insidious, as the outcomes of the sudden “fast” disaster will exploit and expose the previous legacy problems that characterized the slow disaster. These disasters often present the most challenges to recovery, due to the blend of legacy unattended problems compounded by new and unexpected challenges.

Communities in danger of this kind of disaster are those that are already in a suboptimal state due to being in a slow disaster “mode,” a decline due to disinvestment, foreclosure, or any range of steadily narrowing economic and social future options and opportunities for the resident population. This protracted decline is intercepted by an abrupt extreme event that creates

a significant immediate decline. This event may be a natural disaster, or it could represent economic or human impacts of a financial crisis, even the departure of a significant employer for middle-and working-class families that depended on a living wage. The “one-two punch” of the hybrid disaster could be a blend of economic, environmental or social aspects, or it could represent a doubling up of a singular aspect.

Successful application of long-term recovery in a hybrid disaster situation will impact the viability of the community over the long run. Recovery will be challenged by legacy problems and voids that lead to the previous “slow” disaster state of the given community. The ability to attract and retain the necessary resources, both human and financial, will be crucial for putting the community on a new trajectory of recovery and growth.

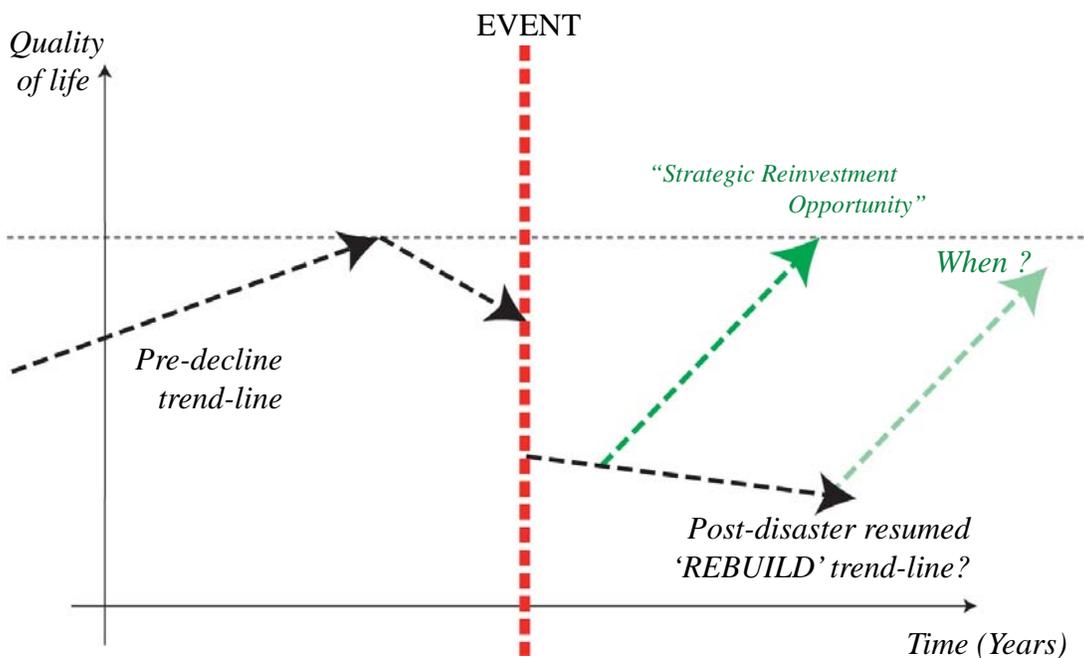


Diagram 4. “Hybrid” Disaster - Rebuilding vs. Strategic Reinvestment

# Typical Observed Phases of Disaster Recovery (in the United States)

TOOLS FOR  
THINKING

*Disaster recovery proceeds through distinct short-term and long-term phases. Communities that understand these phases will be able to plan ahead and maximize their use of resources and funding during the long-term recovery process.*

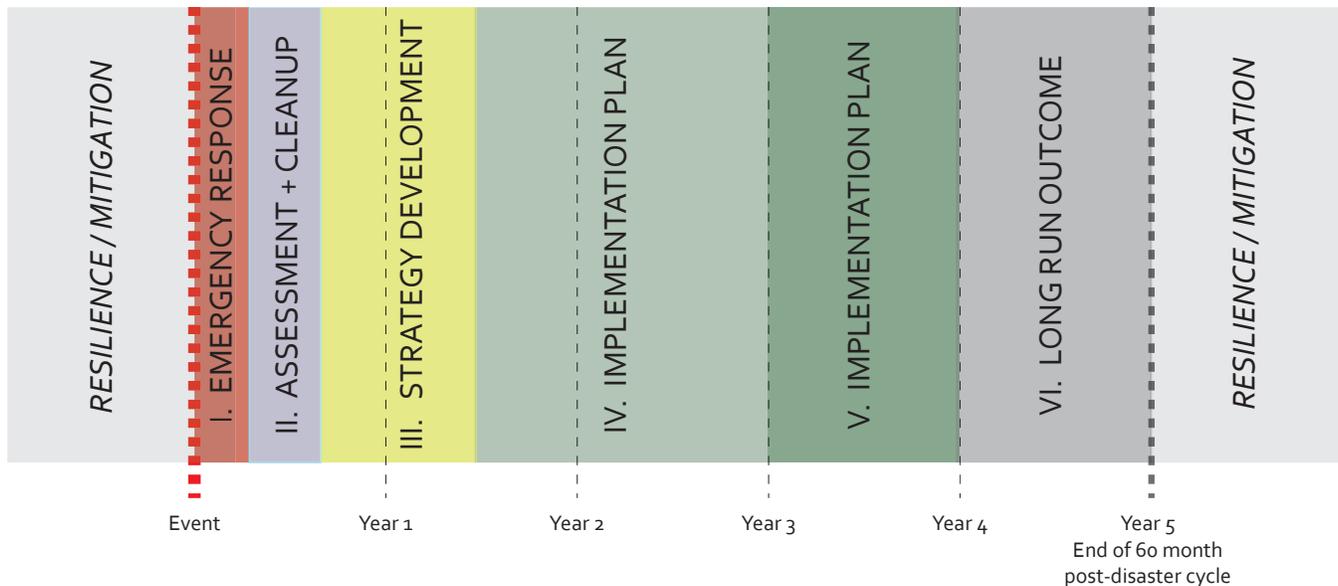


Diagram 5. Phases of Disaster Recovery

Equipped with a better understanding of the types of disasters and how they will impact a community’s prospects and long-term outcomes, the above diagram indicates the various phases a community typically goes through after a disaster. These particular phases were observed following Hurricane Katrina in 2005, though it is clear that other disaster events are at least partially conforming to the phases and time frames as described below and indicated in Diagram 3.

Before a disaster, it is important to note that there are two distinct sets of activities that create disaster “readiness”: “Disaster Preparedness” activities and “Resilience and Mitigation” activities. These two sets of actions will inevitably have a fair amount of overlap in their timing, approach, and activities, but in practice there are subtle but important differences in their specific actions and goals. Disaster Preparedness activities are typically well-

practiced and familiar in many areas prone to disasters. These activities are specifically focused on preparing for the emergency response phase and short-term recovery. Preparedness activities can include putting together emergency kits, practicing response drills, and putting resources into emergency response equipment and systems such as fire trucks and emergency water supply systems. While these types of activities typically focus on concrete actions, some theoretical planning is also involved, such as the creation of debris cleanup plans.

Resilience and Mitigation activities are typically activities that look towards long-term recovery after a disaster. They may seem less concrete and more theoretical than disaster preparedness activities, and involve actions such as networking and relationship-building, leadership structure reorganization, awareness-raising, or research.

## Typical Observed Phases of Disaster Recovery (in the United States)

## TOOLS FOR THINKING

The understanding is that putting in time, energy, and resources now, recovery activities later will be smoother, quicker, and more focused. Some Resilience and Mitigation activities benefit both long-term recovery and disaster response, such as mitigating homes against earthquakes or flooding. Not only does mitigation ensure that more people survive the disaster and need fewer outside resources in the response phase, it also minimizes the need for extensive long-term recovery and keeps cities and communities more intact after a disaster.

Many communities practice Disaster Preparedness activities as part of their established emergency response practices, but few have begun to see the value of Resilience and Mitigation. This may largely be because it is easy to see the return on dollars spent for things such as fire trucks - you have a concrete object, or plan, to show for your time and effort. This may not be the case for Resilience and Mitigation - the return on the investment may not appear until years later, and may not ever be measurable. Disaster Preparedness activities are also better tested and documented, so people have an easy and understandable starting point, whereas many people do not know where to begin on Resilience and Mitigation activities. However, both types of activities impact long-term recovery, and ideally communities practice both.

### Post-Disaster Phases I through VI<sup>2</sup>:

#### *Phase I – Emergency Disaster Response*

This is the phase that follows the immediate aftermath of a fast or hybrid type of disaster. Key response is usually from government and authorized non-profit agencies such as the Red Cross and The Salvation Army. The phase tends to last approximately 90 days and is characterized by a significant allocation of funds spent on emergency response. The pre-existence of disaster plans and familiarity of state and local governments with these plans often defines the speed, efficiency and success of the response.

#### *Phase II – Assessment and Cleanup, emphasis on Insurance and Re-Insurance Assessments*

Spanning the first 12 months, this phase is characterized by the significant growth of stakeholders and counterparties to response plans. Government representatives and teams of emergency response non-profits are joined by university groups, private sector specialists, and volunteers. Once the immediate primary care concerns in the community are concluded, this phase commences with cleanup as the priority. The cleanup is impacted by the critical insurance and re-insurance assessment that will start to define not only the capital available to the emergency response efforts, but also the long-term recovery efforts. This phase is also marked by the commencement of debates about how to recover and rebuild. The emotional intensity of these debates will demarcate lines between agencies that will often directly impact their ability to partner and leverage their resources during the later long-term recovery phases.

#### *Phase III – Strategy Development – first phases of community outreach*

Overlapping with Phase II, this period often commences after month 6 when emergency officials and recovery officials begin to make plans on how to allocate both resources and responsibilities. If resilience and mitigation plans have not been prepared, the emergency response and recovery plans and activities are rapidly assembled. These will often become the baseline documents upon which many assumptions will be based. It is characterized by the mobilization of the private sector, who need to make both business continuity decisions, and local residents who are eager to reclaim their property. It is also this period that witnesses the rise of conflicts of interests between emergency response and long-term recovery efforts. These conflicts will generate gaps in trust and confidence between the various sectors and actors. The negative outcome of these gaps could have been countered or reduced by resilience-building community activities before the extreme event.

<sup>2</sup>Paul Taylor, SRP Development ‘Speaking Points on Recovery after Disaster’, Tulane University – October 2010.

# Typical Observed Phases of Disaster Recovery (in the United States)

## TOOLS FOR THINKING

### *Phase IV – Initial Implementation Plan*

The pre-development and pre-construction phase usually commences 18 to 36 months after the extreme event. This phase is characterized by the ‘as planned’ reduction of the federal government direct involvement and transfer of the majority of activities to state and local agencies. The trust and confidence gaps start to manifest themselves into co-ordination issues in the rebuild and recovery efforts. This period also generally witnesses the vanguard of rebuilding taken up by the private sector that does not require partnerships or capital allocations to recovery themselves. The lack of coordination at this phase will have long-run problems for capital absorption. At the community and neighborhood level, the reduced confidence in the recovery process becomes a “first-mover disadvantage” game with returning residents waiting for others, as they will be subject to higher return costs.

### *Phase V – Follow-through Implementation Plan*

This phase is the longest period as it marks the period when rebuilding and construction gets underway. Commencing around the 36-month mark, the second implementation phase should mark at scale recovery efforts, and is ideally characterized by high degrees of co-ordination across the public-non-profit and private sectors. However, the efforts of this period are impacted by the limitation of the risks not mitigated during Phase III. This period most strongly represents how much confidence there is in the long-term recovery of a community and will define the economic and social momentum the community will be able to capture and that will define their long-term prospects. This period will end on or around the 60th month when the awareness and response to the event will need to display significant recovery success to counter donor fatigue and most non-community actors recognizing the current state of the recovery represents the “new normal” of the impacted community.

### *Phase VI – Long Run Outcome or “New Normal”*

The final phase is the period that commences once the majority of recovery funding and resources (human and capital) have left the impacted community. This phase represents the new reality that the community lives in, and has been able to define since the extreme event. This period encapsulates the degree of success the community has had in both overcoming the shock from the extreme event and all the legacy problems that was exacerbated by the traumatic occurrence. Most importantly, this is the period that the community must re-engage and re-invigorate its resiliency and mitigation plans to prepare for the next disaster cycle. This period will allow new goal setting and long-range planning that will start with an honest and difficult assessment of its current state. It can be viewed as a second chance to redefine itself within the parameters of the resources it is able to maintain and retain or attract.

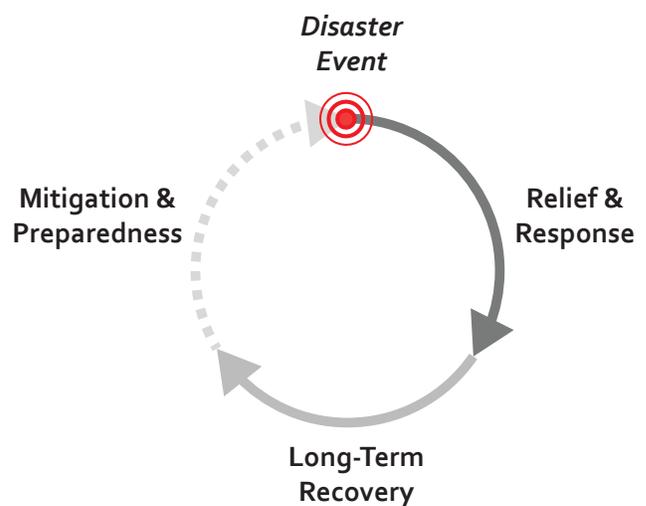


Diagram 6. The Resilience Cycle: A Reminder

# Limited Window of Recovery Funding

TOOLS FOR  
THINKING

The “window” of recovery funding lasts approximately five years before government funding and donor dollars move on to another disaster elsewhere. Establishing a long-term recovery initiative that runs on this timeline will benefit communities’ ability to efficiently allocate capital.

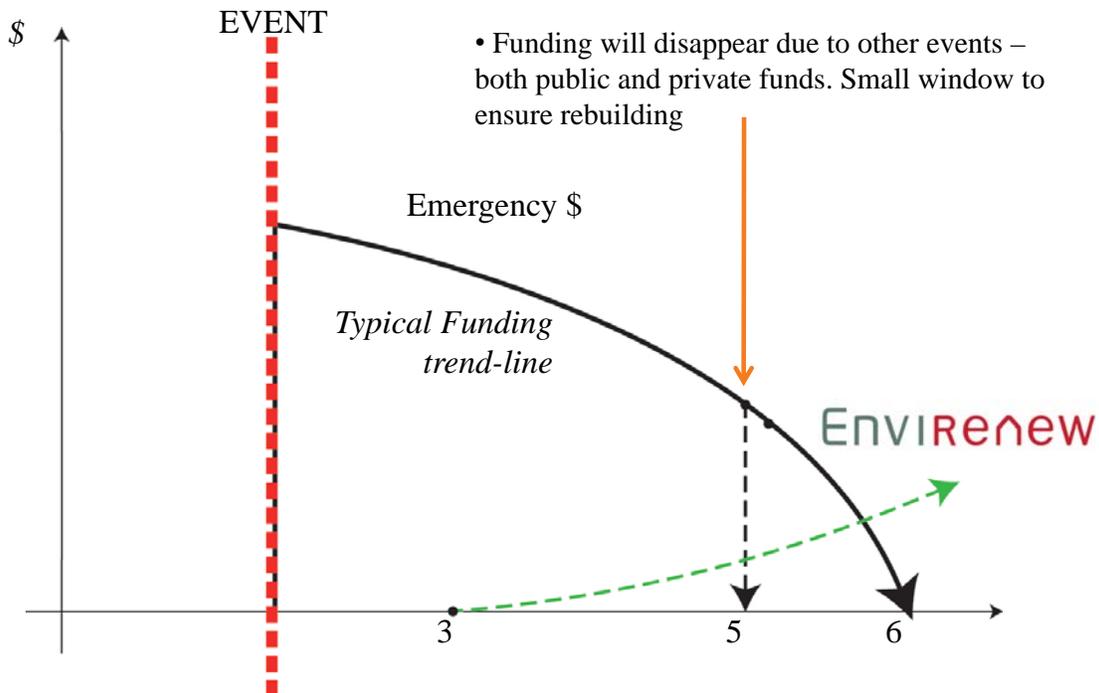


Diagram 7. Typical Dropoff in Recovery Funding - EnviRenew as Long-Term Alternative

One of the most significant observations after Katrina has been that disaster response and long-term recovery have a limited window to be effective. Following discussions with a range of funders across the private and non-profit sectors, it is clear anecdotally that approximately 60 months, or five years, represents a significant post-disaster milestone for funders investing in a community’s recovery. The reasons for this specific period range from donor fatigue to competing attention from more recent extreme events. It is also notable that five years spans beyond the four-year election cycle of local governments, meaning that the recovery effort would either have been handled predominantly by a single administration, with the success or failure attributable to that

administration, or across two administrations meaning that the recovery performance can be aggregated.

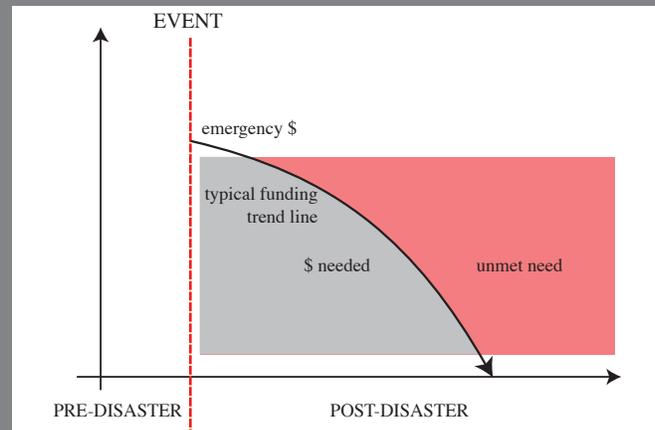
Given this limited window of funding and the danger of hitting the “donor fatigue” mark before a community can sufficiently recover, long-term recovery demands a high-speed specialist skill set to handle the market dislocations of a city or town that has faced a complete systems collapse. Disaster and long-term recovery face competitive forces for attention with capital and talent existing today in a global economy, and the economics of long-term recovery must compete in a global marketplace for capital and talent to help in the recovery process.

# Limited Window of Recovery Funding

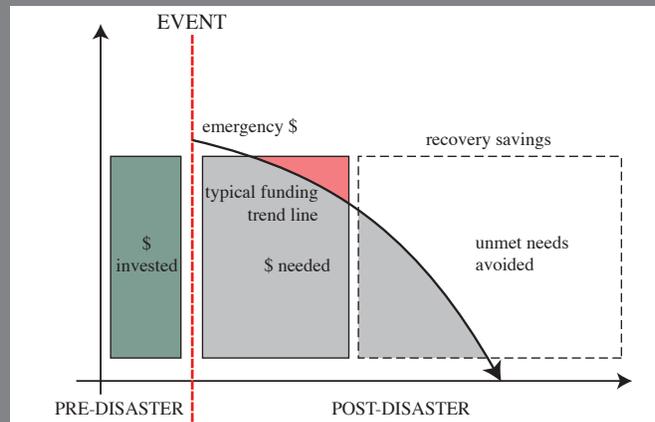
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## Sidebar: Mitigation Reduces Cost of Recovery

The post-disaster funding dropoff highlights the importance of spending resources on Resilience and Mitigation efforts. While spending resources on Resilience and Mitigation pre-disaster may not see an immediate return, it can significantly reduce the cost of long-term recovery by reducing the amount of rebuilding, increasing coordination and effectiveness, and reducing recovery time. This is particularly important due to this inevitable funding dropoff, which leaves a gap of unmet recovery needs. Reducing the number of dollars needed post-disaster by carefully spending resources pre-disaster can drastically reduce this unmet need. Additionally, the number of dollars saved during recovery for every dollar spent on mitigation is far higher than one-to-one, representing a significant overall savings during the entire resilience cycle.



Sidebar Diagram 1. Unmet Needs without Mitigation.



Sidebar Diagram 2. With Mitigation, Lower Costs and Fewer Unmet Needs in Long-Term Recovery.

This limited period of recovery is very difficult to explain to communities and households; it can be emotionally difficult to describe recovery as a competitive endeavor to those in the healing process. This insight, though, explains the critical need for a separate long-term recovery team, and capital allocation for long-term needs that is separate from emergency response funding. Impatience and optimism for results does not provide emergency response organizations with the space to rationally think through long-term recovery. Yet, displaying a long-term recovery strategy and plan of action can

help leapfrog donors' surprise that their capital will take a period of time before being actually used to impact the recovery of a community. It will enable donors to define where they wish to apply their recovery capital based on their own investment risk profile and associated time constraints for that capital. There are significant advantages to be had by defining long-term recovery as a separate and parallel process to the emergency response process.

*Reaching a critical mass of investors that want to return to a city, neighborhood, or block will create a "tipping point" that allows the private market to continue this long-term recovery process. Defining a geographic zone and focusing resources to quickly rebuild it will help generate the investor confidence to create this critical mass on a broader scale.*

The previous sections dealt with typical timelines for building resilience during long-term recovery; this section deals specifically with the spatial and geographic mechanisms that can help promote a resilient recovery process. Doug Ahlers, of the Harvard University Kennedy School of Government, has observed a "tipping point" mechanism that can help determine the future of a neighborhood or locality. The tipping point describes the need for a "critical mass of investors" to decide to return and improve their properties after a disaster. The most granular manifestation of the tipping point mechanism can be observed on a single neighborhood block – if enough residents return, that block will reach real estate values close or equal to the pre-disaster values. However, it should be noted that there is a baseline assumption within this idea: the "critical mass" of investors cannot be simply located in a single city block without the recovery of other neighborhood and city assets, including jobs, schools, and infrastructure. Instead, the baseline also must include critical mass and significant enough momentum at multiple scales in the overall recovery effort that the tipping point can be reached (See Diagram 4).

The 'tipping point' as a mechanism occurs under non-disaster conditions already - and all the time. Generally, the mechanism manifests as gentrification or blight in neighborhoods at the margin; that is, neighborhoods that are either seen as undervalued or overvalued. The private marketplace responds to these perceptions by either retracting their investment (resulting in blight) or increasing investment (resulting in gentrification).

In a post-disaster environment, the tipping point can actually be used as an investment strategy to drive

long-term recovery. In order to reach critical mass and thereby the scale and speed that are critical to reaching a tipping point, private, public and non-profit actors must work together to further these investment strategies and ensure an inclusive, speedy recovery.

Furthermore, it is critical to define a geographic zone to focus activity and intended impact during initial recovery efforts, from which the private marketplace can then expand the recovery as real estate values and investor confidence recover. A defined zone enables and focuses critical mass and removes 'first mover disadvantage' from the various investment groups' concerns. This defining of a specific zone can be a particularly difficult matter to negotiate for impacted neighborhoods and communities because it requires the prioritization of certain recovery areas over others. This is further evidence as to why cross-sectoral co-ordination is required to be able to truly capture the promise of a tipping point strategy.

The tipping point can be a slow approach compared to many of the other disaster recovery tasks, which means that swift recovery of housing and neighborhood assets is critical. Without pre-disaster mitigation and the capacity to accommodate development at scale, many neighborhoods may not adequately recover before the window of funding closes and the opportunity of the tipping point is rendered ineffective. The key to avert this risk is to deliver at scale and speed and get an area and the forthcoming residents ready for occupation.

# The Tipping Point as a Mechanism in Neighborhood Recovery

## TOOLS FOR THINKING

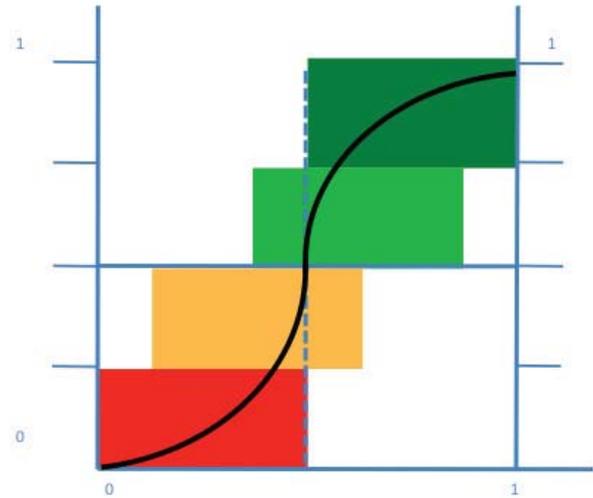
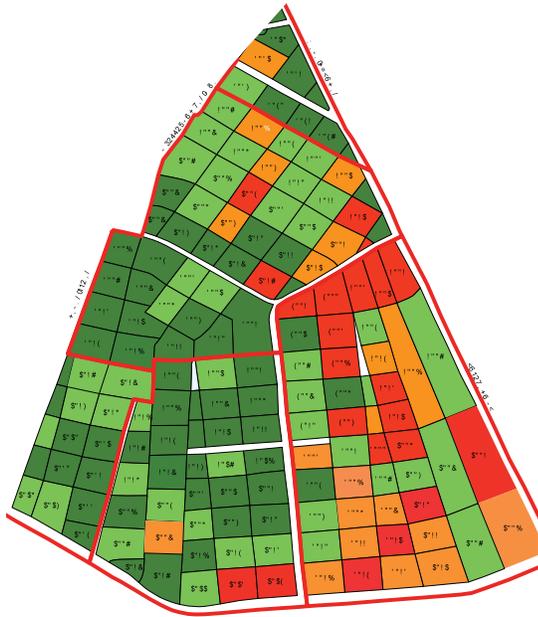


Diagram 8. "Tipping the Block" - The Tipping Point's Geographic Recovery Strategy  
 Source: Doug Ahlers, 'Acting In Time Initiative', Harvard University Kennedy School of Government

The above diagram illustrates the tipping-point principle in two parts. The left side displays a series of city blocks that make up a neighborhood. The red blocks are those lowest on the tipping-point scale at right: they likely have a very substantial percentage of blight, pollution, or other negative features that make them very hard to "tip" to become positive neighborhood assets. Rather than pour money into these blocks, neighborhoods should invest money more broadly across the orange and light green blocks that are very close to becoming positive assets. This funding will "tip" these blocks and allow real estate values across the neighborhood to rise.

The big lesson here is that not every \$1 invested in recovery is equal; funds invested based on a geographic strategy will have a larger impact than those simply dedicated to an issue such as blight or rehabilitation.

*After a disaster, cities that are more effective at leveraging resources and imagination to “tip” their communities into recovery will see significant benefits, while cities without this ability are unlikely to recover to their previous level of social welfare. The graphs in this section describe potential recovery scenarios based on different strategies, skills, and resources.*

The following set of visioning tools for long-term recovery represents a combination of the cycle of long-term recovery with use of the tipping point mechanism. The models that follow apply at various spatial scales, from the neighborhood block to the city as a whole. The models borrow heavily from on-the-ground strategic recovery efforts experienced by the EnviRenew team in New Orleans working across multiple neighborhoods and with those communities’ representative groups.

### **I. Sub-Optimal Recovery – ‘The Status Quo’**

Doug Ahlers has developed a tool that explains how the recovery of communities that have been through a disaster is subject to a tipping point condition. In the following graphs, the ‘social welfare utility’ is used to represent a range of inputs that measures the general welfare of a community or city over time.

The current trend in disaster recovery funding, indicated in the ‘Funding Trend’ below the graph, almost always means that the social welfare utility recovery trend-line will be lower than the pre-event social welfare utility trend-line that the community was on before the disaster event. Note that the dropoff of disaster recovery dollars will start to have an impact just as momentum in the recovery is starting to build. The reduction of available capital and resources at this critical inflection point will undercut the ability for the recovery dollars to maximize their impact. Funders need to revise the nature of their giving in order to improve the odds for communities in recovery.

### **II. Optimized Recovery – ‘Leapfrogging the Gap’**

Ahlers’ work posits that by providing long-term recovery dollars much earlier in the process, it enables communities to ‘jump the gap’ and place them back on the previous trend-line: the orange arrow in Diagram 10. By having an earlier community discussion around long-term recovery, funds can be set aside to address long-term aspirations, increasing the likelihood that the aims for recovery will be achieved. This will allow localities to achieve early momentum with long-term recovery goals and resources, which will in turn enable greater coordination and leveraging opportunities with the emergency response resources operating in the early months and years after a disaster.

# Tipping Point Strategies as Part of Long-Term Community Recovery

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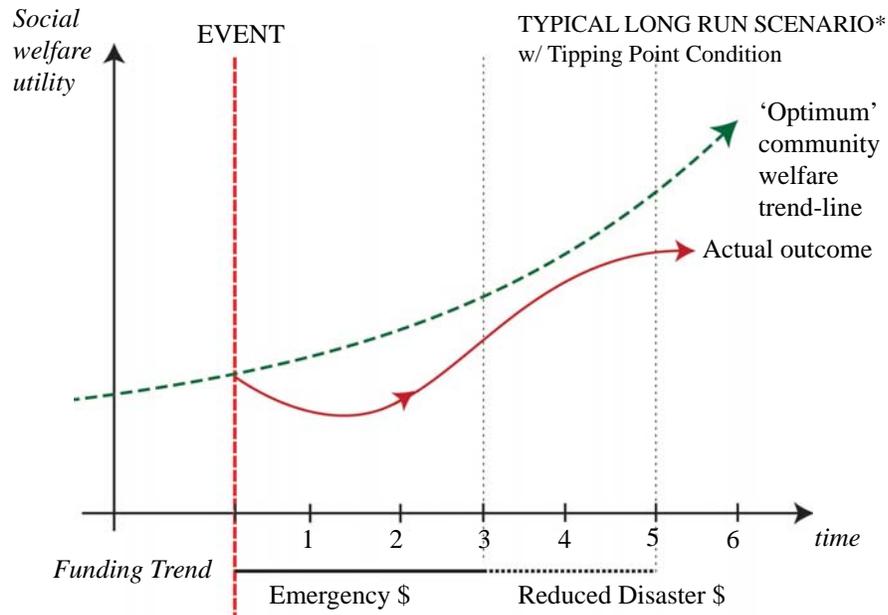


Diagram 9. Sub-Optimal Recovery: Trying to Bring Back the Status Quo

Source: Developed by Doug Ahlers, 'Acting In Time Initiative'

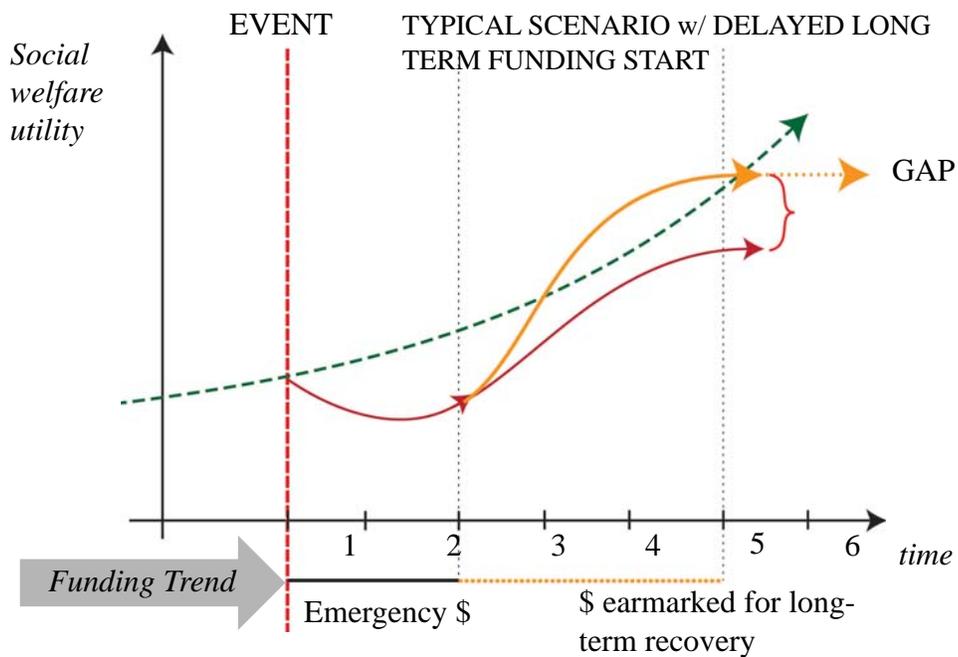


Diagram 10. Optimized Recovery: Leapfrogging the Gap with Long-Term Funds

Source: Developed with Doug Ahlers, 'Acting In Time Initiative'

### III. Re-imagining Recovery: ‘Recapturing Long-Term Competitiveness’

EnviRenew’s experience and research in New Orleans supports the need for a separate but parallel process engaged in long-term recovery planning that is established on Day 1 after a disaster event. This process should engage affected citizens to re-imagine their future; this re-imagining process can provide the opportunity to optimize their recovery beyond their previous trend-line. Inspiration for this is based on in-field work Bob Berkebile and his team from BNIM developed for the small community of Greensburg, Kansas. On the diagram below, the reimagining process is represented by the green arrow.

Re-imagining is the act and practice that a community must undertake to reclaim its upward trajectory and a community’s reinvention of itself and its long-term prospects. Re-imagining asks a community to think beyond the recovery process and imagine itself in fifteen or twenty years’ time. This should enable a community to consider how it will remain relevant and competitive within its regional or national economy. This planning process includes more than just capital investment; it also involves the ability to attract and retain talent, which is influenced by the quality of the environment, built and natural. Re-imagining enables recovery dollars to be put to work to assist communities to deploy sustainability as a means to regain their competitiveness after an extreme event.

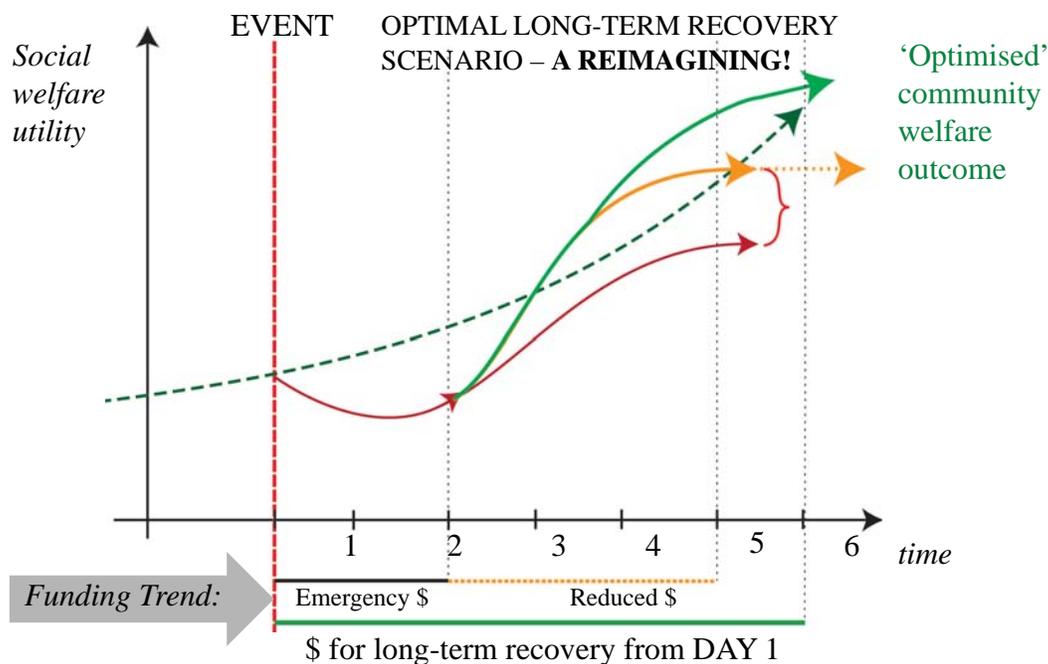


Diagram 11. Re-Imagining Recovery: Recapturing Long-Term Competitiveness

*Sidebar: The Importance of Reimagining - "A Tale of Two Cities"*

Okushiri is a small island in Japan that lies off the west coast of Hokkaido, Japan's northernmost main island. In 1993, the island town of Okushiri was severely affected by the Hokkaido earthquake and ensuing tsunami wave, which killed 198 island residents and caused over 600 million dollars' worth of property damage. The earthquake's epicenter was so close to the island that residents had essentially no warning of the tsunami's arrival.

Greensburg is a small town in Kansas that is located approximately 110 miles west of Wichita, the nearest major population center. In 2007, Greensburg was struck by an EF5 tornado, which is the tornado type with the strongest winds and the highest potential for damage to human life and property; despite a 20-minute warning through tornado sirens and a declared tornado emergency, 12 lives were lost due to the sheer destructive scale of the storm.

Though Okushiri and Greensburg are geographically distant, they are markedly similar in other ways. Both were small towns even before they were hit by disaster: Okushiri had a population of approximately 4,700 prior to the tsunami, while Greensburg's population was 1,574 as of the 2000 U.S. census. Both towns relied primarily on long-established economies based on natural resources: Greensburg's economic base was farming and related industries, while Okushiri's was fishing. The disasters that Okushiri and Greensburg suffered were also similar: they were quick, difficult to avoid, and caused massive devastation.

Despite the similarities between Okushiri and Greensburg, their recovery strategies have markedly differed.

- In Okushiri, recovery has focused on memorializing the past and prevention of a similar event. Okushiri recovery investment has included a museum to memorialize the tsunami's impact and its victims. The majority of investment has focused on physical mitigation, as the Japanese government has built one billion dollars' worth of physical infrastructure to hold back tsunami waves. This includes fourteen kilometers of seawall up to 38 feet in height, as well as four tsunami sluice gates that automatically wall off the mouths of rivers in the event of an earthquake.
- In Greensburg, the recovery operation has focused on the future of the community and using investment to become an innovation center. Greensburg is the first city in the U.S. to require the LEED Platinum standard, one of the highest existing green building standards, for all construction that takes place within their community. The community came to this decision via a literal "big tent" process: EnviRenew Resilience principal Bob Berkebile's firm, BNIM, came to Greensburg and set up a 300-person tent where entire families gathered to discuss their dreams for the future. The decision to build LEED Platinum emerged from the potential to attract new jobs in the green energy and green building sectors and bring new residents and life into town. One of the first steps in this process was to build a business incubator where new green businesses could grow and employ local residents.

Okushiri, after pouring funds into physical mitigation, has witnessed a continual decline in population over the last 10 years. After the high-paying construction jobs disappeared, young people and families left for Japan's urban areas to avoid the difficult, lower-paying fishing work that was the traditional source of income for the islanders. Greensburg has also declined in population since the tornado occurred, to about half of its pre-storm population, but it continues to complete and attract new investment and recovery opportunities, and appears to be on an upward trajectory of continued long-term recovery.

**IV. Resilience Building – Future-proofing for Communities**

Combining the re-imagining model with pre-disaster resilience and mitigation activities is the most progressive policy, but is also most promising model to help communities both better prepare and more effectively address a post-extreme event state.

Investment in pre-disaster resilience and mitigation for communities promises at least four potential and significant advantages:

1. Pre-disaster resilience can improve the pre-disaster social welfare utility of communities: it can improve the trend-line trajectory itself.
2. In the post-disaster condition, resilience-building efforts can reduce the impact

of the disaster, thus creating a shallower dip immediately after the extreme event.

3. Post-disaster momentum leveraging off pre-disaster resilience activities promises both an ability to speed up the return to the pre-disaster trend-line, and surpass the higher trend-line.
4. Reduced post-disaster impacts also reduces the amount of long-term resources needed, so dollars can be better utilized for reimagining and go farther in increasing social welfare.

While this report is largely focused on long-term recovery actions and scenarios, it is important to emphasize that recovery is affected by actions along all phases of the resilience cycle, and the optimal scenario includes resilience actions both pre and post disaster.

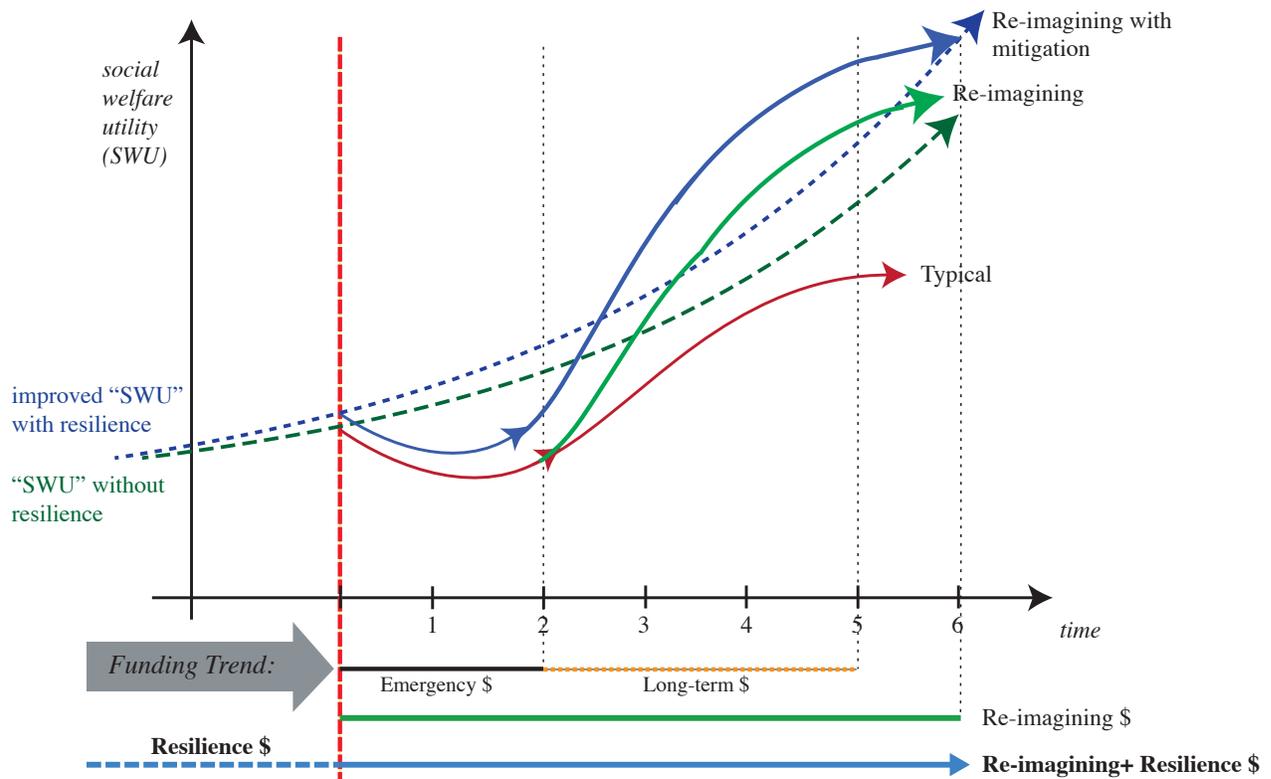


Diagram 12. Resilience Building Pre-Disaster: Future-Proofing for Communities

*The triple bottom line approach considers the social, economic, and physical assets of a community and shows how these assets are interlinked. Resilience relies on strengthening all of these aspects of a local environment in order to create value.*

The triple bottom line model provides an overall context for understanding the pre-disaster and post-disaster opportunities for resilience. The triple bottom line looks holistically at a community’s assets and resources: it focuses on the social, economic, and physical sectors of development and how these can operate together to provide better results. This is a useful context as it allows public, non-profit and private sectors to understand the value proposition that pre-disaster resilience building is able to offer based on their specific interests, and clearly shows

how resilience-building can redefine and invigorate long-run competitiveness in communities. Most importantly, the triple bottom line approach shows that investment as a preparedness and resilience strategy is a value-creating exercise that can be leveraged into funding opportunities and improve the effectiveness of resources set aside for long-term recovery in a post-disaster scenario. The diagram below offers a way of seeing the range of characteristics and value that pre-disaster resilience building activities can provide.

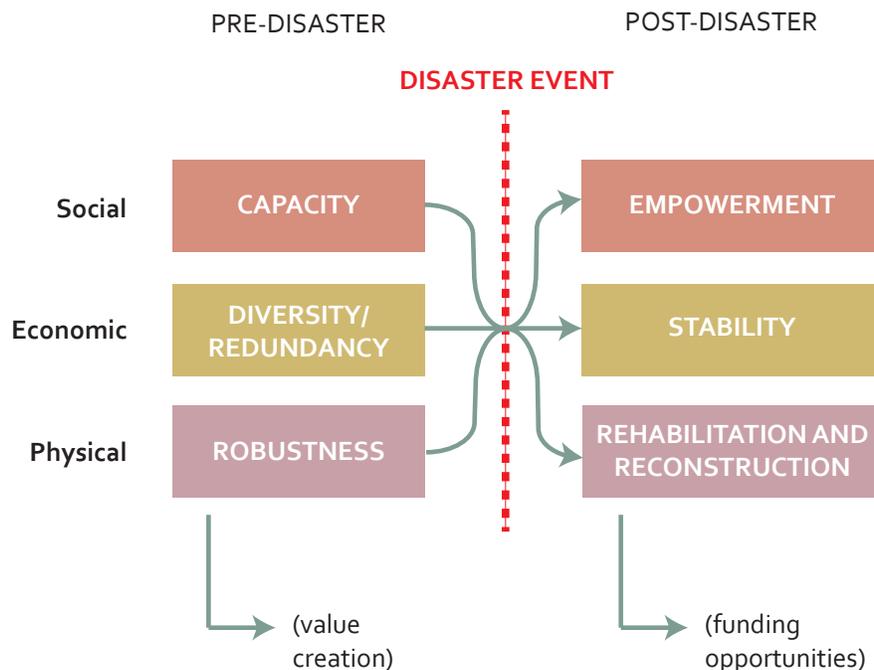


Diagram 13. Triple Bottom Line Characteristics of Resilient Communities

**Section 2** will use a triple bottom line approach to expand on the types of real-world activities that can be used to build resilience in communities, and to help communities better recover back to relevance and competitiveness with other communities. Throughout Section 2, case studies will help support and explain these actionable recommendations.

2

## The Triple Bottom Line: A Framework for Resilience and Recovery Actions

*This section focuses on how communities can take action to enhance the potential for a speedy, successful long-term recovery from disaster. Communities will learn to build resilience with the triple bottom line - the social, economic, and physical aspects of human life - in mind.*

When trying to build a resilient society, the triple bottom line viewpoint has two major advantages for communities and individuals.

- The triple bottom line system of analysis shows that every community is *greater than the sum of its parts*: social, economic, and physical aspects of every community are interconnected and essential for withstanding and building from the shock of a disaster.
- The triple bottom line gives people a *common language* for talking about a disaster’s effects, which enhances communication among disparate groups and creates a set of common metrics to measure the success of long-term recovery.

The framework on the following page shows the actions that communities can take to build resilience, divided into their triple bottom line components.

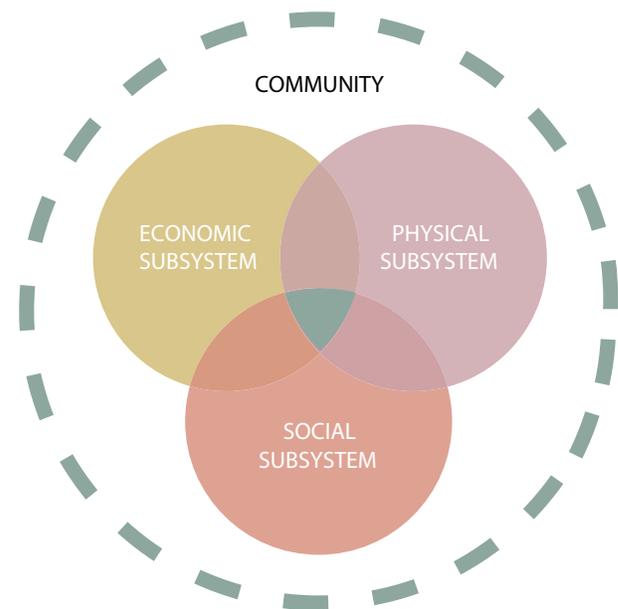


Diagram 14. The Triple Bottom Line.

## Framework: Actions that Create Resilience

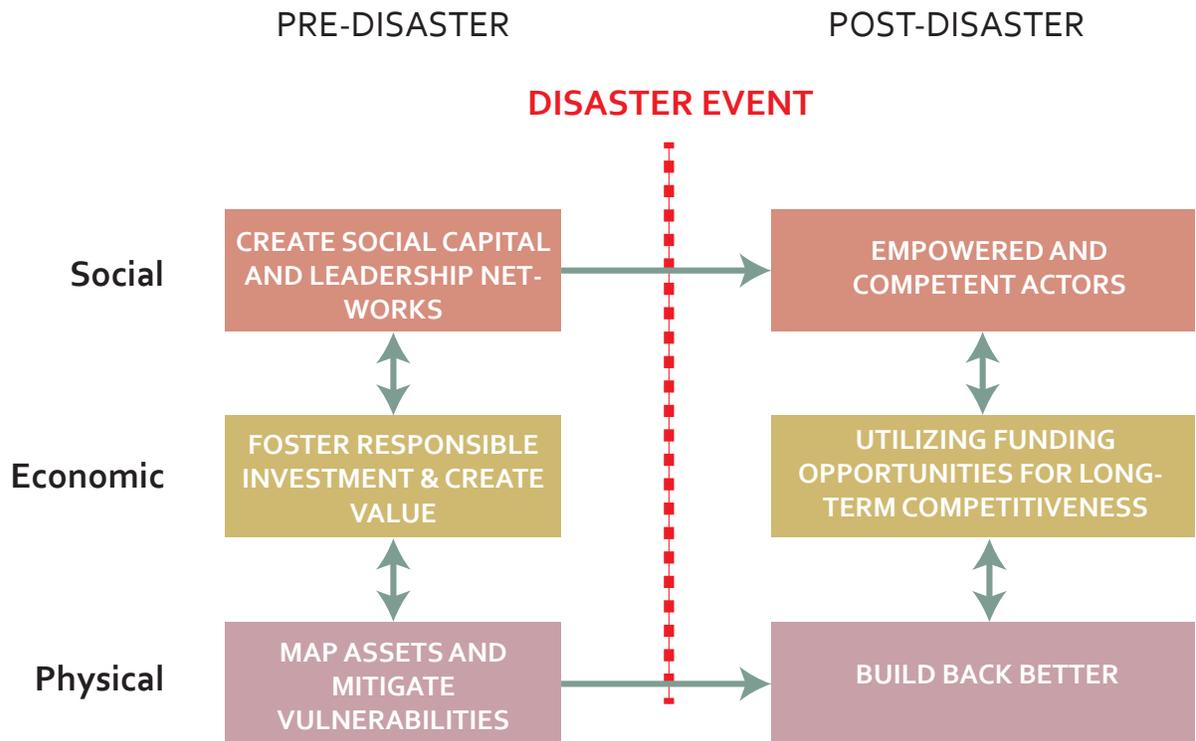


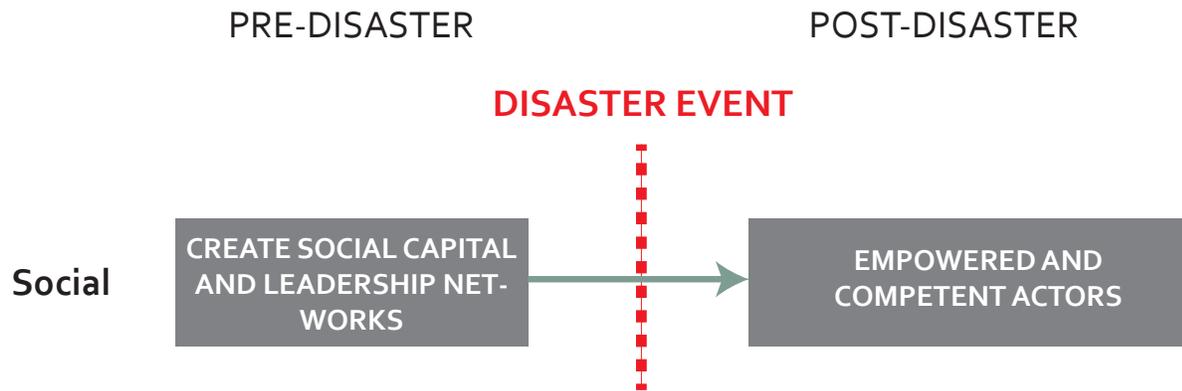
Diagram 15. A Framework of Actions that Create Resilience

The rest of Section II describes specific challenges to resilience within the social, economic, and physical sectors, and provides case studies to show how groups of people have attempted to resolve these challenges. Readers should remember that, though

some sectors may seem more urgent than others in addressing the potential for disaster, all of these sectors are necessary to help reimagine and regain the potential of a community after a disaster occurs.

2A

# The Social Sector: Build Community Capacity and Social Capital



The social aspects of resilience are based on ensuring that people have the tools, expertise, resources, and capacity that they need to help themselves and their communities in the long-term recovery from a disaster. By learning to take action together and work with experienced partners, community members, neighborhoods, and businesses can assist in improving collective social welfare both before and after a disaster. Government entities, non-profits, and recovery organizations can help empower citizens by setting clear timelines and expectations for long-term recovery,

and then remaining accountable and transparent as everyone attempts to fulfill those expectations.

Ultimately, social resilience depends on the opportunities for collective action available before and after a disaster. Collective action within neighborhoods, within city blocks, within self-identified social groups, or between governments and citizens, creates the trust, relationships, and competence necessary to rebuild after disaster.



*Note:* “Building Our Future” (event pictured above) is an effort through The Salvation Army’s EnviRenew and Emerge programs in New Orleans to increase young women’s awareness of career opportunities that allow them to influence the built environment by bringing them together with women role models over the course of a day. The women role models are business leaders in architecture, engineering, real estate development, and construction.

## Community Capacity: Leverage Internal Resources

*Community capacity allows a community or self-identified group to use its internal assets to advocate for and achieve common goals. Community capacity is based on trust in one another's long-term commitment to similar goals, and knowledge of and respect for the skills and assets that each individual brings to the group.*

Community capacity allows a neighborhood or town to understand and leverage its internal resources, or to use the assets that already exist within local residents, businesses, and physical features. Strong community capacity will enable residents to participate in imagining and implementing new city futures after a disaster event and meet their own needs internally. The prerequisite for community capacity are trust and relationships between community members, and building these relationships is often not as easy as it seems. Neighbors on the same block may not know one another's names; there may be more than one neighborhood association claiming territory over the same ten blocks of a city; leaders of different faith groups may never have met. Formal institutions such as city governments or other large organizations may also need to make better connections between their members or employees.

Enabling communities to take action together, and supporting communities that do take action to support greater resilience and recovery, is an essential step to building community capacity. Roundtabling, discussion, and public meetings will not fully build capacity, because people will soon stop coming to meetings if they do not feel they are achieving something. The strongest organizations in terms of community capacity are therefore those that bring people together to accomplish set goals or tasks and that constantly work toward new achievements.

Working together toward particular achievements or goals deepens the relationships between community members beyond simple name or face recognition toward a mutual confidence in the skills and assets that each person brings to the table in achieving a goal. Constantly setting new goals (while keeping these goals manageable) will keep these relationships of confidence continuous and will strengthen the bonds that already exist. Ultimately, working toward goals and achieving them will create the trust that only emanates from completing a project together and seeing the final results.

Dr. Rick Weil of Louisiana State University has done a great deal of research to support the strong connection between community capacity and recovery from disaster. His research has found that strong social bonds within groups such as the Social Aid and Pleasure Clubs and the Vietnamese community within New Orleans enabled the members of these groups to recover from Hurricane Katrina more quickly and more fully than other groups, including returning to New Orleans, rebuilding housing, and being able to support their families. These groups, though they did not have a great deal of monetary wealth to call upon, were able to leverage their internal skills and relationships to help themselves and each other recover as well as wealthier groups within New Orleans.

## Community Capacity: Leverage Internal Resources

### Case Study #1: EnviRenew

After Hurricane Katrina, The Salvation Army started the EnviRenew fund in New Orleans to help local neighborhoods recover. When considering potential funding structures, EnviRenew and The Salvation Army staff chose to distribute funds through neighborhood organizations rather than distributing them directly to households. This decision was made explicitly in order to help improve the neighborhoods' community capacity: as the neighborhood organizations sought out households to deliver grants and worked with them to deliver the necessary documentation, the organizations grew to know and understand the needs of their community even better than before.

As each neighborhood began to see results from the EnviRenew program, more and more people became invested in the EnviRenew process and built bonds with their local neighborhood organization while they benefited from the funds that EnviRenew provided. Meanwhile, EnviRenew was secure in the knowledge that it was fulfilling the priorities of the local neighborhoods and providing the best possible level of service to neighborhood residents by using the neighborhood organizations' local knowledge.

EnviRenew is a true triple-bottom-line fund: its emphasis on community capacity is matched by its aims to improve the physical and economic characteristics of each neighborhood. EnviRenew improves the sustainability and physical fabric of these communities by providing subsidies to homeowners to buy new energy-efficient homes, as well as grants to improve the energy efficiency of residents' homes who had already returned after Hurricane Katrina. These grants allow local residents to move back to their communities, reducing the blight that has affected New Orleans' neighborhoods since Hurricane Katrina. The houses' energy efficiency gives residents the confidence that their monthly energy bills will remain low, which helps to compensate for increased insurance rates after Katrina and helps ensure that community members will always be able to afford their housing.

More information about EnviRenew is available at <http://www.envirenew.org>.

### Case Study #2: Citizen Corps Councils

The Citizen Corps Program was founded by the Federal Emergency Management Agency (FEMA) after September 11, 2001, to coordinate volunteer activities that support disaster preparedness and community safety. Since the founding of the program, over 1,100 communities have started their own local Citizen Corps Councils. Citizen Corps focuses on the pre-disaster side of community capacity: it helps to bring people together to take part in volunteer activities such as Neighborhood Watch, community policing, and community disaster preparedness education.

It is often easier to create a spirit of community leadership after a disaster, when many tasks need to be accomplished, than before a disaster when the need to complete projects and create bonds seems less immediate to many residents with their own busy lives. Citizen Corps Councils help to keep these skills and bonds more immediate and impart the lessons needed to maintain public safety on an everyday basis, so that citizens will be armed with knowledge of their communities and the disaster preparedness and recovery system in the event that a disaster does occur.

More information about the Citizen Corps Program is available at <http://www.citizencorps.gov>.

## Social Capital: Attract External Resources

*Social capital is the skills and relationships that allow individuals or communities to effectively access external assets by leveraging their internal resources. Social capital allows individuals and communities to build strong partnerships with universities, non-profits, government agencies, and private companies.*

A community has social capital when it has resources and strong advocates that are able to leverage these resources through partnerships, relationships, and skilled communication and negotiation. Social capital helps communities to attract and leverage external resources to help in their disaster mitigation and recovery efforts. Some benefits of social capital include:

- The ability to navigate political systems to have needs met by a government agency.
- The ability to attract private investment from businesses, corporations, banks, or funds.
- The ability to attract grants from local and national non-profit organizations and foundations.
- The ability to attract recovery funds from the federal government after a disaster.

Social capital creation relies on the development of relationships, leadership, social skills, and bodies of knowledge. Navigating official systems is a skill that requires understanding of different vocabularies, different power structures, and different means of

communication. Communities with higher levels of wealth or education often have more members who are versed in the appropriate means of communication or who have existing relationships with those in power, and are more likely to be able to access external resources; this means that other, less skilled communities can often be left out during the distribution of resources. Cities and neighborhoods that establish strategic partnerships with corporations, universities, national non-profits, and other experts can help to close this gap by providing all communities with a strategic level of support in developing their social capital.

Social capital is a complementary skill to community capacity, and some communities are stronger in one area than the other. The presence of high levels of social capital can often make up for low community capacity, and vice versa; however communities that have both strong community capacity and strong social capital will be the most socially resilient in the event of a disaster.

### Case Study: Neighborhood Empowerment Network University

San Francisco's Neighborhood Empowerment Network (NEN) is dedicated to bringing disaster resilience to neighborhoods through civic engagement, disaster preparedness education, and support for collective action to reach neighborhood goals. As part of reaching this goal, NEN has established the Neighborhood Empowerment Network University (NENU), which creates partnerships between neighborhoods and universities like San Francisco State University, the University of California at San Francisco, and the University of San Francisco. EnviRenew Resilience principal Daniel Homsey has played a crucial role in establishing the resilience models within NEN and NENU.

NENU's partnerships create social capital by having universities act as facilitators for communities to set priorities and achieve them; the universities help access outside resources and data to help define and support the communities' priority projects. The partnerships proceed through the following steps:

- The first step in each partnership is to establish a geographically defined "Engaged Learning Zone" which will be the focus of the universities' and citizens' efforts.
- The second step is to conduct a "Listening and Mapping Tour" in which the universities interview local stakeholders, perform a physical asset mapping process, and convene local leaders and residents to discuss the community's priorities and potential short-term projects.
- Once the community selects short-term projects to execute, the third step in the process is "Capacity Building," in which the universities help access resources, train community leaders, aid community problem solving, and support the establishment of a Community Council which will take the leadership in execution of these projects.
- Finally, the last step is to establish a long-term planning process for community projects and the Community Council, and to continue providing the council with the tools it needs to address these long-term community projects focused on the priorities identified by the Council.

The process thus allows communities to set their own priorities, and to use the university partner as an advocate and supporter as the community builds its internal capacity.

More information about NENU is available at <http://empowersf.org>. Specific information on Engaged Learning Zones is at [http://empowersf.org/?page\\_id=1019](http://empowersf.org/?page_id=1019).

*Citizens need accurate information about the timeline for long-term neighborhood recovery and the necessary preparation steps to regain their housing and employment. Providing this information will help communities retain as much population as possible after a disaster.*

Most citizens of disaster-prone areas are aware that they will need items such as bottled water or flashlights in the immediate aftermath of a disaster – they have expectations about the immediate needs that disaster brings. However, managing citizens’ expectations for long-term recovery is also extremely important to ensure that residents are prepared to recover their homes and belongings, and that they understand the recovery timeline so they can decide when it will be practical to return home.

In pre-disaster mitigation situations, families should be offered clear information about long-term disaster implications, such as planning for potential financial impacts. For example, homeowners need to know that they will still be responsible for their mortgages after a disaster, even though their homes may be destroyed or unlivable; this means families may essentially have to pay for housing twice. Residents also need to know what their homeowners’ and other insurance will cover in the event of a disaster, and what types of disasters their homes are truly vulnerable to. In New Orleans, many families did not have all the appropriate types of insurance to protect against wind and flood damage in addition to their basic homeowners’ insurance. Some of these families have been unable to rebuild their homes after Hurricane Katrina, leaving them displaced and the city blighted with vacant, damaged homes. In San Francisco, many families do not realize that even new homes built to the most up-to-date building code are designed to only prevent loss of life during a major earthquake, but they may be uninhabitable after a disaster or require lengthy and costly repairs without additional seismic mitigation measures.

In post-disaster situations, families need clear timelines for disaster recovery milestones to help manage expectations. Immediate milestones include

restoration of electricity, the availability of fresh water, and other basic early recovery steps that address basic needs – families need to know that even this essential infrastructure may take weeks or months to return in an acute disaster. Longer-term milestones are also critical to community health, and include such steps as the availability of federal funding for rebuilding housing, the return of employment and income, the restoration of grocery stores, the reopening of schools, and the projections for resettlement of full city blocks or neighborhoods.

Finally, families need to understand that after a disaster, they will be asked to take part in a re-imagining process that will help impact their community’s future development. Preparing citizens ahead of time and re-emphasizing this principle after a disaster event helps drive home the message that while things may not look the same after a disaster, there is a chance for them to become even “better than before.”

Some tools, such as the University of Minnesota’s Family Financial Toolkit, are available to help families in disaster recovery situations navigate these new systems and make plans using their knowledge and the data that public officials provide to them. The availability of this information will help families do personal planning based on their knowledge of their job situation, their finances, their children’s schooling, and their ability to recover their housing.

### Case Study: Family Financial Toolkit

The Family Financial Toolkit from the University of Minnesota Extension Service and the North Dakota University Extension Service provides families with the information they need to make a strong financial recovery from disaster. This toolkit sets expectations for the obstacles families will face and the many tools and organizations that can help to overcome these obstacles. It includes the names of key resources in disaster situations, such as long-term recovery organizations and case managers; financial planning strategies, such as monthly budgets and credit monitoring; tools such as checklists and calendars to keep track of financial health; and action strategies for homeowners or renters to find new interim or long-term housing.

This toolkit has several strengths as a resource for setting families' long-term expectations:

- First, it was developed in collaboration with an advisory board of disaster recovery professionals, which allowed the authors to draw on a wealth of experience to ensure that the information in the toolkit was complete, concise, and correct so that families would benefit from all available resources.
- Second, the authors consulted a focus group of both citizens and professionals to ensure the toolkit was accessible to the public.
- Third, the document includes tools like calendars and provides real-world examples of how one family used these tools in their recovery process, lending clarity and authenticity to the toolkit.
- Finally, the toolkit is customizable, with two Minnesota and North Dakota versions already in place; localities can take the toolkit and insert information on local long-term recovery organizations, funding opportunities, and housing resources, so that local residents will be able to tap the resources that are available quickly and easily.

A general version of this toolkit, as well as the locally customized versions for Minnesota and North Dakota, is available at <http://www.extension.umn.edu/family/tough-times/disaster-recovery/docs/financial-toolkit-nss.pdf>.

## Create Clear Accountability for Specific Tasks

*An accountability plan in a disaster situation ensures that defined groups are responsible for defined tasks. Clarifying these responsibilities ahead of time enables coordination between groups, clarifies the allocation of recovery funds, defines staffing needs for the recovery process, and ensures that residents know where to access the rebuilding resources they need.*

The days and weeks after a disaster can be confusing and overwhelming, and are always full of activity as existing plans for disaster response and management kick in. Few public officials or residents will have time to figure out who is supposed to be taking care of long-term recovery tasks unless an accountability plan is already in place. Over time, this confusion can create overlapping agencies trying to do the same job, a proliferation of conflicting information, and frustration for families and residents. Cities and even regions need to expand their timeframe for thinking about disaster planning, using other disaster situations as models, in order to create a long-term recovery accountability plan before a disaster occurs.

The hallmarks of a good accountability plan are:

- Explicit allocation of responsibility for the various sectors of recovery, including residential rebuilding, economic development and commercial rebuilding, infrastructure recovery, and school recovery.
- Inclusion of a coordination plan to enable agencies to work together, share information to allow for more informed decision-making, and make sensible decisions that cohere as a whole. This can include fostering communication and relationships to make big decisions together about the future of the community, but for smaller day-to-day exchanges, should include digital information that is secure and consistently updated to allow all parties access to the most up-to-date information, such as CrisisCommons.org or the Coordinated Assistance Network (CAN).
- Organizational structures that support accountability. Creating explicit responsibilities pertaining to resilience before a disaster occurs

is one way to ensure that institutional knowledge and experience exists to guide new employees in administering post-disaster recovery. If a disaster occurs, existing government and nonprofit agencies won't be able to deal with the situation by including exactly the same employees and jobs that were in place before the disaster. Accountability plans should include scenarios for post-disaster agency structures and the number of new positions that would be needed.

- Power that supports accountability. Giving actors like city agencies and recovery agencies the power necessary to follow through on their assigned responsibilities, including adequate staff and adequate decision-making abilities, is essential to keep bottlenecks out of the recovery process.
- Leadership and information continuity. Safeguarding institutional knowledge and data are essential for organizations that do long-term work in the resilience field. Keeping succession plans in place for key staff, and having a secure data backup system, will allow recovery work to continue smoothly rather than being interrupted by leadership transitions or data losses.
- Succession planning. As part of leadership continuity, organizations should have a succession plan that enables key information to be carried over from one leader to another and establishes policies to encourage outgoing leaders to share their knowledge and wisdom. Leader "burnout" is very common amid the trauma, stress, and immense effort of disaster recovery; succession planning helps counteract burnout's effects.

## Create Clear Accountability for Specific Tasks

## SOCIAL SECTOR

### Case Study #1: The Disaster Accountability Project

The Disaster Accountability Project (DAP) was founded as an outsider advocacy group after Hurricane Katrina to examine the results of recovery policies and funding. DAP uses its status as an advocacy group to publicize points that many within the government and donor community cannot. Its method of engagement is to analyze the scope and scale of a disaster response and release wide-ranging reports with recommendations on overcoming problems and avoiding these problems in the future.

For example, in the U.S., DAP has noted that the Federal Emergency Management Agency (FEMA) and the Department of Housing and Urban Development (HUD) have still not resolved a long-standing dispute over which of these agencies are responsible for fulfilling short-term and long-term housing needs in disaster-affected communities. This turf battle has had problematic effects on the response to Katrina, which are likely to resurface in the event of another large-scale disaster. DAP has also released reports on the use of donor funds in Haiti's earthquake recovery, noting that non-profits in Haiti need greater coordination and transparency to show how and when they plan to use their donor funds.

For more information about the Disaster Accountability Project, visit <http://www.disasteraccountability.org>.

### Case Study #2: Resilient SF

While DAP focuses on advocacy at the macro scale, an initiative in San Francisco is working to create accountability and resilience inside the San Francisco city government itself. Resilient SF attempts to create space for relationship-building within the city government, as well as between the government and other stakeholders including neighborhoods, researchers, schools, technology experts, and public utilities. Through its numerous partners, Resilient SF offers a platform of tools and strategies around which its stakeholders can connect, including volunteerism, university-community partnerships, and earthquake risk reduction programs.

Resilient SF's approach complements DAP's approach; one focuses on demanding change from the outside, which the other attempts to slowly change existing systems from the inside by becoming more inclusive and working to enhance coordination so that all parties understand their potential collaborations in a disaster situation.

For more information on Resilient SF, visit <http://resilientsf.org>.

2B

The Economic Sector: Leverage Recovery Funds and Attract New Capital



In a pre-disaster or post-disaster situation, communities should pursue socially-conscious, value-driven investment that monitors existing assets and understands how all the triple bottom line aspects of a community contribute to ongoing local growth and competitiveness. This type of investment allows communities to accurately value and estimate the replacement cost of all their assets, not just the key corporations or districts within a city. It also leads

to a greater potential for both business and market continuity: businesses will have disaster response plans that enable them to maintain their supply chains and keep operating, while consumers will be able to rapidly return to their jobs and begin buying from local firms again. Finally, communities that take the opportunity to invest in human capital both before and after a disaster will find greater loyalty and skill available for the long-term recovery process.



*Communities that use a triple bottom line approach to evaluate their pre-disaster assets will understand which of these assets are covered by insurance, and which may need additional mitigation or funding in order to return post-disaster. Social, economic, and physical assets are all crucial for attracting talent and remaining competitive.*

Pre-disaster preparation drives two critical pieces of awareness for a metro area – the need for an accurate audit of the area’s strengths and weaknesses, and a better understanding of how much insurance coverage is required to maintain that assessed position. These two understandings are the key to pre-disaster resilience and will form the baseline studies that can be used to generate an action plan for resilience building.

A local metro area should assess its insurance coverage beyond financial accounting of replacement cost for its key and core businesses and the related infrastructure. Rather than focus on these major assets alone, the insurance assessment should use a triple bottom line approach. The triple bottom line provides a better understanding of all the local assets that can be attributed to a local area’s competitiveness. For example, the value of local amenities such as landscape, cultural assets, and architecture can be undervalued according to a traditional model, but the triple bottom line ensures that recovery of these assets is appropriately valued.

These social and environmental assets are not simply of intrinsic value; they support the local area’s ability

to attract and retain talent and population. Talent and population are key to the quality and competitiveness of product and services that businesses and the economy can deliver back to the resident population. Ability to attract and retain an active, productive population is fundamental to delivering an economic growth rate that should improve quality of life and put a community back on a trajectory toward economic growth and social well-being. The long-term retention of population and attraction and inclusion of talent enables resilience to become a characteristic of the local area.

Insurance can therefore be understood in two ways - sufficient coverage to ensure a full rebuilding, and the various additional, less direct aspects that can ensure competitive rebuilding. Lastly, it must be noted that sufficient coverage will also include the need to rebuild at speed. This is a vital point - most insurance coverage covers recovery only after other processes are running or at least on-line. The cost for a rapid, critical mass rebuild may require a new, different type of insurance coverage.

Case Study: Hurricane Katrina's Effect on the National Flood Insurance Program

Residents of every community need to clearly understand what their insurance policies cover, and communities need to closely monitor the percentage of properties with private and public insurance coverage. After Hurricane Katrina caused nearly \$44 billion in damage to New Orleans and the Gulf Coast, many residents were unprepared for the coverage rejections that came from their private homeowners' insurance. This occurred because essentially no homeowners' and renters' policies from private U.S. insurers cover flood damage. Homeowners in flood-prone areas instead must purchase government-backed insurance from the National Flood Insurance Program (NFIP) in addition to traditional homeowners' policies.

After Hurricane Katrina, many homeowners found themselves in one of two situations. First, many experienced stalled recovery because they did not have additional flood insurance. In Louisiana, over 32,000 properties received water damage but had no flood insurance coverage through NFIP. Second, other households who may have had flood insurance still experienced stalled recovery because they received no funds from their private insurers. Post-Katrina, private insurers tended to reject all claims from homeowners whose properties had flooded as due exclusively to flooding, or as excluded by the "anti-concurrent causation" law included in many private policies. Homeowners who had depended on coverage from both programs to recover therefore often did not receive sufficient funds. The process of resolving these insurance claims and waiting for additional funding from federal programs to cover the gaps limited the scale of potential housing recovery over the critical first two-year period.

By 2007, as these problems were ongoing, The Federal Emergency Management Agency (FEMA) had recognized that a large-scale disaster created huge payouts from NFIP without necessarily providing an adequate degree of coverage for all households to rebuild and perform necessary mitigation for the future. Since then, FEMA has been exploring solutions including:

- Option 1: Modify NFIP by improving floodplain management and flood hazard maps
- Option 2: Replace NFIP with expanded eligibility or disaster assistance, but limit this assistance to areas that utilize flood mitigation and preparedness techniques
- Option 3: Provide insurance policies to communities rather than individuals

Options 2 and 3 offer some potential solutions to the difficulty of ensuring that households buy flood insurance, even when that insurance is mandatory, and of bringing more collective bargaining power to the table when homeowners must work with private insurers.

*Business continuity provides a post-disaster community with an adequate supply of products and services, while market continuity ensures that these businesses have a population that want to buy their services. Both supply and demand are necessary to keep markets functioning in a post-disaster environment.*

There is a fundamental difference between business and market continuity; most economic actors will better understand this area as the supply and demand sides of the economy. Learning lessons from September 11, 2001, most sizeable businesses now have a business continuity plan. This is especially true in companies that engage in activities at the regional, national and global scale. After Japan's 2011 earthquake and tsunami disrupted supply chains and slowed the tech and auto industries, most companies that have global supply chains became aware of the critical need to have redundancies in those chains to ensure the continued flow of their product, and that redundancies need not always be the mark of inefficiency.

However, less attention has been paid to what we call 'market continuity' – simply, if there are no customers for extended periods of time, business can be severely

affected or worse. Unlike supply chains whose global aspects make them vulnerable, the more local a business or the denser the revenue stream is within a local market, the more vulnerable the business is to a geographically concentrated event. The most affected will be local businesses, who depend almost exclusively on local supply chains and a local customer base. Loss of market continuity could devastate local businesses. However, the local operation of a global or national company which has lost its local customer base in a disaster affected area will also see a sharp drop in the need for market presence, until a verified customer base within its target audience justifies its return. In this case, the loss of customer base simply means that the company removes operations from that locale, with minimal disruption to the larger company, until the market returns. Note the slow return of well-known brands in New Orleans after Katrina.

#### Case Study: Red Cross Ready Rating Program

The Red Cross Ready Rating Program addresses the supply side of the market, or the business continuity portion, by providing businesses a combined checklist and scorecard that encompasses the steps that can assist with mitigation of a disaster's effects and rapid recovery if a disaster does occur. The checklist includes basic steps such as consulting with local emergency management agencies to assess vulnerabilities, assessing potential disaster impacts, planning for immediate disaster response, creating a Continuity of Operations plan for long-term recovery, and embedding the preparedness plan through drills, training, and exercises.

Besides these basic steps in preparing a business continuity plan, the Ready Rating System also encourages businesses to get involved in disaster preparedness for the broader community. It takes companies through potential options such as hosting blood drives, volunteering company facilities as community shelters, leading preparedness education sessions for local residents, or sponsoring a local school district's emergency preparedness preparations. While many of these steps focus on short-term disaster preparedness rather than long-term recovery, the relationships built between businesses, schools, families, and disaster recovery non-profits may turn out to be valuable social and economic assets in the event of a disaster. For example, rapid recovery of schools can help employees return sooner after a disaster, or a relationship with a relief and recovery organization may help a business in gauging the long-term recovery and market potential of the surrounding area.

*Investing in local residents and newcomers will help reduce blight, retain businesses, and create strong social bonds after a disaster. Ensuring that the community welcomes and attracts new residents, while also assisting disaster-affected residents to return, will lead to growth and development.*

Recovery of a disaster-affected local area is largely contingent on population retention after a disaster event. In anecdotal observations of recent disasters, it appears that most local areas should only expect to receive up to 70 or 80% of their original population back – regardless of how strong and effective the recovery effort is. More specifically, no marketing campaign will ensure every single disaster surviving individual or household will return. This is more about psychological human responses to traumatic events than the inability to rebuild. Some individuals after experiencing a traumatic event do not wish to return to the site of the event, sometimes ever.

Therefore, for a local area to maximize the use of funding and reset itself on a path to sustainable growth, the need to attract and retain new human capital after a disaster is key. This will require a profound awareness and valuing of the inclusion of new parties in community and economic activity. The cultural impacts to local communities and areas will be changing and will require sensitive leadership from civic and business leaders.

#### Case Study: Chamber of Commerce

The national Chamber of Commerce system represents and communicates with approximately three million businesses, 96% of which are small businesses with less than 100 employees. In a disaster situation when the business environment is uncertain and businesses may consider relocation, the Chamber of Commerce provides an inroad for information on recovery timelines, economic development plans, and recovery funds for businesses to reestablish themselves locally. After a tornado hit Worcester, MA in June 2011, the local Chamber of Commerce set up an information page telling local residents how to register with FEMA for recovery programs, how to deal with insurance claims, and how to claim benefits in case of temporary unemployment. Similarly, the Joplin Area Chamber of Commerce supplied up-to-date information about damage estimates and recovery efforts for businesses after the devastating May 2011 tornado in Joplin, MO, and followed up by establishing a business recovery donation fund that supports donors by giving them tax credits from the state of Missouri for donations over \$1,000.

The local Chambers of Commerce are supported in disaster recovery by the Business Civic Leadership Center (BCLC), part of the national U.S. Chamber of Commerce organization. The BCLC helps establish national best practices for businesses facing disaster, as well as businesses that want to support short-term and long-term disaster recovery. The BCLC also helps connect national firms with disaster-affected cities and small business owners to provide training, investment, and technical assistance.

For more information on the Business Civic Leadership Center, visit <http://bclc.uschamber.com/>.

2C

The Physical Sector: Adapt the Physical Environment with Standards, Maps, Data, and Plans



Adapting the physical environment to disaster is an iterative process: new standards and policies improve a community’s resistance to disaster-related damage, while constant updates to maps, data, and city plans ensure that further strengths and weaknesses can be identified and resolved. Working to improve standards, policies, maps, and data can help communities return to better housing stock, more neighbors, and a higher quality of life than before. However, careless standards or policies that don’t account for the real estate market or the availability of recovery funding can cause a community to lose population and become seriously blighted after a disaster event.

The following chapter focuses on case studies that illustrate different approaches to physical mitigation and recovery such as setting new construction standards, changing policies that may affect residents’ ability to rebuild their homes, and restoring land and buildings to commerce. These approaches are different from the basic physical protections that disaster preparedness requires, such as tornado cellars or flood walls. Preparedness protections are very important to keep families and communities safe in the short run during and after a disaster; the measures in this chapter help ensure that communities are able to quickly, easily and strongly rebuild over the long term.



*Note:* The homes pictured above are two of the homes that EnviRenew has subsidized in partnership with a neighborhood organization in New Orleans, as part of the city's recovery from Hurricane Katrina. The above homes are in the Algiers Riverview neighborhood.

*To keep the physical components of a community vital and dynamic over the long term, urban plans should be regularly updated with resident input and best practices to express the future development potential of a city or town. After a disaster, cities can use these forward-looking plans to set actionable goals based on the anticipated amount and timeline of recovery funding.*

Regardless of the potential for disaster, every city needs a process for regularly updating a legally enforceable general plan for the city's physical development potential. After a disaster, cities that already have progressive, up-to-date general and specific plans will have an advantage in the process of reinventing themselves: the data and community input included in these plans can form the foundation of a physical vision that will already be grounded in community consensus. This will allow cities to focus on establishing the legal and economic structures needed to quickly reestablish commerce and maintain competitiveness. If a city does not have up-to-date plans, it will need to spend more time building consensus around a new vision for the future rather than setting goals based on a preexisting future vision.

Though a good pre-disaster plan is a key element in creating community resilience, every disaster brings unexpected consequences and can require alterations to preexisting plans. These alterations can be based on safety concerns that emerge for rebuilding in certain areas; they should also account for the inescapable fact that after a major disaster, population will return slowly, over time, and only 70-80% of the original population may return at all. Cities will need to quickly set actionable goals using pre-existing plans as basic frameworks, but basing actions around new and specific information.

A good example of a strong pre-disaster plan is San Francisco's General Plan, which is kept up-to-date and is required by California law to address seven factors that make this plan extremely comprehensive. Each of these important physical features has an

"element" within the General Plan that explains the broad strategy that community members and planners agree on, followed by more specific "area plans" that use maps and data to address neighborhood concerns. The seven factors are:

- Land use (what can be built where)
- Circulation (transportation and traffic)
- Housing
- Conservation (of energy, water, and resources)
- Open space (parks and recreational areas)
- Noise
- Safety (including disaster preparedness)

In order to assure a swift and smooth rebuilding process, the Community Safety Element in San Francisco's General Plan states that, after a disaster, the rebuilding of the city will be based on what is written and mapped in the plan. This creates less of a need to build consensus around a forward-looking plan: the vision already exists and accounts for the interplay of the many factors needed to build a quality city.

A contrasting view comes from New Orleans, where many citizens gradually slipped into "planning fatigue" during the Hurricane Katrina long-term recovery process, because the planning process became a wish list rather than an allocation of available resources over time. Without a visionary pre-disaster plan, or a strong sense of future funding opportunities, the planning process created distrust in New Orleans communities because implementation had to constantly backslide from the many, many ambitious goals defined in the early planning process. New Orleans' experience

## Maintain Actionable and Enforceable Physical Plans

## PHYSICAL SECTOR

illustrates the need to set actionable goals based on estimated funding and recovery timelines. Recovery funds (especially government funds) arrive in an affected area over time, and residents come back over time. Disaster-affected communities need to combine a careful estimate of the total funds needed for recovery with a constant careful monitoring of the

pace of market recovery: market recovery includes infrastructure, housing, schools, and businesses.

### Case Study: Central Business District Recovery in Christchurch

In Christchurch, urban plans made before the 2011 earthquake did not account for the fact that many of downtown's classic masonry and stonework structures would not survive a major tremor. Recovery of the Christchurch Central Business District therefore required the production of a new vision for the area. Christchurch turned to both residents and experts to propose ideas for new ways to rebuild.

- Residents contributed their thoughts through the Christchurch "share an idea" program, which included an online forum for discussion and public meetings with City Council members. This program has resulted in a new design for the CBD with a smaller footprint, more public transit and public space, and lower-rise, safer buildings.
- Engineers and other experts have helped propose new designs for Christchurch's transition from less flexible masonry and concrete structures to steel-framed constructions that are more seismically resilient. They have also created a detailed proposal for a "Quake Star" rating system for earthquake safety in buildings.

To help set long-term recovery deadlines and coordinate the recovery process, the Canterbury Earthquake Recovery Authority (CERA) was created to cut across bureaucratic lines. CERA's Draft Recovery Strategy sets out many of the basic timelines for the production of economic, social, environmental, and built environment recovery, including timelines for plan production, demolitions that will allow plan implementation, and social programs to help purchase insured properties that lie in designated no-build "red zones" due to earthquake risk.

Though the recovery is progressing, many of the processes in CERA's plan have taken up to a year to complete due to ongoing aftershock tremors as well as administrative capacity challenges, and citizens have urgent concerns about the length of time it has taken to understand what the future holds. Tensions between immediate action and good long-term planning will always exist. Pursuing actionable goals can help alleviate but not eliminate these tensions.

For more information on the "share an idea" program, visit <http://www.rebuildchristchurch.co.nz/blog/2011/6/the-rebuild-christchurch-ideas>.

For more information on the QuakeStar proposal, visit <http://www.quakestar.org.nz/>.

For more information on the Draft Recovery Strategy, visit <http://cera.govt.nz/>.

*Policies and standards are necessary to embody mitigation against disaster in the physical environment before and after a disaster. They must, however, be carefully and strategically implemented so that they do not prevent rebuilding at scale after a disaster, or exclude certain residents from rebuilding due to the sheer expense of meeting standards.*

Codes, standards, and policies that affect the built and natural environments help communities to ensure the future safety, resilience, and sustainability of their populations. However, they can also restrict long-term disaster recovery when requirements are too stringent for residents to meet or have other unintended consequences. When implementing building codes, energy-efficiency standards, insurance requirements, and restrictions on new construction, it is important to perform a cost-benefit analysis and examine all possible outcomes to understand their likely effects on retaining and recovering population after a disaster.

Building codes express a community's concern for residents' safety and well-being by preventing residents from living in substandard housing. However, because full disaster mitigation is expensive and hedges against an uncertain risk, it is difficult for communities to go beyond building codes that ensure life safety toward building codes that fully encompass disaster mitigation, as this would price many potential homeowners out of the marketplace. Programs such as the Transfer Tax Rebate in Berkeley, CA help address this problem. The Transfer Tax Rebate allows new homeowners to receive a rebate of up to one-third of the "transfer tax" (tax paid when a house is sold) to use for seismically retrofitting their newly purchased home. Because the tax is paid regardless of whether or not the home is retrofitted, many homeowners see the value in recapturing that money for retrofit work, and the program has been highly successful. This rebate represents a way of allocating public funds directly toward seismic retrofit, without the need to add the seismic mitigation requirement to the building codes.

Requirements for obtaining homeowners', flood, and disaster insurance can also help improve resilience,

and government recovery funding should coordinate with these requirements in order to help homeowners reach the necessary standards. After Hurricane Katrina in New Orleans, insurance companies became more stringent in requiring homes to be elevated past the FEMA requirements in order to obtain insurance at a reasonable price. Many homeowners could not afford this elevation, so a government program using recovery dollars was put in place to help elevate homes. However, this program did not begin subsidizing elevation until three years after Katrina occurred, which created a great deal of extra expense as many homeowners had already rebuilt and then needed to elevate later, rather than doing the rebuilding all at once. This issue illustrates the need for coordination between the timelines of recovery dollars, rebuilding procedures, and insurance requirements.

New standards and policies can also damage recovery, if appropriate subsidies or financial mechanisms are not made available to help property owners build or rebuild to the new, higher standards that are put in place. For example, in New Orleans, the Road Home program was designed to help homeowners rebuild, but homeowners received funds based on the pre-Katrina value of their home, not the cost of new construction of a similar home. This created vast inequities between neighborhoods that had lower real estate values and those with higher values; historically African-American neighborhoods were especially hard-hit, because their pre-storm values were lower than the cost of building a new home and families therefore received inadequate funds for rebuilding. This left many families and residents unable to rebuild their homes, despite receiving significant recovery dollars which then became tied up in a lengthy process of arbitration.

# Examine Policies and Standards for Effects on Real Estate Markets

# PHYSICAL SECTOR

Finally, existing policies about new construction can also have unanticipated consequences after a disaster, when new construction may occur at scale and can affect the character of a community. In San Francisco, where two-thirds of residents rent, there are restrictions on the conversion of rental housing to for-sale condominiums to maintain affordability and keep the city diverse. However, these restrictions no longer apply once a building is demolished and rebuilt; a building owner can then replace affordable rentals with condominiums, which create greater profit. After an earthquake, this policy could lead to unnecessary demolitions and a sharp decrease in the amount of affordable rental property available to residents, unless appropriate legal changes and subsidies are put in place to help maintain affordable rental property.

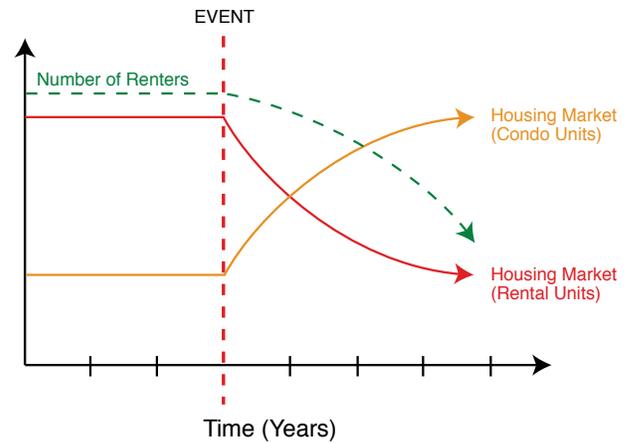


Diagram 16. Consequences of Rental Housing Loss Post-Disaster

## Case Study: NORA and the 50 HERS Rating Standard

Most new building standards and codes create added expense for builders and developers, and therefore they create added expense for those who want to buy property. After a disaster, new standards and codes should be weighed carefully to consider both how they protect families, and the amount of added expense they generate.

After Hurricane Katrina, the New Orleans Redevelopment Authority (NORA) wanted to ensure that developers and neighborhood organizations were rebuilding homes sustainably and to a high energy-efficiency standard. NORA administered a federal subsidy program that would help developers rebuild homes for middle-class and working-class families who would otherwise be unable to return to their houses because the expense of rebuilding was too great. In many cases, this was not because the homeowners were irresponsible, but rather because their home values were lower than the cost of replacing and elevating their homes, so they did not receive enough insurance money to fully rebuild.

In trying to set a high standard, NORA required that half of the houses receiving these subsidies obtain a 50 Home Energy Rating System Index (HERS) Index or better; the others had to achieve a 70 HERS Index. HERS is a method of calculating energy efficiency: how much energy a home needs on a daily basis. A 50 HERS Index requires a very low level of energy usage for a house – it must use approximately half the energy of a code-compliant home of the same size, which would have a HERS rating of 100. As a reference point, the Builders Challenge program from the U.S. Department of Energy requires that buildings have a HERS Index of 70, or use about 70% the energy of a code-compliant home.

The requirement to meet a 50 HERS rating has created significant up-front costs for developers in insulation, low-energy windows, and other energy-efficiency factors that could instead go into other mitigation standards such as higher elevation to make the home less vulnerable to floods. Developers who were midway through the design process had to go back and revise specifications, adding to predevelopment costs, to meet the new standard. Furthermore, the additional time spent re-specifying caused further delays to the already slow rebuild process in low and moderate-income neighborhoods. The requirement has also raised the price of houses overall so that fewer working-class families are able to gather the remaining money to rebuild their homes using these federal subsidies, creating a more exclusive housing market and reducing the scale and speed at which neighborhoods can recover.

## Keep Land and Buildings in Commerce Post-disaster by Creating Streamlined, Place-focused Processes

## PHYSICAL SECTOR

*Creating a streamlined process for evaluating the safety and ownership of land and buildings, then returning these buildings to commerce, is a crucial step to enable speedy rebuilding after a disaster. Focusing processes geographically can allow new, innovative ways to ensure that residents can reinvent their neighborhoods, and that new owners invest in their properties.*

An essential step after a disaster is to evaluate whether buildings can be immediately reoccupied and restored to their current use, or whether they need to be rehabilitated or demolished. Some disasters that have a risk of recurring regularly, such as earthquakes or floods, may also make certain areas of land unsafe or unusable. Land and buildings will be out of commerce during this evaluation period, which will make it difficult for people to begin the rebuilding process.

Given that these obstacles will always have a negative effect on the real estate market, helping willing residents overcome the many obstacles in the rebuilding process will instill confidence that their neighborhoods are returning, and will reduce the number of residents who leave the community out of frustration or trauma caused by the disaster and lengthy recovery process. Streamlining processes by providing one central agency liaison and set of required documentation, as well as ensuring that recovery agencies have adequate staffing, will help recovery proceed quickly and at scale.

Despite government and non-profit funders' best efforts at streamlining processes, a certain percentage of properties will remain difficult to reoccupy or sell, including:

- Properties without clear title. These properties are especially prevalent in historic neighborhoods or neighborhoods with high percentages of long-

term family ownership. After Hurricane Katrina, many properties that had been family-owned for generations did not have clear title allocated to one person in the family, which created obstacles when family members applied for recovery funds or tried to gain permission to rebuild these properties.

- Properties that have been voluntarily sold to the government. Some owners may choose not to return, and may sell their properties to a government entity (necessitating resale or some form of land banking).
- Abandoned properties. Other owners who do not return may simply abandon their properties, requiring administrative work to track them down or extract the property from their control.

Creating geographically-focused processes of recovery and blight remediation can help to get these difficult properties into the hands of willing residents. Next-door neighbors, neighborhood organizations, and local non-profits and businesses all have a stake in ensuring that these difficult properties do not remain unoccupied or blighted. Assisting these local individuals and organizations to buy the properties is a proven strategy for moving properties off the city's maintenance docket and back into occupation and commerce.

# Keep Land and Buildings in Commerce Post-disaster by Creating Streamlined, Place-focused Processes

## PHYSICAL SECTOR

### Case Study #1: Building Occupation Resumption Program

San Francisco's Department of Building Inspection has created the Building Occupancy Resumption Program (BORP) as a tool to help expedite post-earthquake recovery for key buildings and businesses. The program allows building owners in San Francisco to pre-certify a private post-earthquake inspection of their building by a qualified engineer, avoiding a potentially very long wait for a city employee to inspect the building and approve it for re-occupancy.

Before the earthquake, the building owner must work with an approved engineer to perform an initial inspection to identify the building's structural system and prepare documents to be readily available for the post-earthquake inspection, such as construction drawings and an emergency inspection plan that is tailored to the building's specific characteristics and potential areas of vulnerability. When an earthquake occurs, the building owner will then already have in place a relationship and agreement with an engineer and a specialized checklist for their post earthquake inspection. These documents must be maintained and updated annually. After an earthquake, the inspection plan can be quickly implemented and the building re-occupied.

This type of program is especially useful for buildings that house essential services or major employers that are critical to the economic health of the area. To date, 47 buildings in San Francisco have a BORP contract in place.

### Case Study #2: Louisiana Land Trust Properties

The Louisiana Land Trust (LLT) was established after Hurricanes Katrina and Rita to absorb the properties of homeowners who did not wish to return to their original Louisiana homes after the disaster. The owners of these properties allowed the state of Louisiana to purchase their properties from them after these disasters, and the state then placed them into this public land trust. The mission of the LLT was established by law as "to finance, own, lease as lessee or lessor, sell, exchange, donate or otherwise hold or transfer a property interest in housing stock damaged by Hurricane Katrina or Hurricane Rita."

The LLT faced a number of challenges in distributing the properties it owned: it did not have the power, resources, and staffing necessary to establish the status of these properties and to create a streamlined process for reintroducing the properties to commerce. This was partially because local agencies were made responsible for selling the properties; these agencies feared the putting too many properties in private hands would flood the market and result in neglect from the new owners. But even when private sector developers or residents wished to buy the properties and develop them, there were often long delays and conflicting information resulting from low capacity within both the LLT and the local agencies. As of 2012, the LLT has had to shut down due to lack of continued operating funds and return thousands of properties to municipalities across the state. The municipalities will now have to find new funds for maintenance and resale of these properties, or else come up with new strategies for their use.

Despite the staffing issues, LLT did have one fairly successful program for distributing land bank properties into the hands of neighborhoods and residents: the geographically-focused "Lot Next Door" program. This program allowed the neighbors living next door to vacant lots to purchase them for a very low price in return for a promise to maintain and use these lots. This program was successful because it recognized the need to distribute these lots efficiently, and relied on a very simple geographic strategy to attract buyers and confirm their interest in maintaining the property. As of January 2012, this program had distributed 667 total lots, with an additional 400 buyers in the pipeline; this represents about one-fifth of the 5,000 properties formerly held by LLT in New Orleans.

*Recovery is a process that takes place over time and at scale. Creating open data sets that can be sourced from the public, and using data to generate informative maps, will help show how recovery is proceeding geographically and create new, nimble strategies based on these results.*

The ability to monitor the physical environment comes from many agencies, non-profits, neighborhood organizations, and residents making their data available for government and public use. Crowdsourcing of information is useful immediately after a disaster and in long-term recovery, because one agency often cannot effectively monitor recovery progress over an entire city or town without help from other volunteer organizations. CrisisCommons and Ushahidi are two groups that have used crowdsourced online maps and data to monitor immediate post-disaster needs for rescue workers and emergency services.

In the short-term disaster response timeline, accuracy and verification of data can be an issue, but the advantage of having real-time information from numerous sources to provide emergency services usually outweighs these concerns. During long-term recovery, organizations often caretake and formalize data distribution by displaying census and local government data sets for the public in order to monitor recovery progress. In New Orleans, organizations such as the Greater New Orleans Data Center and WhoData have been developed to share data sets from public and non-profit organizations. More recently, the New Orleans city government has also begun distributing geographically-based blight data and other neighborhood data on its website.

Having up-to-date maps of recovery progress over time allows community members, governments, and organizations to hold one another accountable for recovery progress as it appears on the ground, rather than reciting statistics that may not reflect results at

the correct scale. Resilience comes from making interventions at multiple physical scales, from altering individual buildings, to improving neighborhoods and their community assets, to upgrading the broad regional transportation and infrastructure systems.

- At the building scale, it's important to look at many of the issues already discussed in this section: the standards and policies that create more disaster-resistant buildings, and the need to keep these individual features monitored to understand progress on putting them back into commerce. Maps of recovery and blight can reveal where these strategies are succeeding, and where they may be stalling or holding up the progress of recovery.
- At the neighborhood scale, it is important to combine maps of housing recovery with maps that

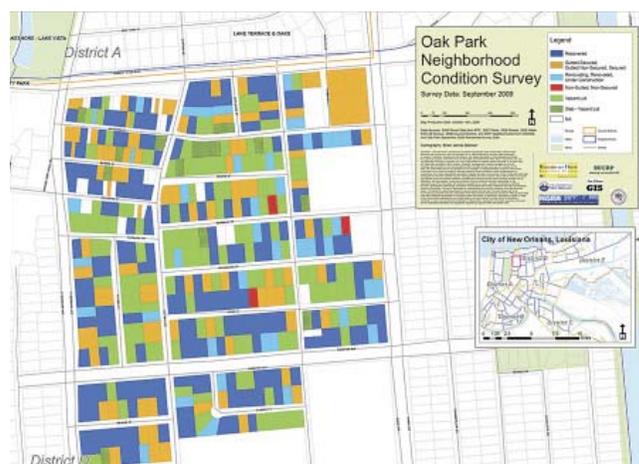


Image: Parcel Map used for Beacon of Hope Community Surveys. Source: Beacon of Hope, 2010.

show the recovery of key assets like schools, parks, and retail stores to understand the interrelationships of the recovery of these types of assets.

- At the infrastructure or systems scale, maps of important lifelines and access to transportation will help identify key assets and vulnerabilities. This image, from the Dutch Dialogues water management planning process in New Orleans, provides a good example of a map that successfully diagrams a regional process with changes to major infrastructure.



Image: Water Infrastructure Planning at the Systems Level. Source: Dutch Dialogues, 2010.

#### Case Study: Beacon of Hope Resource Center

The Beacon of Hope Resource Center was founded in New Orleans' Lakeview neighborhood, one of the hardest-hit areas during Hurricane Katrina. Beacon of Hope uses both citizen involvement and mapping expertise to gather data and represent the progress of recovery in New Orleans neighborhoods.

Early on in the recovery process, Beacon of Hope created walking maps to enable neighbors to report the progress of recovery on a block-by-block basis and identify blighted properties and infrastructure problems. Initially, the non-profit simply reported this data to authorities. Over time, however, Beacon of Hope has become more involved in identifying the reasons behind the blighted properties and helping to rectify the underlying causes of weak long-term recovery. The non-profit searches public records to identify what obstacles have prevented owners from returning and try to help remove those obstacles, or to identify why the new owner has not made improvements.

Currently, Beacon of Hope is working to develop online and smartphone applications so that citizens can report blight more quickly, and non-profit staff can benefit from the automation of this collection. To deal with the potential errors in this crowdsourced data, the non-profit still takes responsibility for checking through the data to reduce or eliminate potential errors and incomplete data entry problems.

More information about Beacon of Hope is available at: <http://www.beaconofhopenola.org/>.

# Notes

**MISSION STATEMENT**

“Create a compelling, actionable, and inclusive process for sustainable community resilience and recovery.”

- Developed by EnviRenew Resilience Principals and Interns, June 2011

**DEFINING RESILIENCE**

“Resilience is the capacity of a system to be able to prevent, withstand, absorb, adapt to, or bounce back from a shock (whether the shock is sudden, evolving or cascading). It is, in part, reaching a point where a community is able to mitigate, absorb, and manage its vulnerabilities.”

-Doug Ahlers, “Acting In Time Initiative”

**TOOLS FOR THINKING**

Communities can experience “fast” disasters, characterized by a sudden shock to a thriving community; “slow” disasters, characterized by an ongoing process of disinvestment and decay; or “hybrid” disasters, which include both sudden and ongoing features. This framework helps to define ideal long-term recovery actions.

Disaster recovery proceeds through distinct short-term and long-term phases. Communities that understand these phases will be able to plan ahead and maximize their use of resources and funding during the long-term recovery process.

The “window” of recovery funding lasts approximately five years before government funding and donor dollars move on to another disaster elsewhere. Establishing a long-term recovery initiative that runs on this timeline will benefit communities’ ability to efficiently allocate capital.

Reaching a critical mass of investors that want to return to a city, neighborhood, or block will create a “tipping point” that allows the private market to continue this long-term recovery process. Defining a geographic zone and focusing resources to quickly rebuild it will help generate the investor confidence to create this critical mass on a broader scale.

After a disaster, cities that are more effective at leveraging resources and imagination to “tip” their communities into recovery will see significant benefits, while cities without this ability are unlikely to recover to their previous level of social welfare.

**TRIPLE BOTTOM LINE FRAMEWORK**

The triple bottom line approach considers the social, economic, and physical assets of a community and shows how these assets are interlinked. Resilience relies on strengthening all of these aspects of a local environment in order to create value.

**SOCIAL SECTOR**

Community capacity allows a community to use its internal skills and assets to achieve defined goals.

Social capital allows a community to access external assets by leveraging its internal resources.

Keeping citizens informed about the long-term recovery timeline will help retain population after a disaster.

Creating an accountability plan enables coordination, clarifies funding allocation, and gives residents clarity on where to access rebuilding resources.

**ECONOMIC SECTOR**

Using a triple bottom line approach to value community assets will help define the need for funding after a disaster.

Business and market continuity define supply and demand after a disaster - both are critical to sustain a local economy.

Investing in human capital (existing residents and newcomers) will reduce blight, retain businesses, and create strong social bonds.

**PHYSICAL SECTOR**

Creating actionable, enforceable, forward-looking urban plans will help communities reach their potential in rebuilding after disaster.

Policies and standards for rebuilding can improve a community; however, if not carefully evaluated, they can also hamper recovery or create unintended consequences.

Streamlined, place-focused rebuilding processes will enable neighborhoods to rebuild with speed and at scale.

Using open data sets and mapping recovery data will help create new, nimble geographic recovery strategies.



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