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HOUSING ISSUES IN FUTURE U. S. DISASTERS

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SUMMARY

In the event of an earthquake, particularly an urban-centered earthquake, housing is typically hardest hit, representing ninety percent of the buildings damaged and fifty percent of the value of damage. The social upheaval in temporary sheltering and the financial burden of reconstruction are often beyond the capacity of most aid organizations and governments. In the United States, two earthquakes and one hurricane have hit three major urban areas, the San Francisco bay region, greater Los Angeles, and Miami/Dade County overwhelming traditional government recovery programs, and pushing insurers to insolvency. Similarly, the governments of Japan, Turkey, Algeria, and Taiwan were unprepared for the recovery costs in recent earthquakes.

These experiences have demonstrated three fundamental differences in the way we now evaluate losses and plan for post-disaster recovery. First, we now understand that we have systematically undercounted housing-losses in past disasters and this affects our loss projections for future events. Second, future losses in earthquakes will continue to inflict major economic losses, and the burden of recovery has shifted away from insurance and onto the individual victims, charities, and governments. Third, the visibility of disasters through the media will assure that government response will be highly politicized. Societal expectations for public financial assistance will grow, even as governments and charitable aid organizations acknowledge the limits of their capacity to fund recovery.

INTRODUCTION

For Americans living in California, Florida, or the Carolinas, where the evidence of destruction from recent earthquakes and hurricanes is still visible, the potential for another disaster is both immediate, yet difficult to fathom and easy to deny. Despite all the efforts at public education, people are not voluntarily improving their homes and commercial buildings. Instead, most citizens "come to grips with" the potential for a major earthquake or storm in their community by expressing outrage over the doubling and tripling of their homeowners insurance premiums, and bemoaning the limitations on payments for earthquake or hurricane damage built into their polices. There is sometimes an equivalent degree of outrage among some who find their policies canceled entirely because their insurer has decided to leave the state entirely. But most American citizens usually temper their anger by repeating what has become

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the disaster mantra: "Why pay for insurance? If it's that bad, FEMA (the Federal Emergency Management Agency) will come and write us a check."

The combination of aid and insurance used to finance disaster recovery is wholly inadequate to meet the needs of urban populations. The present system of disaster recovery in the United States was never designed to provide as many as 300,000 homeowners with insurance payments and/or government loans of $40,000 each, and the present system is completely incapable of covering the costs of repairs in some 50,000 apartment units. Yet that is the scale of the loss experienced in Dade County, Florida after Hurricane Andrew and in Los Angeles, California after the Northridge earthquake. The chance that $20 to $30 billion will ever be available to homeowners and local governments to finance disaster repairs is virtually nil. Neither the taxpayers nor the insurance industry will stand for it.

In future urban disasters, the current model will not work. But why should low probability events like urban disasters be on anyone's policy agenda? Because in the United States, as in most nations of the world, we no longer live in a rural society. Increasingly the U. S. is made up of urban dwellers concentrated on the coasts. Disaster losses now average one billion dollars per week. Note that the Northridge earthquake, alone, constituted one year's worth. Although less than one percent of U. S. Gross Domestic Product (GDP), annual losses in China often reach five to seven percent of GDP, and Hurricane Mitch, by itself reduced the Central American GDP by 50 percent. Worldwide, losses are doubling or tripling each decade, even after adjusting for inflation. Equally important, the character of the loss is changing as a result of urbanization, density, and a concomitant dependence on an increasingly fragile infrastructure [1].

FIVE YEARS WITH ONE CATASTROPHE AFTER ANOTHER

During the fall of 1989, within a month Hurricane Hugo devastated the South Carolina coast near Charleston, and the Loma Preita earthquake shocked the San Francisco Bay Area. Hugo caused $6.4 billion in damages, nearly half or which reflected damage to residential structures. Nine thousand homes were destroyed, 26,000 were severely damaged and another 75,000 had some minor damage. Loma Prieta damage was valued at $7.4 billion, of which 45% was attributed to private property. Half of that was residential, with about 11,500 units destroyed or severely damaged and 31,000 units with minor damage [2].

Federal and state emergency managers were stunned by the scale and the circumstances of these back-to-back disasters. These were the most costly disasters in U.S. history and they were urban. Damages were concentrated in privately owned buildings, largely non-engineered, light weight wood-frame residential structures. In South Carolina, the combination of private insurance, National Flood Insurance, Small Business Administration (SBA) loans and Federal Emergency Management Agency (FEMA) grants were sufficient to allow the state to claim 90 percent recovery within one year. However, many of the post disaster evaluations suggest that the homes of the rural poor and most multifamily structures were largely overlooked, unassisted, and un-repaired. Moreover, engineering and policy reviews raised questions as to why governments and insurance companies allowed low-quality construction with insufficient wind resistance to be built in high-hazard coastal areas [3].

In California, more than 60 percent of the housing units lost as a result of the Loma Prieta earthquake were in multifamily structures, and overwhelmingly these units were occupied by low-income renters. One year after the event, the single family homes were largely repaired but no owners of multifamily dwellings had begun construction [4]. The frustrations with the uneven treatment of poor and minority victims and the lack of any programs for the repair of multifamily housing led the California OES and the National Center for Earthquake Engineering to host a Symposium on Policy Issues in the Provision of

Post-Earthquake Shelter and Housing in October of 1992, which coincidentally took place two months after Hurricane Andrew, the newest, most expensive disaster in U.S. history.

Thus, while trying to understand the housing and recovery issues from 1989, the federal government was once again overwhelmed by another catastrophic urban disaster where the physical damages cost $23 billion, of which 70 percent represented residential structures and contents. Nearly 50,000 housing units were destroyed and a total of 136,000 units were damaged. Then, in the spring and summer of 1993, nine Midwestern states were inundated by a five hundred-year flood on the Mississippi River. The total damage ranged between $15 and $20 billion, and another 50,000 homes were damaged. Six months later, the Northridge earthquake rivaled Hurricane Andrew for the top spot as the costliest disaster in U.S. history, with damages at $26 billion. Once again, half the damage was in residential structures: 60,000 units were destroyed or severely damaged and more than 300,000 had some minor damage. In this disaster 85 percent of the inspected damages were in multifamily structures [2], although in the final count, the cost of damage to single family dwellings swamped the housing loss numbers and shocked the insurance industry.

In a five year period, between 1989 and 1994, five U.S. disasters caused $75 billion in damages half of which was in residential structures: 200,000 housing units were destroyed or severely damaged, 600,000 were damaged and in need of repairs. The total number is roughly equivalent to the total number of housing units in the City of Houston, or metropolitan Seattle. It is also more than half the number of housing starts in the United States in a single year.

WHY HOUSING MATTERS

The importance of the damage caused to housing in disasters (and on the ways in which individuals and communities recover) derives from the fact that housing makes up the greatest portion of the building stock in any community--about 60-70 percent of the built environment. From census data we know that there are approximately 112 million housing units in the United States, the majority (75 percent) are concentrated in urbanized areas. Florida and California, two highly populous, highly urbanized, states at greatest risk from earthquakes and hurricanes have 17 percent of the nation's housing [5].

The American dream is one of home ownership and American policy from federal tax laws to local land use planning has always supported that ideal. In fact, single-family homes account for 64% of the total housing stock, but every home is not occupied by an owner. Similarly, not every multifamily unit is occupied by a renter. With the invention and promotion of condominiums in the 1970s, new multifamily buildings were constructed for individual ownership of the units, and many existing rental apartment buildings have been converted to condominium ownership. At the same time, many single-family homes are available for rental. Thus, Americans have a housing stock in which about 60 percent of the units are in single family homes, but only slightly more than half of the total units are owner occupied.

Understanding the nature of the housing stock and the potential for housing loss is central to understanding the impact that disasters have on people's lives and on their ability to personally and financially recover. The collapse of the Northridge Meadows apartment complex in Los Angeles in the 1994 Northridge earthquake, which killed 16 people, made national news headlines. The failure of this relatively modern wood-frame building was significant because it contradicted the popularly held belief that American wood-frame structures are relatively safe in earthquakes. In fact, the damage to Northridge Meadows and other modern wood-frame residential and commercial structures exposed a historic lack of attention to seismic design issues for non-engineered structures in California's building codes [6].

The American system of wood-frame construction is still one of the safest in the world, but the amount of damage to housing and commercial structures in Los Angeles raised questions about the efficacy of the whole system of building construction (from design standards to construction quality) that allowed for so much damage. Building standards are not simply created by architects, engineers, and building officials. The building industry is largely controlled by development and real estate interests who strive to keep costs down. When codes are written, the demands of various interest groups are met, and the building code is a compromise. The standards of best practice are tempered by market forces.

Defining "acceptable" levels of damage from disasters that may or may not occur over the life of a building is one part of the complexity inherent in the regulatory process. In order to keep front end costs down, modern codes allow for buildings to crack and sustain other types of damage from wind and earthquake forces. Architects and engineers understand that codes are minimum standards designed to protect life safety, not to guarantee the performance of a building under unusual loading. Building owners and the general public, by contrast, perceive codes as the penultimate measure of safety. The reasonable compromise that allowed non-structural, non-life threatening damage as acceptable in the event of strong earthquakes, seemed much less reasonable or acceptable when owners of damaged buildings started to add up the costs incurred in recent disasters.

In short, housing is important not only as a key sector in the nation's financial infrastructure, but also in the social infrastructure of cities. Houses and neighborhoods are chosen not only on price, but also on the quality of schools; the proximity to jobs; and availability of transportation, services (such as day care or health care), parks, shops, and other social amenities. Owners and renters alike are attached to their neighborhood. At a personal level, they are familiar and comfortable with the grocers and dry cleaners, and neighbors in the community. At a functional level, their location in the region serves their financial and personal needs. How Americans finance, build, own, and insure housing influences the type of losses caused by disasters as well as the capacity to recovery, socially and financially, from disasters. The same is true for all urban centers in the developed world.

HOUSING RESTORATION AND COMMUNITY CONSERVATION

In the immediate aftermath of any disaster, sheltering the victims is one of the great challenges posed to government officials. In the long term, planning, design, and the redevelopment of damaged areas, poses other challenges for governments and financial institutions. The 1995 earthquake which struck Kobe, Japan caused six thousand deaths and damaged $90 billion worth of buildings and infrastructure. Although the earthquake's magnitude was similar to the one in Los Angeles the year before, the location of the epicenter in the dense urban center of the city contributed to the scale of the losses. Kobe's experience brought home the lessons of vulnerability for cities around the globe.

The 1995 Great Hanshin and the 1994 Northridge earthquakes both had significant impacts on housing. For planners, the recovery process raised numerous dilemmas in land use, density, infrastructure replacement, and design. For individuals and for government, the dilemmas revolved around finance. Now that several years have passed, it is useful to examine: 1) the government approaches to sheltering and housing recovery, 2) methods for expediting the delivery of housing, and 3) lessons for other metropolitan areas at risk.

The Northridge earthquake was the first disaster in which systematic information on damaged buildings was compiled in a database and used by government to make sheltering and recovery

decisions. The data, based on local building inspections, revealed that 60,000 housing units were seriously damaged by the earthquake, and approximately 400,000 units had minor damage. The majority of these units were in apartment buildings. The damage appeared to be heavily concentrated in the San Fernando Valley, with 15 neighborhoods dubbed "Ghost Towns" where 40 to 90 percent of the housing was uninhabitable. Two to three years after the event, it became clear that there was also costly damage to about 300,000 single-family homes. The information on these damages only because evident as insurance claims were tallied. Total losses were estimated at $40 to $50 billion, with direct capital losses at $25 billion.

Because of high vacancy rates in the Los Angeles housing stock, victims were rehoused within six weeks, with government assistance for transitional rental payments. Federal grants provided funds to rebuild about 20,000 units, and nearly 300,000 families received small repair grants. Additionally, homeowners had access to private insurance. Only apartment owners were left to finance their own repairs.

In Kobe, Japan, the damage to buildings and infrastructure dwarfed the losses in the Northridge earthquake. Port facilities, freeways, and railroads were extensively damaged. About 4,000 commercial, industrial, and public buildings were heavily damaged or collapsed. In total, approximately 400,000 housing units in 190,000 buildings were uninhabitable. The total losses were estimated at $150 billion, with direct capital losses at $90 billion.

The displaced population lived in shelters for nearly a year, and many were transferred to the 48,000 temporary units assembled by the government and placed in parking lots and open sites outside central Kobe. Private insurance was largely unavailable in Japan, and most families had to rely on savings for repair or reconstruction. The government undertook an ambitious plan for "lot-line readjustment" in about half of the heavily damaged wards, which delayed individual construction projects. Although the government issued a three year plan to build 125,000 housing units, government funds were used for only about 28,000 units of public and elderly housing. The other units came from private sector development.

In both events, residential buildings represented about 50 percent of the damage. The U. S. government contribution to sheltering and housing recovery represents about 18 percent of the total expended, while the Japan government contribution to housing is estimated at about 6 percent of the estimated damage value. Although the estimates of expenditures on housing are imprecise, it is interesting to note that each country spent $5-6 billion on sheltering and housing recovery in each event.

In Los Angeles, sheltering was not a difficult problem because the economic recession had caused high vacancy rates (8-9 percent) in rental housing throughout the area. By contrast, in Kobe, rental vacancies were extremely low, and 316,000 people were housed in evacuation shelters after the event [7]. Thus, more than half of the Japan government's expenditures went toward the provision of temporary shelter. One has to question whether temporary shelter could or should be rethought as immediate as well as permanent replacement housing, so that victims could more quickly resume their "normal" lives and government expenditures for housing could serve long-term needs.

Government programs built 20,000 units in Los Angeles, and only 30,000 units in Kobe, despite the greater housing loss. In both cases, reconstruction was left to private sector initiatives. Balancing temporary and permanent housing expenditures can make a major difference in long-term urban quality. Compare the experience in Los Angeles and Kobe with Mexico City (after 1985) or Turkey (after the 1999 earthquakes). Mexico City's official estimate of 76,000 housing units lost is probably low, but still, the government provided nearly 100,000 replacement housing units in a two-year period. Similarly, the 1999 earthquakes in Istanbul and Düzce left 600,000 homeless. With help from World Bank loans, the government has built 43,000 housing units in five years. In both cases, policy decisions minimized expenditures on temporary shelter, and concentrated on housing construction. While outside aid is clearly a critical factor in housing replacement in developing countries, the idea that resources are concentrated on replacement housing is an important policy model.

RECOVERY IS BASED ON POLICY, PLANNING, AND FINANCE

In the event of a major disaster, what happens immediately afterward follows a fairly predictable path. The first stage is the emergency response. Fires are put out. Searches are conducted for the injured and the dead. Victims are rescued; hospitals set up triage operations to attend to the injured. Those without food or shelter are directed to pre-determined public buildings to be used for shelters, but many fend for themselves in backyards and parks. Victims and emergency service providers alike are trying to get some information on the extent of the damage. The process may be slow if communications are down, power is out and road networks are interrupted. At the same, time teams of volunteers, government officials, and technical experts will pour into the area to assess the damage and organize the relief efforts.

As the crises of the immediate post disaster period are brought under control, the two most pressing needs are: 1) to begin to restore power and lifeline services, clear roads of debris and re-route traffic until infrastructure repairs can be made; and 2) to move displaced victims out of the shelters and tent camps and into some form of temporary housing. The first activity is largely within the control of government agencies and utility companies; the second involves a complex process of interactions among volunteers, victims and government officials.

The recovery stage is much longer and much more complex. The speed and the nature of the public investment in infrastructure will often determine the capacity and the speed with which the private sector can recover. Now, however, it is clear that a larger public planning role is emerging in the management of private recovery. Beyond the granting of building or use permits, the new recovery planning ties the use of public and privately owned space to recovery policy and public finance, re-opening the question of how society organizes disaster response and pays for recovery.

In the new model, insurance is limited so the federal government plays an important role in handling natural disasters, not only in emergency assistance, but particularly in the provision of resources and policy for long-term recovery. These may include funds for construction as well as pre-disaster damage prevention technology. Similarly, state and local governments play a

critical role through land use controls and the enforcement of building codes before disasters, and in creating mechanisms for expediting construction after disasters.

CRITERIA FOR SUCCESSFUL RECOVERY

Obviously, many factors contribute to the capacity of a community to successfully rebuild after a disaster: the political and economic conditions; the nature of the state's role, the regulatory system; and the disaster management system [8]. The most important, however, is the system of finance for housing repairs. One approach is for a government to take on the entire program of rebuilding. In developing countries, various international aid organizations will assist the government with financing and technical assistance to build replacement housing when a particular area has been hard hit. This model assumes that individual victims are too poor and too devastated to rebuild on their own. This somewhat paternalistic model was developed and applied after a number of disasters in the 1970s. For example, international relief organizations financed and oversaw the construction of new housing in downtown Managua, replacing some 40% of the city's housing stock, after a devastating earthquake. The Italian government committed funding and expertise to rebuild towns in the Friuli region in the north, and the Campania-Basilicata region in the south, when scores of towns were destroyed by a series of earthquakes.

Although well intentioned, in many cases the funds were sometimes misappropriated, and the housing built was often inappropriate to the climate, social, and economic conditions in the affected community. In response to criticism, the "infusion of aid" model was modified in the 1980s to mix the provision of replacement housing by outside contractors with locally managed self help building programs, as aid organizations recognized that large scale interventions often caused other difficulties.

In the United States and other developed countries, where standards of living and personal wealth are higher, no one would expect an outside entity to rebuild the homes of disaster victims. Homeowners and businesses are expected to insure their investments against catastrophic losses, or borrow from banks to finance property repairs. The American Red Cross and other charities were formed to help provide for those without access to other resources. However, in the event of a major disaster, the federal government is expected to provide an infusion of capital to assist in the repair of public infrastructure. Over time, the government has taken on the additional role of providing supplementary assistance for citizens for emergency relief and home repairs. The enormous cost of several recent disasters, however, has made governments rethink their spending commitments, and created an opportunity to rethink disaster policy.

The New Cash Infusion Model

In the absence of tougher design standards and disaster insurance, governments could develop a recovery policy that sets aside capital for the replacement of uninhabitable units. Despite public perception that the federal government will bail out local jurisdictions and citizens in the event of a disaster, under current policy, most federal assistance is a small supplement to private funds. With a targeted rebuilding strategy, the government would acknowledge that private

insurance was not feasible, and would fully assist a devastated locale with emergency and temporary housing as well as with funding subsidies for replacing and repairing damaged housing. This is essentially what happened in Mexico City, and it is the basis of the "cash infusion model" so often applied outside the U.S. Here, the federal government would serve in a capacity similar to that of the World Bank or the United Nations in financing public and private rebuilding after a disaster.

Economically, the approach is rational and probably cost effective. Politically, it is fraught with land mines. How would the government distinguish a catastrophic disaster triggering massive federal recovery intervention, from the 30-40 garden-variety events (floods, snowstorms tornadoes, and little earthquakes and hurricanes) in which, presumably, they would limit assistance to funds for public infrastructure and emergency relief for citizens? Politicians have left the current policies intentionally vague, to allow for special appropriations if they can convince their colleagues or trade for support of other legislation. How much more difficult would the process be if massive appropriations were at stake?

At the local level, would small cities like Santa Cruz, California, Charleston, South Carolina, or St. Petersburg, Florida, trust that the federal government would respond to the needs of their citizens in the same way that they would to the large powerhouse cities like Los Angeles, Miami, Boston or New York? The ultimate question for local governments and citizens attracted to this "do nothing until it happens" model, is whether they are willing to bet that the government will be there for them in the event that a serious disaster creates a housing crisis within their city.

In any cash infusion model, there are technical as well as political problems. Most significant is the potential for seriously diminished standards of construction and maintenance. If an owner expects to receive government funds in the event of a disaster, there is no incentive to maintain or improve properties, particularly rental properties. The more dilapidated the property, the more easily damage occurs, the greater the value of the government financing.

The Market Response Model

If one takes the position that government should not provide a safety net for private property losses, then the debate is limited to whether or not the government should simply drop recovery funding programs; and whether or not government should redirect funds to promote protection of property through mitigation programs. If the U. S. federal government simply stopped programs that provided repair and rebuilding funds to private individuals (SBA loans, FEMA Minimum Home Repair and Individual and Family Grants, HUD CDBG and HOME special appropriations), agencies would save one third of the total federal expenditure. For the Northridge earthquake, that amounts to a savings of $4.5 billion of the $13.5 billion spent by government on disaster programs.

Would homeowners and renters in high hazard areas act differently, if they did not expect to have access to federal recovery assistance—probably not. Those who are already risk-averse would continue to be, but most would simply put the car, the kids' orthodontist, and any number of personal expense payments before an investment in insurance, savings, or mitigation.

In the event of a disastrous earthquake or hurricane, many would loose their homes because damage made it uninhabitable, or because the bank foreclosed for non-payment of the mortgage. Homeowners would compete with displaced renters for space in available rentals. Both poor and middle class victims would have to choose between leaving and area and spending extended periods in some form of temporary housing until the market had time to catch up with demand.

The scenario of limited post-disaster housing, limited access to insurance, and extremely limited government assistance for privately owned property is not far fetched. In fact, it was the situation in Kobe, after the earthquake of 1995. While the national government provided temporary shelter for 100,000 displaced victims and promised a construction program for 125,000 housing units, the government built only 28,000 units. In this circumstance, the Japanese government weighed the need for investment in housing in Kobe against other pressing needs to improve infrastructure in Tokyo, or to bolster Japan's economy in terms of international trade.

For the national government, Kobe's housing problems are insignificant when compared to losses in a real estate market downturn. As a result, property scavengers, with the capacity to buy and hold damaged homes and vacant lots, have profited. Many former residents will leave the area, and many others will continue live in damaged units, using their life savings to gradually repair and restore their properties.

The Targeted Finance Model

If one accepts that the disaster recovery problem is at least partially a government responsibility; and if one accepts that the current limitation of the private insurance market; two policy questions emerge: How can the federal government control costs under the present system of limited supplemental assistance for local governments and homeowners; and how might the government re-focus recovery spending to meet the needs of a broader spectrum of disaster victims?

In a policy paper prepared by James Lee Witt, Director of FEMA, and Robert E. Rubin, Secretary of the Department of the Treasury, and submitted to the vice-president in February of 1995, federal officials acknowledge the interdependence between various levels of government, insurance, and business in providing financial protection to those living in disaster prone areas. Officials also acknowledge the evidence that insurance markets are not functioning well and evidence that real estate markets do not reflect expected disaster damage in pricing and land use decisions.

The policy paper essentially endorses the current federal policy of providing supplemental government assistance after disasters and proposes to save costs though proposals for loss prevention initiatives and better management of existing programs. The proposals to reduce losses include funding for communities to develop and adopt building codes and life safety standards for wind and seismic risk, and the use of unexpended relief funds for rehabilitation of public buildings based on performance guidelines. These are minimalist approaches to mitigation, essentially funding jurisdictions which have never had building codes to adopt one,

and supporting the upgrade of a handful of public buildings per year. As mitigation against future losses, the proposal has no effect.

More significant are two proposals to require insurance for federally backed home loans, and to create a Treasury-based reinsurance fund of $25 to $50 billion. The first recommendation is that mortgages issued by federally related entities on newly constructed one to four family structures be required to carry hazard insurance. This initiative, if undertaken for new construction and phased in for existing home sales could have a powerful impact in promoting private insurance. To date, lenders have been unwilling to require disaster insurance on residential properties, because it was not required in the secondary market. Additionally, unless the requirement was a state or national standard, lenders felt their loans would not be competitive.

The second recommendation, that the Treasury create national reinsurance pools to cover industry losses in single large events is clearly an acknowledgment that one cannot require insurance unless it is possible to underwrite it. If such a pool could be created, it would certainly help to improve the availability of insurance, and perhaps it would provide an incentive to tackle the problems in pricing and accessibility of disaster insurance across a broad spectrum of the real estate market. Unfortunately, a federal reinsurance pool may simply provide a safeguard for current insurance practices without any inducement of reforms.

These proposals began to raise consciousness on a potential insurance crisis, but they have been lost in the shadow of the September 11, 2001 attacks and war. Unfortunately, no government agency is focused on natural disasters and very little to being done to address mitigation, recovery financing, or post-disaster housing issues.

CRITERIA FOR SUCCESS

How would we judge the success of any disaster recovery process and how would be set criteria for evaluating a financing program? The success of any recovery effort would be judged by the ability to temporarily re-house disaster victims, while moving quickly on repairs and reconstruction. Five criteria define the process:

1. Losses have to be manageable, that is the volume of damage should be limited by pre-disaster hazard mitigation.
2. Rebuilding and/or repairs need to take place within 2 years.
3. Financing should be available for all economic sectors and housing types.
4. Public or private program funds should not exceed the cost of damage.
5. Public and private program funds should complement, rather than substitute for or duplicate each other [9].

To meet these ideals probably requires that multiple (redundant) systems of public assistance and private insurance are in place, that pre-disaster mitigation is effective, and that the patterns of damage in a particular event influence the patterns of recovery assistance made available.

To create an expedient means of disbursing recovery funds to both single family homes and multifamily structures requires that some hard work be done before another urban disaster strikes. In recent disasters, the lion's share of insurance payments and government grants and loans have benefited single family homeowners with minor damage. To insure that the spatial distribution of assistance matches the spatial distribution of damage, some form of disaster insurance must be available to all housing sectors, and realistically priced. At the same time, before providing such coverage, both insurance companies and government programs ought to be asking what that property owner has done to lessen the potential for damage.

Whether public or private, rebuilding funds should not be wasted. Insurance claims and government grants and loans from past disasters need to be reviewed to distinguish the actual cost of repairs from refinishing and redecorating, and from the replacement of contents and personal possessions which may or may not have been impacted by the disaster. A functioning disaster recovery program may not be able to replace carpets and televisions in every damaged housing unit, but it should be able to make those units habitable.

Finally, public disaster recovery programs should include a physical-planning component. Knowing where temporary or replacement housing could be placed, having a system for expedited permitting, and creating alternative redevelopment solutions before a disaster strikes will ultimately make it possible to rebuild with whatever resources are available. Returning displaced people to their own buildings and/or neighborhoods in a short time-frame is typically less expensive than other interim housing possibilities. As such, speedy building repairs for those with non-structural damage starts the process of neighborhood revitalization.

For other homeless victims, trailers and manufactured portable housing are often expensive and slow to move, but these can be used in an existing neighborhood if sites are made available on secondary streets and vacant lots. By placing temporary housing and social services directly in the affected neighborhoods, the public pressure to repair and rebuild is enhanced, the urban fabric is maintained, along with the social fabric of community. Clearly, an ideal disaster policy must minimize the potential for damage through serious and effective mitigation programs and, when damage occurs, link property owners to reliable sources of recovery capital. At the same time, an ideal policy must delineate how and where redevelopment can and should happen.

FORGING A NEW DISASTER RECOVERY POLICY

New disaster recovery policy will require a comprehensive revision of the government's role, new insurance instruments, and the involvement of the lending community. For government, humanitarian disaster relief ought to be separated from financing for repairs. Existing housing programs in HUD, low-income housing tax credits, and other non-disaster programs could be increased to allow locally based agencies to take control of community recovery. To promote mitigation, it will take a combination of regulation and incentives. To reach a large number of home and apartment owners, it is important to devise policy that taps into the real estate marketplace. Most properties have loans from financial institutions. Most loans are sold in a secondary-market. In the United States, the Federal National Mortgage Association, a quasi-government agency, buys fifty percent of the home loans in the nation. Such a high volume

mortgage underwriter could require safety inspections as part of the sales transaction, or they could charge a small fee to create a disaster lending pool. Standardized federal requirements for inspection or disaster recovery finance pools offer many financial advantages, but there are also many political obstacles. However, real solutions to funding post-disaster housing repairs and reconstruction can happen only in the areas where capital already exists.

Housing is a peculiar economic commodity--expensive, fixed in space, long lasting, and necessary for "normal" modern life. As such, large-scale damage in concentrations of urban housing resulting from natural disasters is both a public and private concern. Socially and politically, we have made a commitment to provide shelter those made homeless in disasters, but we have a responsibility to plan not only for how we are going to build it, but also how we are going to pay for it. In the future, we need pre- and post-disaster policies that are safe, fair, and cost-effective.

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