These papers are preliminary in nature: their purpose is to stimulate discussion and comment. Therefore, they are not to be cited or quoted in any publication without the express permission of the author.
The devastation caused by recent large magnitude earthquakes in Turkey and Taiwan provides a chilling preview of what could happen in a major urban disaster in the United States. The damage to modern buildings and infrastructure cannot be wholly written off as bad construction practices, that won’t happen here. For the first time in human history, we are approaching a moment when more people worldwide live in cities than live in rural areas, and many of those cities are located in areas prone to earthquakes, hurricanes, and other natural disasters.

America’s own experience with disasters in the last decade has focused some attention on pre-and post-disaster policy. After a relatively quiet century, major earthquakes, hurricanes, and floods have become more frequent, and urbanization has contributed to increased damage and dramatically increased costs for repairs. In the five-year period, between 1989 and 1994, the five largest United States disasters caused $75 billion in damage, half of it in residential structures. In just those five events (two earthquakes, two hurricanes, and a 500 year flood), more than 800,000 housing units were damaged or destroyed--that is approximately equal to all the housing units in metropolitan Seattle.

Because relatively few people have been killed in American disasters, Americans tend to under-estimate the real risk of disasters. In fact, Hurricane Andrew, which hit South Dade County, Florida in 1992, and the Northridge Earthquake, which hit the San Fernando Valley in California in 1994 were financial disasters for insurance companies, and each required federal appropriations five to ten times greater than any previous events. Capital losses were about $25 billion in each event. In both cases, half of the total losses were in residential structures. In both cases, insurance paid for about half the
losses, with the federal government picking up the difference. This does not account for
the indirect costs to business and individuals without insurance and/or access to federal
programs. Analysts estimate the total price tag for each disaster at about $40 billion.

These two suburban disasters demonstrated the potential for financial loss in a
major urban event. If Hurricane Floyd would have hit central Miami, or if a Kobe caliber
earthquake were to occur in San Francisco or Los Angeles, capital losses could easily
range from $50 to $100 billion, four times that of Andrew or Northridge. Unfortunately,
in the aftermath of those two disasters, the two primary sources of funding for repairs,
insurance and federal assistance, have severely limited access to capital. Residential
insurance has become expensive and hard to get, and balanced budget requirements now
cap federal disaster spending. Thus, when the next disaster hits a major urban area, there
will be no deep pockets to fund repairs.

Private insurance companies were shocked by losses in Andrew and Northridge
(nine companies were made insolvent). Most companies no longer offering disaster
insurance along with a traditional homeowner policy in California, Florida and Hawaii.
Coverage is only available through state managed disaster insurance pools with high
premiums, high deductibles, and limited coverage. Less than 20% of California
homeowners carry disaster insurance now. Although there has been increased federal
funding for disaster response and recovery, it was never intended to take the place of
insurance. Between 1989 and 1998, federal supplemental appropriations for disasters
totaled $35.5 billion, with $6 billion in 1992 and $8.4 billion in 1994, each reflecting
large expenditures in Andrew and Northridge (See Table 1). Until 1996, these
appropriations were designated as “emergency” funds, and therefore exempt from budget
limitations. The 104th Congress changed that rule and now supplemental disaster appropriations require recissions (cuts) to be taken from other domestic programs. Thus while the public believes that insurance is unnecessary because the Federal Emergency Management Agency (FEMA) will be there to pick up the pieces, the reality is that the federal disaster recovery programs will be subject to political whims and partisan deals.

Who will now pay for the repair and rebuilding of hundreds of thousands of homes, apartments, and commercial buildings in a major urban disaster is an open question. With the cost of urban disasters increasing, private insurance is not available, government agencies are caught between the public pressure to do more and a Congressional unwillingness to pay more, and property owners have no incentives to take actions that would reduce losses and costs. What follows is a review of the evolution of federal disaster policy, a discussion of current programs, and a proposal to improve disaster recovery finance through policies that promote shared risk and responsibility.

The Hayward Fault Scenario

The 1995 Annual Meeting of the Earthquake Engineering Research Institute included a day long symposium devoted to the challenges of a major urban earthquake in the Bay Area, centered on the Hayward fault. In 1999, the USGS released research that suggests a 70% probability for a magnitude 6.7 or greater event in the San Francisco Bay Area. At the same time, further research on the vulnerabilities of various building types and infrastructure systems has confirmed that the potential for loss may be even greater than that was presented in the meeting and the report.

In the ten years since the Loma Prieta earthquake (M7.1 with the epicenter 60 miles south of San Francisco), the damage to freeways and bridges has still not been fully
repaired. It is clear that in a M 7.0 earthquake on the Hayward fault, there would be widespread damage, including bridge collapses and mass disruption in the region’s transportation system, resulting from hundreds of road closures. Repairs could cost $50 billion, six times more than the Loma Prieta repair program, and take longer to complete. Power outages would be widespread; telecommunications would be overwhelmed; lifelines and critical facilities would be severely impacted. Buildings of all types would suffer, but most important, housing damage could reach the levels experienced in Kobe, Japan in 1995.

In reports by the Association of Bay Area Governments (ABAG) and in the author’s research, it is estimated that over 100,000 dwellings would be uninhabitable, and as many as 400,000 could sustain some damage. In a region where rents and home prices are at a premium and vacancies are extremely low, damage to one third of the housing stock in the counties closest to the fault rupture (combined with the business disruption and the inability to travel around the region), would create a social and financial disaster.

The potential for massive disruption is a function of the physical conditions in the region. The building stock as well as the infrastructure is old. The geography of the region has concentrated urban development between the hills and the bay, forcing limited transit corridors with little redundancy, and creating significant distances between the urban core immediately surrounding the bay and outlying communities.

The potential for economic disruption is a function of the changing financial climate. Traditionally, the assumption of risk in any disaster was in the following order: 1) with the owner, 2) with the insurance company, 3) with the federal government, and 4) with the lender. Today, the burden of financial risk is largely with the owner, as
insurance availability is limited; as government devises regulations to limit emergency spending; and lenders sell the mortgages in a secondary market, and typically insure themselves against owners who default, not against damage to property.

The Evolution of Federal Disaster Policy

The American model for providing disaster relief and recovery assistance has always been a mixture of charity, private insurance, and federal programs. Prior to World War II the Red Cross provided emergency relief to disaster victims throughout the country, and federal assistance was limited to specific appropriations designated for financial assistance to local governments on a case-by-case basis. After the war, federal involvement in disaster assistance grew with each succeeding disaster, but usually in the context of providing a “safety net” that paralleled but did not substitute for charitable relief or private insurance.

The programs and policies that evolved over the course of a century are the product of the country’s experience--and lack of experience--with certain types of disasters. Although there were some disaster relief acts passed in response to specific floods and hurricanes in the 1920s and 1930s, the beginning of the federal role in supplementing state and private disaster relief efforts came with the Federal Disaster Act of 1950. This legislation laid the groundwork for the federal government to provide supplementary assistance to states, usually to support infrastructure repair or replacement. Losses to individual victims were not covered by this law.

It was not until Hurricane Camille in 1969, that Congress instituted a program of assistance to individual victims of disaster. Over the years, individual assistance has grown to include temporary housing, individual and family grants, low interest home
loans, long term rental assistance, unemployment compensation, food stamps, crisis
counseling, and legal services. In *Disasters and Democracy* (Island Press, 1999),
Rutherford Platt describes the last half century of federal laws and programs designed to
soften the financial and social impacts of natural disasters as a transition from
compassion to entitlement. He suggests that the federal generosity has served to diminish
the natural caution that individuals, businesses, and communities, might otherwise
exercise in adjusting to natural hazards in their investment and location decisions.

**Expanding Agency Roles and Missions 1989-1999**

In 1988, the Stafford Act reorganized emergency management within FEMA, but
did not streamline previous legislation or change the activities of other agencies. Then, in
September of 1989 Hurricane Hugo left a path of destruction across South Carolina.
When it made landfall, about forty miles northwest of Charleston, it was a category 4
storm with winds of more than 100 miles per hour. Hugo severely damaged many coastal
communities, and cut a 30 mile swath of destruction through the eastern half of the state.
One month later, a M 7.1 earthquake rocked the San Francisco Bay Area, severely
damaging buildings in the cities of Watsonville and Santa Cruz, but also destroying
freeways, bridges and housing in Oakland and San Francisco, 60 miles away.

In 1991, wildfires burned 3,000 homes in the Oakland hills. In 1992, Hurricane
Andrew slammed into south Florida, damaging 1,100 square miles, while Hurricane Iniki
hit Hawaii. In 1993, a 500 year flood on the Mississippi River affected communities in 9
states, and there were more wildfires in southern California. In 1994, the M 6.8
Northridge earthquake struck in the San Fernando Valley, in northwest Los Angeles.
From 1995 to 1997 major floods hit California, North Carolina, Ohio, Minnesota, and
North Dakota. In 1998, tornadoes left their mark across Texas and Oklahoma, and in 1999 Hurricane Floyd missed Florida, but engulfed the Carolinas. Between the big disasters, there were scores of smaller ones. For federal agencies, there was unprecedented pressure to do better and to do more.

The most significant programmatic improvements came in the area of emergency response. In California, emergency communication problems after Loma Prieta and the Oakland hills fire resulted in the development of statewide satellite communications and standardized emergency response procedures. The inequities and problems in sheltering low income victims after Loma Prieta and Andrew led to a review of procedures by charitable and government agencies. Volunteers and staff were trained in cultural sensitivity, foreign languages, and specialized services. At FEMA, regulations were changed to allow federal agencies to take action on catastrophic disasters even before states officially request help.

The housing recovery problems after Hugo and Loma Prieta were met with the standard range of services even though the scale of housing loss was greater than had ever been experienced. Homeowners were frustrated by the maze of programs, each of which required that an owner be rejected by one program before they could work through another application and inspection process. Lower-income homeowners often found they were not “creditworthy” and were ineligible for SBA loans. Apartment owners had equal trouble qualifying for SBA business loans. Low-income renters could not find any alternative housing, and often received no assistance because they could not produce a traditional lease. The post-disaster affordable housing problems were complicated by general problems of housing supply and affordability.
The Loma Prieta experience raised the federal consciousness about housing loss in disasters, and federal services were expanded. After Hurricane Andrew, disaster programs were combined with existing housing programs to help thousands of victims in south Dade County. FEMA provided over 3,600 mobile homes and travel trailers; the US Department of Agriculture developed mobile home parks for farmworkers; and HUD made 8,000 Section 8 rental vouchers available for victims and provided reconstruction funds through the acceleration of Community Development Block Grants (CDBG) and HOME Investment Partnership funds.

It is not surprising then that within hours of the Northridge earthquake, in January of 1994, Henry Cisneros, secretary of Housing and Urban Development, was on an airplane to Los Angeles, ready to offer the resources of HUD to assist with the problems of temporary shelter and reconstruction of damaged housing. The combined resources of FEMA and HUD quickly rehoused displaced residents of all income levels. There were still no special disaster programs for the repair of multifamily housing, and apartment owners faced certain rejection by SBA loan programs, but HUD filled a significant gap with extra moneys in CDBG and HOME funds. The SBA did make 99,000 loans to “credit-worthy” owners of single family homes, amounting to $2.4 billion, one eighth of the value of all the loans for the previous forty years.

The entry of non-disaster agencies like HUD, along with the continued expansion of disaster agencies into new areas has been an attempt to solve the new problems posed by large scale urban disasters. But compassion and politics pushed federal disaster spending to new levels. Table One describes the number of disaster declarations and dollars appropriated from 1989 to 1998. The actual magnitude of federal spending on
disasters is difficult to assess, because while FEMA accounts for its outlays under the Stafford Act, other agencies (such as Agriculture, Transportation, HUD, SBA, the Army Corps of Engineers, etc.) combine FEMA transfers with their own programs and resources. Still, of the $6 billion in supplemental appropriations in 1992, at least $2.2 billion were spent on Andrew, and of that, $1.2 billion was spent on housing. Similarly, of the $8.4 billion appropriated in 1994, $4.7 billion was spent on housing by FEMA, HUD, and SBA, half in loans, half in direct grants. The expansion of agency roles and the large expenditures lead conservative members of Congress from states outside the earthquake and hurricane belt to question the federal role in disaster assistance. In 1996, the 104th Congress offset supplemental appropriations for disaster assistance with recissions of prior domestic appropriations, such as low-income housing, Americorps and bilingual education.
Table 1
Federal Disaster Declarations and Appropriations 1989-1998

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Number of Disaster Declarations</th>
<th>Supplemental Appropriations (current dollars in millions)</th>
</tr>
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<tbody>
<tr>
<td>1989</td>
<td>29</td>
<td>$1,207</td>
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<tr>
<td>1990</td>
<td>35</td>
<td>$2,850</td>
</tr>
<tr>
<td>1991</td>
<td>39</td>
<td>0</td>
</tr>
<tr>
<td>1992</td>
<td>46</td>
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<td>39</td>
<td>$3,474</td>
</tr>
<tr>
<td>1994</td>
<td>36</td>
<td>$8,412</td>
</tr>
<tr>
<td>1995</td>
<td>29</td>
<td>$2,775 (a)</td>
</tr>
<tr>
<td>1996</td>
<td>72</td>
<td>$3,900</td>
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<td>49</td>
<td>$4,700</td>
</tr>
<tr>
<td>1998</td>
<td>62</td>
<td>$2,400 (a)</td>
</tr>
</tbody>
</table>

(a) offset by rescissions


Rising Expectations

In the wake of coping with the appropriateness of agency roles, there was another important question on the minds of most disaster program directors. “What can we do to avoid the bad press we received in the last disaster?” The Loma Prieta earthquake was a big time news event, in part because the national media was already in the area for the World Series, and in part because the damage to the Cypress freeway, the Bay Bridge, and the Marina district was particularly dramatic and photogenic. With the introduction of 24 hour cable TV news, Loma Prieta moved disasters into the same category as wars (and later murder trials); that is, disasters became ongoing events requiring continuous
coverage and regular updates. Television personalizes disaster, and after Loma Prieta, local politicians took advantage of the media to make their case for specialized affordable housing assistance.

This was not lost on other local governments. Witness the head of Dade County’s Emergency Management Office tearfully telling the TV cameras, “Where in the hell is the cavalry? I’d like (President George Bush) to follow up on the commitments he made.” Never mind that Florida officials had not only not asked for military assistance, they specifically said they didn’t want any.

The constant broadcasting and updating of disaster footage (the CNN-ization of disasters) intensified the politicization of disasters light years beyond the ordinary dimensions of pork-barreling. For every unchallenged tirade against the federal government for failure to deliver more services, the federal agencies tried to improve their tattered images by offering more dollars and more services than ever before. George Bush promised to rebuild Homestead Air Force Base (leveled by Hurricane Andrew) in the midst of base closures around the nation. Although President Bush could not make good on the Homestead promise, he did pay 100% of Florida’s clean up costs (instead of the customary 75% federal share). He extended this to Louisiana, and Hawaii (after Hurricane Iniki), and when Senator Hollings complained, North Carolina was retroactively included. Only in California, where Bush was unlikely to receive additional votes, were funds allocated less generously.

In this era, gone was the notion that a federal declaration of disaster signified that state and local resources were overwhelmed. With TV cameras rolling, the federal government was the first on the scene, and in the public mind, the federal programs
designed to “assist victims in need” were transformed into entitlement programs for aggressive individuals and local governments. Constant TV broadcasting has forced the federal government to promise more and more assistance, and the visibility of those promises has built unrealistic expectations, especially now when disaster assistance is going to be traded off against Social Security and other domestic programs.

The Insurance Problem

Just as disasters in the past decade focused attention on the role of government, they have also focused attention of the role of private insurance. Earlier in the century, the government faced the problem of having insurers leave the market because of repeated flood losses, which accounted for 70 to 80 percent of all disasters in the United States. The federal government first attempted to address flood loss through a program of flood control measures (dams seawalls, levees, etc.) begun in the 1920s. The first federal flood insurance was instituted in 1956, followed by the National Flood Insurance Program (NFIP) in 1968. Flood insurance was designed to serve as an alternative to disaster relief, and participation was tied to local mitigation efforts, but many communities did not and still do not participate.

At the time of the Midwestern flood in 1993, only 20 to 30 percent of insurable buildings were covered by federal flood insurance, and communities choosing not to participate in the NFIP received substantial assistance, despite regulations to the contrary. Since then, the program has been reorganized, but problems remain. State and local governments are more likely to defer to real estate and development interests than enforce good building and zoning practices. For its part, the federal government has a hard time refusing assistance to any disaster victim.
Nothing similar to federal flood insurance has ever been proposed for hurricanes or earthquakes. During this century, the infrequency and unpredictability of these events suggested that a combination of private insurance and one time appropriations were adequate. The last decade has changed that view, but the only proposed remedy was a national multi-hazard insurance program, a proposal with few supporters. Most critics fear another government sponsored insurance program would simply condone bad building practices and create a “moral hazard”–a situation where an insured party has lower incentive to avoid risk, because an enhanced level of protection is provided.

At the time of Loma Prieta, only about 20% of Californians had earthquake coverage, as a rider on their home insurance. Why did so few homeowners carry a policy? The reasons are varied but generally included these, published by Risa Palm from survey data:

1. Homeowners did not think “it” would happen to them.
2. Homeowners perceived premiums and deductibles as too high.
3. Banks did not require earthquake insurance.
4. Insurers did not market coverage, because to them, it appeared underpriced relative to potential losses.
5. Homeowners assumed the federal government would come to their aid.

Despite the fact that California had required insurance companies to offer earthquake coverage with homeowner polices since 1985, purchases of the coverage did not increase until after the Loma Prieta earthquake. By 1994, more than 40% of California homeowners had earthquake coverage. With more homeowners purchasing the insurance, the companies saw their exposure increased, without adequate underwriting. The Oakland hills fire made insurance companies recognize the scale of potential losses. Here was a case where the insured value of many older homes did not
reflect the replacement costs. There was tremendous pressure on the companies to settle for more that the policy value.

Even as insurers felt the product was underpriced and consumers felt it was overpriced, insurance companies were under pressure because the world-wide capacity for reinsurance had not grown with demand. Reinsurance is the “insurance” bought by insurance companies to protect themselves against extreme losses. Lloyds of London and Swiss RE are two of a small number of such global reinsurance companies. When Lloyds faced bankruptcy in 1992 and the market was concentrated in only a few companies, rate increases made reinsurance hard to obtain. Hurricane Andrew’s insured losses were $16.3 billion and in the Northridge earthquake, the insured losses were $12.5 billion. In the Northridge case, the insured losses were more than three times the total direct premiums collected for all earthquake insurance policies in the U.S. and Puerto Rico for the period from 1990 to 1993.

Raising rates was not the answer. Insurers preferred to leave the disaster market entirely. In California and Florida (as well as Hawaii), private insurers quit offering earthquake or hurricane insurance as part of a homeowner policy. In each case, a semi-autonomous non-profit agency (the California Earthquake Authority, and the Joint Underwriting Authority in Florida) was created to offer limited residential disaster insurance coverage. These agencies do something a private company cannot. They provide a tax-free state-backed reserve fund set aside over a period of years for disasters, when they happen. However, these funds are relatively small ($12 billion in California), so coverage is limited, making the policies unattractive for consumers. If the CEA had been in place at the time of the Northridge earthquake, only about one half of the
payments would have been made to one half the number of claimants. This is because CEA policies raise the deductible from 10% to 15%, limit contents losses to $5,000, and limit coverage to the main structure only. Together these policy restrictions cut coverage dramatically.

It is a mistake to think that private insurance will never return. Lenders require it on commercial building loans, and small companies are beginning to target “good risk” customers with an alternative to state policies. To bring insurance back, government will need to look seriously at the tax laws that prevent private companies from creating multi-year risk pools for hurricanes and earthquakes. At the same time, insurers need to do the research necessary to better tie the price of disaster insurance to the real risks based on location and building conditions. Insurers could also consider a variety of insurance products. Instead of a high premium policy that covers catastrophic loss after the owner pays a $30-$50,000 deductible, insurers might offer a “minor loss” policy, capped at $50,000 to cover the typical minor damage and contents damage most homes experience after hurricanes and earthquakes. For insurance to come back, it needs to be part of a series of recovery options available to home and building owners, and not the sole source of recovery funding.

**Pre-Disaster Mitigation**

Given the limited availability of insurance and caps on federal spending, the solution advocated by FEMA is the creation of “Disaster Resistant Communities.” The strategy is to provide seed funds to cities to promote mitigation of hazards by building owners before disaster strikes in order to limit federal and personal recovery costs. In theory, this is reasonable, as there are clearly cases of individual buildings or bridges
which have been retrofitted and which have been spared some damage as a result.

However, the success of individual projects does not necessarily translate into regional or national programs. Despite the fact that mitigation can reduce losses, it is clear from past experience that the real estate market does not reward a building owner for such expenditures in higher rents or higher property values.

In 1981, Los Angeles mandated that Unreinforced Masonry (known as URMs or simply brick) buildings be seismically retrofitted because of the overwhelming collapse hazard. In 1985, the state of California passed legislation requiring all local jurisdictions to inventory and mitigate the URM problem. But cities had a hard time requiring tax-paying property owners to undertake expensive repairs if they were unable to increase rents. If mitigation by regulation is difficult, mitigation without incentives is almost impossible.

Advocates for mitigation cite damage avoided as a social benefit, but there has been little exploration of who should bear the cost for this benefit. It may be relatively easy to justify the retrofit to a highway system which is publicly owned and maintained. It will be more difficult to justify any regulation which orders hazard mitigation in privately owned structures, when the cost to be incurred by individuals is intended for a public good. Is it reasonable to ask that every structure in California be brought up to some newer standard? If not all, then which ones, in what order of priority, and at what cost?

Are concrete frame buildings as important a safety hazard as unreinforced masonry? Are houses more or less a priority that commercial structures? Should all buildings in near-fault or liquefaction zones be a priority? Most importantly, can
mitigation priorities be set on a purely technical basis, without consideration for the cost and/or the disruption. The Los Angeles city council was unable to pass anything more stringent than a requirement for voluntary inspections of steel frame buildings, despite the mass of attention to problems of weld failures after the Northridge earthquake, largely because the business community found the costs unacceptable.

In addition, we do not know the market impacts for incentivizing mitigation. Would the federal or state governments be willing to bear the cost of a full scale tax credit for hazards mitigation? Would the real estate market embrace a seismically improved structure as a “selling feature?”

Finally, mitigation as a concept is not always realistic in terms of engineering solutions. The development of seismic standards for existing buildings is relatively new and much debated. The technical standards are currently only guidelines, and far from adoption as part of a universally adopted building code. The structural engineering community is promoting the concept of “performance based design,” where a building owner selects a performance objective to designate how his/her building should function after an earthquake (such as, immediate occupancy, repairable damage, or collapse prevention). While engineers have met such performance standards in specialized new buildings, the technical capacity to actually retrofit an existing building to such standards is still being developed and tested.

Before any mitigation program is adopted as policy, a good deal more technical and economic research is needed. Standards and enforcement procedures for seismic improvements to existing buildings, infrastructure systems, and lifelines need further development, including definitions of vulnerability based on soil conditions, fault
proximity, construction type, and maintenance quality. The quantification of risk needs to be improved by re-assessing past losses, identifying statistically relevant risk types, and integrating the mapping of soil and building conditions. Serious economic evaluations of mitigation incentives and programs need to be undertaken as well as comparisons between the costs of mitigation and the costs of public and private recovery programs such as insurance and federal assistance.

**Conclusion**

At first glance, the prognosis for any disaster recovery policy appears bleak--with little that makes political or economic sense. The costs incurred in the last decade as a result of disasters shocked the insurance industry and the federal government, and the first reaction on both sides was to limit future payouts. FEMA director, James Lee Witt, has tried to offer pre-disaster mitigation as a policy mechanism for reducing future costs, but there has been no systematic re-evaluation of the problem of financing post-disaster repair and rebuilding costs in large urban disasters.

A new disaster recovery policy incorporating realistic costs for urban disasters 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 services ought to be separated from financing for repairs. After Northridge, the SBA loans went to single family homeowners, while HUD funds went largely to apartment owners and low-income homeowners. In both cases, existing non-disaster programs were used to finance and expedite recovery. This is a good starting point for future government involvement in recovery finance.
However, if government also wants to promote pre-disaster mitigation, it will take a combination of regulation and incentives. Tax credits are an obvious incentive, but they tend to encourage and benefit those who would do the mitigation anyway. To reach a large number of homeowners and some apartment owners, it is important to devise a policy that taps into the real estate marketplace. What the great majority of these properties have in common is a loan, but the lenders sell loans to other financial institutions, spreading their risk and keeping capital in their business. Thus to affect real estate lending, one must go not to the banks and Savings and Loan companies, but to the “secondary” market—the Federal Housing Administration (FHA), Fannie-Mae, and Freddie-Mac (officially, the Federal National Mortgage Association and the Federal Home Loan Mortgage Corporation). These are the quasi-governmental agencies that underwrite and purchase residential loans.

A new role for mortgage underwriters might be to require building safety inspections in order to qualify for federally backed mortgages. These could be based on an engineering rating system where a change in rating could lower the mortgage rate and perhaps even influence insurance premiums. If the secondary mortgage market requires a safety inspection as part of a loan transaction, all lenders would be using the same information, and would be able to “price” their loans accordingly. The same rating system could provide the basis for insurance rates for a variety of insurance products.

There are many financial advantages to instituting federal requirements tied to mortgage origination. For consumers, national standards would force all loan transactions to recognize disaster risk as part of the loan. For lenders, common rules would keep a level playing field. For private insurance companies, as well as state-
managed insurance pools, tying insurance to mortgage origination would guarantee sufficient participation and long term financial capacity. There are also enormous political obstacles to both ambitious and modest interventions in the complex world of real estate mortgage finance, insurance, and tax codes. However, real solutions to funding post disaster building repairs can only happen in the arenas where capital already exists.

Ultimately, any disaster recovery policy will require political commitment, but the economic future of California, Florida, and other hazard prone regions depends on a proactive approach to policy and planning. As FEMA promotes mitigation as a cost-cutter, the agency should promote policies to help insurance companies return to the market, and promote programs that get building safety assessments into real estate transactions. In the future, we need pre-and post-disaster policies that are safe, fair, and cost-effective.

**Suggested Reading**


Earthquake Engineering Research Institute. 1996 *Scenario for a Magnitude 7.0 Earthquake on the Hayward Fault*. EERI, Oakland, California.


Perkins, Jeanie et.al. 1996 *Shaken Awake*. Association of Bay Area Governments, Oakland, California.

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