



GAO

Accountability \* Integrity \* Reliability

United States Government Accountability Office  
Washington, DC 20548

---

December 22, 2008

The Honorable Spencer Bachus  
Ranking Member  
Committee on Financial Services  
House of Representatives

The Honorable Shelley Moore Capito  
Ranking Member  
Subcommittee on Housing and Community Opportunity  
Committee on Financial Services  
House of Representatives

The Honorable Christopher Shays  
House of Representatives

*Subject: Natural Hazard Mitigation and Insurance: The United States and Selected Countries Have Similar Natural Hazard Mitigation Policies but Different Insurance Approaches*

Natural hazards adversely affect hundreds of thousands of people worldwide each year and cause extensive property damage. In 2007, a year that was not considered an exceptional one for natural hazards, natural hazards caused an estimated 14,600 deaths and \$70 billion in property losses. For that year, the insurance industry covered \$23.3 billion in losses. In catastrophic loss years, such as 2005—the year that saw Hurricane Katrina—losses can be far greater. Scientific assessments indicate that climate change is expected to alter the frequency and severity of natural hazard events, and as a result, losses can be expected to climb. Given this scenario, examining policies that are used in other countries to reduce the loss of life and property caused by natural hazard events and examining insurance approaches that provide coverage for natural hazard losses can help identify practices in both areas that could benefit the United States. Similarly, given the ongoing challenges facing the United States, international cooperative efforts may provide instructive examples of risk management and disaster reduction.

Because of your interest in these areas, you asked us to (1) identify policies used by other countries to reduce losses caused by natural hazards; (2) examine the extent of international cooperation among selected countries, including the United States, to mitigate natural hazards; and (3) identify approaches that other industrialized countries use to insure natural hazard risk and regulate insurers. The briefing slides

that we presented to committee staff on November 4, 2008, on the results of our review are reproduced in enclosure I of this report.

Our scope was limited to industrialized countries with a representative style of government. We selected countries from different regions of the world that vary in area, population, and administrative divisions but are susceptible to a number of natural hazards facing the United States, such as floods, cyclones (hurricanes), earthquakes, wildland fires, and landslides.<sup>1</sup> Residential natural hazard insurance is common in these countries. We included six countries in our review: Australia, France, Germany, Japan, New Zealand, and Switzerland. We reviewed and analyzed various studies and reports and interviewed U.S. agency and foreign officials and individuals from academia, reinsurance companies, and relevant organizations. We also interviewed and reviewed written material from knowledgeable individuals from the six countries we selected. We did not assess the effectiveness of the mitigation policies, collaborative efforts, or insurance approaches within or across countries. We provided relevant sections of our briefing slides to country officials for review and comment and made technical changes where appropriate.

We conducted this performance audit between November 2007 and October 2008 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings based on our audit objectives.

## **Background**

Over the past two decades, losses resulting from natural hazards have increased significantly, in part because of higher population densities and development in hazard-prone areas. Over the past decade, some countries have shifted their focus from disaster response and recovery to mitigation—actions taken before or after a natural hazard event to reduce the long-term risks to life and property. As described in previous GAO work, mitigation can play a large role in reducing the physical and financial impact of natural hazards.<sup>2</sup> The Federal Emergency Management Agency (FEMA) has reported that in the United States, every \$1 spent on mitigation saves society an average of \$4.<sup>3</sup> In addition to mitigation, efforts to reduce losses from natural hazards have included collaborative efforts. In previous work, we identified key practices to enhance collaboration, such as (1) defining and articulating a

---

<sup>1</sup>For more information on natural hazards facing the United States, see GAO, *Natural Hazard Mitigation: Various Mitigation Efforts Exist, but Federal Efforts Do Not Provide a Comprehensive Strategic Framework*, [GAO-07-403](#) (Washington, D.C.: Aug. 22, 2007).

<sup>2</sup>[GAO-07-403](#).

<sup>3</sup>National Institute of Building Sciences, *The Multihazard Mitigation Council, Natural Hazard Mitigation Saves: An Independent Study to Assess the Future Savings from Mitigation Activities* (Washington, D.C., 2005).

common outcome; (2) establishing mutually reinforcing or joint strategies; (3) establishing approaches to working together; (4) clarifying priorities, roles, and responsibilities; and (5) developing mechanisms to monitor, evaluate, and report on results.<sup>4</sup>

Insurance is used to cover losses to real property or contents in the event of natural hazards. It may be offered by the private sector, government-backed entities, or a combination of both. Reinsurance, or insurance for insurance companies, is used to cover risk that insurers cannot or do not want to retain. Depending on the country, reinsurance can be purchased from the government or from the private sector. Insurers and reinsurers charge premiums to cover their potential losses. Based on the countries we studied, insurance companies charge the following types of premiums: (1) risk-based premiums, which are calculated based on the potential for loss, often by using risk modeling; (2) fixed premiums, which are set, not according to risk, but on factors such as statutory requirements; and (3) fixed premiums that are also based on risk but that take into account factors such as the property's location and the materials used to build the structures.

We determined features of private sector and government insurance programs in the six countries we studied. Private sector insurance is purchased from insurance companies and may cover only some natural hazards. Premiums for private insurance policies are risk-based and insurance companies purchase reinsurance on the private market to protect against catastrophic losses. Government insurance is generally administered by private companies and requires that property insurance policies cover certain natural hazards. Policyholders typically pay additional fixed premiums beyond the cost of property insurance. Finally, governments may guarantee financial assistance in the event of a major natural hazard to protect against catastrophic losses.

The solvency of an insurance company is defined as its ability to pay the claims of its policyholders. Government regulations have attempted to promote solvency by establishing minimum capital and surplus requirements, statutory accounting conventions, limits to insurance company investment and corporate activities, financial ratio tests, and financial data disclosure.

## **Summary**

The countries that we studied use a variety of policies to reduce losses from natural hazards that are similar to policies used in the United States. As we have previously reported, mitigation policies, assessing and mapping hazard risk, land use planning, building codes, and public awareness, can be used to reduce the risk of losses from natural hazards.<sup>5</sup> In France, for example, the government provides hazard mapping information to depict areas prone to landslides, earthquakes, floods, and avalanches

---

<sup>4</sup>GAO-07-403.

<sup>5</sup>GAO-07-403.

to identify high-risk areas where construction will be prohibited.<sup>6</sup> Like the United States, the countries we studied also use land use planning to determine how best to develop hazard-prone areas. Germany, for example, imposes strict land use planning requirements that prohibit new development in areas designated as floodplains. Also like the United States, some of these countries use building codes to make structures more resistant to natural hazards. In Australia, regional governments have improved standards beyond those required under the national building code maintained by the Australian Building Codes Board to make structures more resistant to hazards such as cyclones and earthquakes. Further, policies in some countries are designed to educate the public on the importance of mitigation. Japan, for instance, disseminates information on natural hazard risks through different media, including television, radio, newspapers, seminars, and lectures. As in the United States, state-level and local governments in all of the countries we studied have primary responsibility for formulating and implementing policies to reduce losses from natural hazards. Local governments in New Zealand are primarily responsible for implementing risk assessments and mitigation policies, for example, and Swiss cantons are responsible for implementing mitigation policies that they develop in coordination with the federal government and other participants.

The countries we studied also participate in a variety of international efforts to minimize natural hazard risk. We found that these efforts are consistent with key practices in collaboration that we identified in prior GAO work.<sup>7</sup> For example, the Council of Europe defines a common goal to improve resilience to major risks, including natural hazards—a key practice in collaboration. Defining and articulating a common outcome is a key practice in collaboration we have previously identified. The United Nations International Strategy for Disaster Reduction has created a set of principles to monitor, evaluate, and report on disaster risk reduction, which is consistent with developing mechanisms to monitor, evaluate, and report on results—another key practice we identified. In addition, a wide range of stakeholders, including U.S. agencies, participate in cooperative strategies and programs. For example, the U.S. Geological Survey is a key participant in the Global Earthquake Model, a public-private partnership among academia, governments, and the insurance industry to calculate and communicate earthquake risk worldwide. And the U.S. Forest Service participates in the Global Wildland Fire Network, which provides a forum for wildfire management professionals, researchers, and others to work on wildland fire risk management and disaster reduction at the local, national, regional, and global levels.

The six countries we studied use a variety of approaches to insure natural hazard risk and regulate insurers. Generally, their approaches involve both the government and the private sector. In four countries with government insurance approaches, property insurance policies include natural hazard insurance coverage at a fixed

---

<sup>6</sup>Hazards noted refer to mainland France only and not its territories.

<sup>7</sup>GAO, *Results-Oriented Government: Practices That Can Help Enhance and Sustain Collaboration among Federal Agencies*, GAO-06-15, (Washington, D.C.: Oct. 21, 2005).

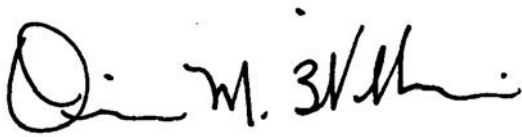
premium, and three of these countries have a government guarantee. All six countries have some type of private insurance approach, and four of these countries offer optional coverage of various natural hazards and have risk-based premiums.

- Australia uses a private sector approach under which coverage for most natural hazards is included with private homeowners insurance. The cost of natural hazard insurance is market driven and involves no government intervention. According to a report commissioned by the Insurance Council of Australia, an estimated 23 percent of residential households do not have property or contents insurance, leaving them without basic natural hazard coverage. To cover potential losses, insurance companies purchase reinsurance from private companies.
- France uses a government approach to insurance, which involves a mandatory extension to property insurance policies provided by the private sector. Policyholders pay an additional cost of 12 percent of the property insurance premium for coverage against natural hazards. The French government must declare a state of natural disaster for coverage to take effect. According to agency officials, 90 to 95 percent of homes have property insurance and therefore have coverage against natural hazards. French insurance companies can purchase reinsurance from private companies or from a government reinsurance agency.
- Under Japan's cost-sharing approach, the government and private insurers share the cost of losses from earthquakes. Private insurers are required to offer Earthquake Insurance on Dwelling Risks (EIDR), but policyholders can decline it. An EIDR policy may cover all, half, or some of the losses to the insured building, its contents, or both, and policyholders may obtain premium discounts for meeting specified earthquake-resistant building standards. By law, all EIDR insurance policies are automatically reinsured with the Japan Earthquake Reinsurance Company (JER). JER is then reinsured by private insurance companies and the Japanese government. According to the Non-Life Insurance Rating Organization of Japan, approximately 40 percent of households had EIDR in 2005.

Finally, five countries have a centralized (federal-level) agency to regulate the private insurance industry. Three of these government agencies regulate the entire financial services industry—for example, the Australian Prudential Regulation Authority oversees banks, building societies, insurance companies, and other entities. Some of the functions of some of these agencies include authorizing insurance companies to do business, assessing solvency, and determining whether insurance companies comply with regulations. Australia and Germany have private sector-only approaches to insurance, and government involvement in pricing insurance is limited. For example, in Germany, prices are controlled only with respect to the company's overall financial safety and the equal treatment of all policyholders.

As agreed with your offices, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days after the date of this report. At that time, we will send copies of this report to interested congressional committees and other parties. In addition, the report will be available at no charge on GAO's Web site at <http://www.gao.gov>.

If you or your staffs have any questions about this report, please contact me at (202) 512-8678 or [williamso@gao.gov](mailto:williamso@gao.gov). Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. Major contributors to this report were Andy Finkel, Assistant Director; Tania Calhoun; Emily Chalmers; Isidro Gomez; Nisha Hazra; Rich LaMore; Marc Molino; and Tom Taydus.

A handwritten signature in black ink, appearing to read "Orice M. Williams". The signature is fluid and cursive, with a large initial "O" and a distinct "M." followed by a long, sweeping horizontal line.

Orice M. Williams  
Director, Financial Markets  
and Community Investment

Enclosure



---

# **The United States and Selected Countries Have Similar Mitigation Policies but Different Insurance Approaches**

---

**Briefing to Congressional Requesters  
November 4, 2008**

---

---

# Outline of Oral Briefing

---

- Introduction
  - Objectives
  - Scope and Methodology
  - Results in Brief
  - Background
  - Other Countries' Policies to Reduce Losses from Natural Hazards Are Similar to Those of the United States
  - Cooperative Efforts to Mitigate Natural Hazards Exist Worldwide
  - Other Countries Use Various Approaches to Insure Natural Hazard Risk
-



---

## Introduction

---

- Natural hazards adversely affect thousands of people worldwide each year and cause extensive property damage
  - In 2007, natural hazards caused an estimated 14,600 deaths and \$70 billion in property losses
  - Insurance covered \$23.3 billion of the 2007 property losses that otherwise might have been the responsibility of individual property owners or governments
  - Given the ongoing challenges facing the United States, international cooperative efforts may provide instructive examples
  - Insurance approaches in other countries may be informative as Congress considers the appropriate role of the federal government in natural hazard insurance
-

---

## Objectives

---

- Identify policies used by other industrialized countries to reduce losses caused by natural hazards
  - Examine the extent of international cooperation among selected countries, including the United States, to mitigate natural hazards
  - Identify approaches that other industrialized countries use to insure natural hazard risk and regulate insurers
-

---

## Scope

---

- Our review was limited to
    - industrialized countries
    - countries with a representative style of government
    - countries in different regions of the world
    - countries affected by natural hazards similar to those faced by the United States, including
      - earthquakes, floods, hurricanes, landslides, tornadoes, wildland fires (based on GAO-07-403)
    - countries where residential natural hazard insurance is common
-

---

## Methodology

---

- Reviewed and analyzed various studies and reports
  - Identified six countries for our review: Australia, France, Germany, Japan, New Zealand, and Switzerland (the information in these slides pertains only to these countries)
  - Interviewed knowledgeable individuals from these six countries
  - Interviewed U.S. agency officials and individuals from academia, large reinsurance companies, and relevant organizations
  - Contacted individuals from Supreme Audit Institutions to determine whether they have done similar work
  - Conducted interviews in person or by phone
  - Reviewed written responses provided by some individuals
  - Did not assess the effectiveness of policies, collaborative efforts, or insurance approaches
  - Due to variation in government structures, did not evaluate the merits of mitigation policies or insurance approaches within or across countries
-

---

## Results in Brief

---

- Other countries' policies to reduce losses from natural hazards are similar to those in the United States
    - Among these policies are hazard assessments, land use planning, building codes, and public awareness campaigns
    - State-level and local governments have primary responsibility for formulating and implementing policies to reduce losses from natural hazards
  - A variety of international efforts exist to mitigate natural hazard losses
    - International cooperative efforts are consistent with key practices in collaboration
    - The U.S. participates in collaborative efforts that involve a wide range of stakeholders
-

---

## Results in Brief

---

- The six countries we studied use various approaches to insure natural hazard risk and regulate insurers
    - Natural hazard insurance generally involves both government and the private sector
    - In four countries that have government insurance approaches, property insurance policies include natural hazard coverage at a fixed premium, and three of these countries have a government guarantee
    - Four countries with private insurance approaches have optional coverage of various natural hazards and risk-based premiums
    - Five countries have centralized agencies that regulate the insurance industry
-








---

## Background

---

- Over the past two decades, losses resulting from natural hazards have increased significantly, in part because of higher population densities and development in hazard-prone areas
  - Over the past decade, some countries have shifted their focus from disaster response and recovery to **mitigation—actions taken before or after a natural hazard event to reduce the long-term risks to life and property from natural hazards**
  - Mitigation reduces the risk of losses of lives and property
    - A study of Federal Emergency Management Agency (FEMA) grants found that every \$1 spent on mitigation saved society an average of \$4
-

# Table 1: Selected Information on the Countries We Studied

	Natural hazards							Administrative divisions	Area (in square miles)	Estimated population (in millions)	Government type
	Blizzards/snow	Flu	Cyclones	Earthquakes	Floods	Landslides	Tsunamis				
 Australia	●	●	●	●	●	●	●	6 states and 2 territories	2,967,909	20.6	Federal parliamentary democracy
 France				●	●	●	●	22 regions	248,429	60.9	Republic
 Germany	●	●	●	●	●	●	●	16 states	137,847	82.4	Federal republic
 Japan			●	●	●	●	●	47 prefectures	145,883	127.3	Constitutional monarchy with a parliamentary government
 New Zealand			●	●	●	●	●	16 regions and 1 territory	103,738	4.2	Parliamentary democracy
 Switzerland	●		●	●	●		●	26 cantons	15,942	7.6	Similar in structure to a federal republic
 United States	●	●	●	●	●	●	●	50 states and the District of Columbia	3,794,083	303.8	Constitution-based federal republic

Sources: CIA World Factbook, Munich Re, and GAO (data); Art Explosion (images).  
 Notes: Cyclones also include typhoons and hurricanes.  
 Other includes avalanches, hail storms, subsidence, tsunamis, volcanic activity, or winter storms.  
 Country populations estimated as of July 2008.



---

## Key Practices in Collaboration

---

- GAO has previously identified key practices to enhance collaboration, such as
    - defining and articulating a common outcome
    - establishing mutually reinforcing or joint strategies
    - establishing approaches to working together
    - clarifying priorities, roles, and responsibilities
    - developing mechanisms to monitor, evaluate, and report on results
-

---

## Insurance and Reinsurance

---

- Property insurance is purchased to cover damage to or loss of property
  - Reinsurance is insurance for insurance companies and is used to cover risk that insurers cannot or do not want to retain
  - The price of an insurance or reinsurance policy is known as the premium
  - Insurers and reinsurers charge premiums to cover their potential losses
-

---

## Types of Premiums

---

- Risk-based
    - Premiums are calculated based on the potential for loss
  - Fixed
    - Premiums are a set rate that is not based on risk but may be based on factors such as statutory requirements
  - Fixed based on risk
    - Premiums are a set rate that takes into account factors such as the property's location and the materials used to build the structures
-

---

## Features of Private and Government Natural Hazard Insurance Programs in the Countries We Studied

---

- Private sector insurance
    - Insurance is purchased from private companies
    - Property insurance policy may cover some natural hazards but other hazards may require a separate policy
    - Premiums are risk-based
    - Reinsurance is purchased on the private market to protect against catastrophic losses
  - Government insurance
    - Insurance is administered by private companies
    - Government requires that property insurance policies cover natural hazards
    - Policyholder typically pays an additional fixed premium beyond the cost of property insurance
    - Government may guarantee financial assistance in the event of a major natural hazard to protect against catastrophic losses
-

---

## Solvency

---

- Solvency is the ability of an insurance company to pay the claims of its policyholders
  - Regulations to promote solvency include
    - minimum capital and surplus requirements
    - statutory accounting conventions
    - limits to insurance company investment and corporate activities
    - financial ratio tests
    - financial data disclosure
-

---

## **Other Countries' Policies to Reduce Losses from Natural Hazards Are Similar to U.S. Policies**

---

- In the countries we studied, natural hazard mitigation policies focus on measures such as assessing and mapping hazard risk, planning for hazard mitigation and land use, strengthening building codes and design standards, and raising public awareness
- State-level and local governments have the primary responsibility for formulating and implementing mitigation policies in the countries we studied

---

## Hazard Mapping

---

- The countries we studied identify natural hazard risk by geographical area
    - France
      - The government provides information about natural hazard risks and identifies hazard-prone areas
      - Hazard mapping identifies areas where new construction is banned (for land use planning purposes)
    - New Zealand
      - The government updates maps covering a wide variety of hazards at least every 5 years
    - Switzerland
      - By 2011, the government plans to have completed hazard maps of the entire country
      - Hazard mapping identifies areas where new construction is banned (for land use planning purposes)
-

---

## Land Use Planning

---

- The countries we studied determine how best to use land located in hazard-prone areas
    - France
      - Requires risk mitigation plans to identify types of hazards in communities and help develop mitigation measures
    - Germany
      - Requires states to designate more areas as floodplains, according to 2005 legislation
      - Imposes strict requirements on new housing in these areas
    - Switzerland
      - Has a policy of “making room for rivers” that expands areas for riverine overflows to mitigate the impact of floods
-



---

## Building Codes

---

- The countries we studied develop minimum requirements to make structures more resistant to natural hazards
    - Australia
      - Regional governments have improved standards to make structures more resistant to hazards, such as cyclones and earthquakes, that go beyond those required under the national building code maintained by the Australian Building Codes Board
    - Japan
      - Building codes and engineering standards are continuously assessed to strengthen and retrofit buildings against earthquakes, tsunamis, and other hazards
    - New Zealand
      - Building codes have been strengthened to better withstand natural hazards and provide guidance for retrofitting and demolition
-

---

## Public Awareness

---

- The countries we studied educate people on the need for mitigation and its benefits
    - Japan
      - Disseminates information on natural hazard risks through different types of media, including television, radio, newspapers, seminars, lectures, and posters
    - Australia
      - Provides information on its emergency management Web site regarding specific mitigation measures for selected hazards
    - New Zealand
      - Advertises information on mitigation through television campaigns, mailings, brochures, newspapers, and magazines and has also developed two Web sites with information on mitigation
-

---

## State-Level and Local Governments Have Primary Responsibility for Mitigation

---

- Australia
    - States and local communities have key roles in developing and establishing mitigation priorities
  
  - France
    - Local governments and communities are responsible for developing and implementing risk prevention plans that are approved by the central government
  
  - Germany
    - States and local communities have primary responsibility for implementing natural hazard policies
-

---

## State-Level and Local Governments Have Primary Responsibility for Mitigation

---

- Japan
    - Prefectures and municipalities develop their own disaster management plans based on the mitigation policies developed at the national level
  - New Zealand
    - Local governments are primarily responsible for implementing policies for risk assessment and mitigation
  - Switzerland
    - States are responsible for implementing mitigation policies that they develop in coordination with the federal government and other participants
-

---

## **A Variety of International Efforts Exist to Mitigate Natural Hazard Losses**

---

- International cooperative efforts are consistent with key practices in collaboration
- The United States participates in collaborative efforts that involve a wide range of stakeholders

## International Cooperative Efforts Are Consistent with Key Practices in Collaboration

Key practice in collaboration	Organization	Purpose/goal
Defining and articulating a common outcome	Council of Europe	Defines a common goal to improve resilience to major risks, including natural hazards
Establishing mutually reinforcing or joint strategies	Australasian Fire and Emergency Services Authorities Council	Has established a joint fire management strategy for Australia and New Zealand
Establishing approaches to working together	Asian Disaster Reduction Center	Works with member countries and other organizations to develop strategies to enhance disaster resilience
Clarifying priorities, roles, and responsibilities	International Consortium on Landslides	Specifies future priorities and responsibilities on landslide risk reduction
Developing mechanisms to monitor, evaluate, and report on results	United Nations International Strategy for Disaster Reduction	Has created a set of principles to monitor, evaluate, and report on disaster risk reduction

---

## The United States Participates in Collaborative Efforts Involving a Range of Stakeholders

---

- A wide range of stakeholders, including U.S. agencies, participates in a wide range of cooperative efforts
    - The U.S. Geological Survey is a key participant in the Global Earthquake Model, a public-private partnership among academia, governments, and the insurance industry to calculate and communicate earthquake risk worldwide
    - The U.S. Forest Service participates in the Global Wildland Fire Network, a forum for wildland fire management professionals, politicians, and researchers to work on risk management and disaster reduction at the local, national, regional, and global levels
-








## Other Countries Use Various Approaches to Insure Natural Hazard Risk and Regulate Insurers

- In the six countries we studied, insurance approaches generally involve both the government and the private sector
- In four countries that have government insurance approaches, property insurance policies include natural hazard coverage at a fixed premium, and three of these countries have a government guarantee
- Four countries with private insurance approaches have optional coverage of various natural hazards and have risk-based premiums
- Five countries have centralized (federal-level) agencies that regulate the insurance industry<sup>1</sup>

<sup>1</sup>In countries that do not have a federal system of government, there may be no viable option other than centralized insurance regulation




















# Overview of Natural Hazard Insurance Approaches

	Program type		Program name	Natural hazards covered
	Private sector	Government		
<b>Australia</b> 	●		N/A	Insurance companies may provide coverage for action of the sea, earthquake, erosion, flood, high water, landslide, storm, subsidence, tempest, tsunami
<b>France</b> 		●	Catastrophes Naturelles (CATNAT)	The government decides whether an event is a natural disaster; some natural hazards that may be covered include earthquake, flood, geotechnical subsidence, landslide, moving masses of ice or snow, and tidal waves
<b>Germany</b> 	●		N/A	Insurance companies may provide coverage for avalanche, earthquake, flood, landslide, subsidence, weight of snow, and volcanic eruption
<b>Japan</b> 	●	●	Earthquake Insurance on Dwelling Risk (EIDR)	Earthquake, tsunami, volcanic eruption
<b>New Zealand</b> 	●	●	Earthquake Commission (EQC)	Earthquake, hydrothermal activity, natural landslip, tsunami, volcanic eruption; in the case of residential land, a storm or flood, or fire caused by any of these
<b>Switzerland</b> 	●	●	Cantonal (State) Monopolies	Avalanche, flooding, hail, landslide, rockfall, snow pressure, storm
<b>United States</b> 		●	Swiss Natural Perils Pool	Avalanche, earthslip, flood, hail, landslide, rockfall, snow pressure, storm
		●	National Flood Insurance Program (NFIP)	Flood

Sources: GAO (analysis); Art Explosion (images).  
 Note: The United States has multiple approaches to natural hazard insurance; however, for the purposes of this report, we have included a description of NFIP only.

## Insurance Approaches in the Countries We Studied Generally Involve Both Government and the Private Sector

	Program type		Program name	Natural hazard coverage required with property insurance		Premium rate		Government guarantee
	Private sector	Government		Yes	No	Risk-based	Fixed	
<b>Australia</b> 	●		N/A			<input type="checkbox"/>		
<b>France</b> 		●	CATNAT				<input type="checkbox"/>	<b>X</b>
	●		N/A			<input type="checkbox"/>		
<b>Germany</b> 	●		N/A			<input type="checkbox"/>		
<b>Japan</b> 		●	EIDR				(based on risk)	<b>X</b>
	●		N/A			<input type="checkbox"/>		
<b>New Zealand</b> 		●	EQC				<input type="checkbox"/>	<b>X</b>
	●		N/A			<input type="checkbox"/>		
<b>Switzerland</b> 		●	Cantonal (State) Monopolies				<input type="checkbox"/>	
	●		Swiss Natural Perils Pool				<input type="checkbox"/>	
<b>United States</b> 		●	NFIP			<input type="checkbox"/>		<b>X</b>

Sources: GAO (analysis); Art Explosion (images).  
 Note: In Japan insurers are required to include EIDR coverage with property insurance, but policy holders are not required to take EIDR coverage. In the United States, flood insurance through NFIP is only mandatory for people living in high-risk areas.

---

## Natural Hazard Insurance in Australia: A Private Sector Approach

---

- Coverage for most natural hazards is included with property insurance
    - Insurance companies can exclude coverage for any hazard, as long they explicitly do so in writing
  - Cost of natural hazard insurance is market driven and involves no government intervention
  - Premiums are risk-based and estimated at the zip code or property level by individual companies on a case-by-case basis
  - One report estimated that approximately 23 percent of residential households do not have property or contents insurance, leaving them without basic natural hazard coverage
  - To cover potential losses, insurance companies purchase reinsurance from private companies
-

## Natural Hazard Insurance in France: A Government Approach

- By law, Catastrophes Naturelles (CATNAT) coverage is a mandatory extension of property insurance policies provided by private insurance companies
- Policyholders pay an additional cost of 12 percent of the property insurance premium for CATNAT coverage, a rate set in 1999
- The government must declare a state of natural disaster for CATNAT coverage to take effect
- According to agency officials, 90 to 95 percent of homes have property insurance and therefore have CATNAT coverage
- French insurance companies can purchase reinsurance from private companies or from Caisse Centrale de Reassurance (CCR), a government reinsurance agency
- Those that purchase reinsurance from CCR benefit from an unlimited financial guarantee of losses by the French government
  - According to government officials, 80 percent of insurance companies purchase reinsurance from CCR

---

## Natural Hazard Insurance in France: A Government Approach

---

- Reinsurance through CCR involves two different types of coverage that work in tandem
    - Quota-share
      - The private insurer passes on a certain proportion of the premiums collected to CCR, and CCR pays the same proportion of losses
    - Stop-loss
      - This coverage applies to the portion of the premiums retained by the private insurer
      - The private insurer pays a deductible, which is an agreed-upon percentage of the premiums retained
      - CCR can cover an unlimited amount beyond that deductible, given the French government guarantee
-

---

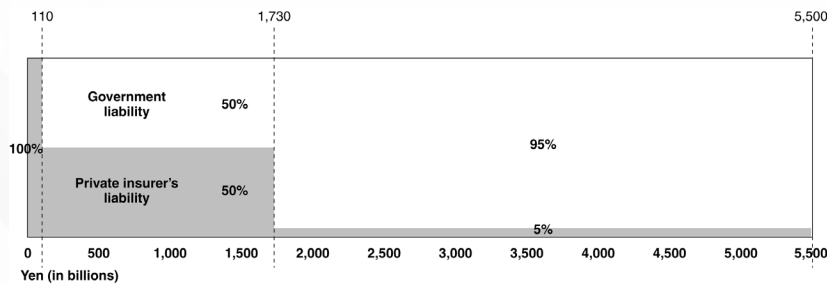
## Earthquake Insurance on Dwelling Risks in Japan: A Cost-Sharing Approach

---

- Private insurers are required to offer optional Earthquake Insurance on Dwelling Risks (EIDR), but policyholders can decline this coverage in writing
  - An EIDR policy may cover all, half, or some of the losses to the insured building, its contents, or both
  - Policyholders may obtain premium discounts
    - 10 percent if residential buildings meet earthquake-resistant standards as stipulated in building code
    - 10 to 30 percent, depending on the earthquake-resistant class of the building
  - Part of the earthquake insurance premium may be tax deductible
  - According to the Non-Life Insurance Rating Organization of Japan, approximately 40 percent of households had EIDR in 2005
-

## Earthquake Insurance on Dwelling Risks in Japan: A Cost-Sharing Approach

- By law, all EIDR insurance policies are automatically reinsured with the Japan Earthquake Reinsurance Company (JER)
- JER is then reinsured by private insurance companies and the Japanese government
- A liability-sharing scheme exists between the government and private insurers to cover losses in the event of an earthquake



Source: General Insurance Association of Japan.

Notes: Private insurers' liability includes the private insurers and JER.  
110 billion yen is approximately equal to 95 million U.S. dollars based on Federal Reserve foreign exchange rates as of September 16, 2008.

---

## Five of the Countries We Studied Have Centralized Agencies That Regulate the Insurance Industry

---

- Five countries have a centralized (federal-level) agency to regulate the private insurance industry, and New Zealand is creating one
  - Three of these agencies regulate the entire financial services industry
    - For example, the Australian Prudential Regulation Authority oversees banks, unions, building societies, insurance companies, friendly societies, and superannuation funds
  - Some functions of some of these agencies in terms of insurance include
    - authorizing insurance companies to do business
    - assessing and monitoring insurance company solvency
    - determining whether insurance companies comply with regulations
  - Australia and Germany have only private sector approaches to insurance, and government involvement in pricing insurance is limited
    - For example, in Germany, prices are controlled only with respect to the overall financial safety of the company and the equal treatment of all policyholders
-



---

---

This is a work of the U.S. government and is not subject to copyright protection in the United States. The published product may be reproduced and distributed in its entirety without further permission from GAO. However, because this work may contain copyrighted images or other material, permission from the copyright holder may be necessary if you wish to reproduce this material separately.

---

## GAO's Mission

The Government Accountability Office, the audit, evaluation, and investigative arm of Congress, exists to support Congress in meeting its constitutional responsibilities and to help improve the performance and accountability of the federal government for the American people. GAO examines the use of public funds; evaluates federal programs and policies; and provides analyses, recommendations, and other assistance to help Congress make informed oversight, policy, and funding decisions. GAO's commitment to good government is reflected in its core values of accountability, integrity, and reliability.

---

## Obtaining Copies of GAO Reports and Testimony

The fastest and easiest way to obtain copies of GAO documents at no cost is through GAO's Web site ([www.gao.gov](http://www.gao.gov)). Each weekday afternoon, GAO posts on its Web site newly released reports, testimony, and correspondence. To have GAO e-mail you a list of newly posted products, go to [www.gao.gov](http://www.gao.gov) and select "E-mail Updates."

---

## Order by Phone

The price of each GAO publication reflects GAO's actual cost of production and distribution and depends on the number of pages in the publication and whether the publication is printed in color or black and white. Pricing and ordering information is posted on GAO's Web site, <http://www.gao.gov/ordering.htm>.

Place orders by calling (202) 512-6000, toll free (866) 801-7077, or TDD (202) 512-2537.

Orders may be paid for using American Express, Discover Card, MasterCard, Visa, check, or money order. Call for additional information.

---

## To Report Fraud, Waste, and Abuse in Federal Programs

Contact:

Web site: [www.gao.gov/fraudnet/fraudnet.htm](http://www.gao.gov/fraudnet/fraudnet.htm)

E-mail: [fraudnet@gao.gov](mailto:fraudnet@gao.gov)

Automated answering system: (800) 424-5454 or (202) 512-7470

---

## Congressional Relations

Ralph Dawn, Managing Director, [dawnr@gao.gov](mailto:dawnr@gao.gov), (202) 512-4400  
U.S. Government Accountability Office, 441 G Street NW, Room 7125  
Washington, DC 20548

---

## Public Affairs

Chuck Young, Managing Director, [youngc1@gao.gov](mailto:youngc1@gao.gov), (202) 512-4800  
U.S. Government Accountability Office, 441 G Street NW, Room 7149  
Washington, DC 20548