OECD Conference on the
Financial Management of Flood Risk
Building financial resilience in a changing climate

PRESENTATIONS –
SESSION 6

12-13 May 2016
Paris, France
Session 6 – Supporting insurability and affordability – challenges and innovations

Setting the Stage

Howard Kunreuther
kunreuth@wharton.upenn.edu

James G. Dinan Professor of Decision Sciences and Public Policy
Co-Director, Risk Management and Decision Processes Center
Wharton School University of Pennsylvania

OECD Conference on the Financial Management of Flood Risk
Paris, France
May 13, 2016

Economic Cost of Natural Disasters, 1980-2015
(in $ billion, 2016 prices, corrected for inflation.) Decadal trend is the dashed line.
12 of the 15 most costly insured catastrophes worldwide between 1970–2015 (2014 prices), occurred since 2000. 10 are flood-related.

<table>
<thead>
<tr>
<th>$ BILLION</th>
<th>EVENT</th>
<th>VICTIMS</th>
<th>YEAR</th>
<th>AREA OF PRIMARY DAMAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>78</td>
<td>Hurricane Katrina; floods</td>
<td>1,836</td>
<td>2005</td>
<td>USA, Gulf of Mexico</td>
</tr>
<tr>
<td>41</td>
<td>9/11 Attacks</td>
<td>3,025</td>
<td>2001</td>
<td>USA</td>
</tr>
<tr>
<td>37</td>
<td>Earthquake (M 9.0) and tsunami</td>
<td>19,135</td>
<td>2011</td>
<td>Japan</td>
</tr>
<tr>
<td>35</td>
<td>Hurricane Sandy; floods</td>
<td>237</td>
<td>2012</td>
<td>USA</td>
</tr>
<tr>
<td>26</td>
<td>Hurricane Andrew</td>
<td>43</td>
<td>1992</td>
<td>USA, Bahamas</td>
</tr>
<tr>
<td>22</td>
<td>Northridge Earthquake (M 6.6)</td>
<td>61</td>
<td>1994</td>
<td>USA</td>
</tr>
<tr>
<td>22</td>
<td>Hurricane Ike; floods</td>
<td>136</td>
<td>2008</td>
<td>USA, Caribbean</td>
</tr>
<tr>
<td>16</td>
<td>Hurricane Ivan</td>
<td>124</td>
<td>2004</td>
<td>USA, Caribbean</td>
</tr>
<tr>
<td>15</td>
<td>Floods; heavy monsoon rains</td>
<td>815</td>
<td>2011</td>
<td>Thailand</td>
</tr>
<tr>
<td>15</td>
<td>Earthquake (M 6.3); aftershocks</td>
<td>181</td>
<td>2011</td>
<td>New Zealand</td>
</tr>
<tr>
<td>15</td>
<td>Hurricane Wilma; floods</td>
<td>35</td>
<td>2005</td>
<td>USA, Gulf of Mexico</td>
</tr>
<tr>
<td>12</td>
<td>Hurricane Rita</td>
<td>34</td>
<td>2005</td>
<td>USA, Gulf of Mexico, et al.</td>
</tr>
<tr>
<td>11</td>
<td>Drought in the Corn Belt</td>
<td>123</td>
<td>2012</td>
<td>USA</td>
</tr>
<tr>
<td>10</td>
<td>Hurricane Charley</td>
<td>24</td>
<td>2004</td>
<td>USA, Caribbean, et al.</td>
</tr>
<tr>
<td>10</td>
<td>Typhoon Mireille</td>
<td>51</td>
<td>1991</td>
<td>Japan</td>
</tr>
</tbody>
</table>

Guiding Principles for Insurance to Deal with Affordability

**Principle 1: Premiums reflecting risk**
- Signals to individuals the hazards they face
- Encourages investment in cost-effective adaptation measures

**Principle 2: Dealing with equity and affordability issues**
- Provide vouchers to individuals requiring special treatment
- Only provide vouchers if homeowners mitigate their property to reduce future flood losses

**Principle 3: Multi-year insurance contracts**
- Premiums reflecting risk with vouchers to deal with affordability
- Addresses myopia
- Encourages investment in loss reduction measures through loans
A Proposed Program for Dealing with Affordability *

Encourage Investment in Loss Reduction Measures
• Risk-based premiums based on updated maps
• Home improvement mitigation loans tied to property
• Premium reductions for undertaking mitigation measures

Address Affordability Issue
• Means-tested vouchers for current residents
• Covers insurance premium and mitigation loan
• Condition for a voucher: You must mitigate
• Required multi-year insurance and loans tied to the property


An Illustrative Example: Dealing with Affordability in Ocean County, NJ
**Two Families Residing in Ocean County, NJ**

**Family 1** is in the A Zone and pays $4,000 for flood insurance.

**Family 2** is in the V Zone and pays $18,550 for flood insurance.

- Both homes are 3 feet below Base Flood Elevation (BFE)
- Each family has an annual income of $50,000 per year

Cost of elevating home to 1 foot above BFE:

- **Family 1:** $25,000 20-Year 3% Loan (Annual Payment $1,680)
- **Family 2:** $55,000 20-Year 3% Loan (Annual Payment $3,660)

Means-tested voucher covers insurance and mitigation costs above $2,500 (i.e., above 5% of income)

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**Cost to the Public Sector and the Two Families**

![Graph showing the costs to the public sector and the two families.](Image)

- **V Zone Property**
- **A Zone Property**
- Cost to Federal Government
- Cost to Homeowner
Estimates of Program Costs for Ocean County Tracts that Experienced Storm Surge

<table>
<thead>
<tr>
<th>Cost of Program in Millions of Dollars</th>
<th>Insurance Voucher</th>
<th>Insurance/Mitigation Loan Voucher, Years 0-20</th>
<th>Insurance/Mitigation Loan Voucher, Years 20+</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>160</td>
<td>80</td>
<td>40</td>
</tr>
<tr>
<td>20</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40</td>
<td></td>
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<tr>
<td>60</td>
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<tr>
<td>80</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>120</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>140</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>160</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Everyone is a Winner

**Homeowner:**
Lower total annual payments

**Insurers:**
Reduction in flood losses

**Financial institution:**
More secure investment due to lower losses from disaster

**Public sector:**
Lower voucher costs due to reduced insurance premiums because property is mitigated (e.g., elevated; flood-proofed)

**General taxpayer:**
Less disaster assistance
Designing Targeted Assistance Programs for an Affordability Program

Challenges and Questions for Discussion

How can the flood risk be effectively communicated to residents in flood-prone areas?

What role can mitigation measures play in making flood insurance more affordable?

What types of financial assistance should be provided to address affordability issues?

What are the roles of the public and insurance sectors in supporting such initiatives?

What impact can these have on the affordability of insurance coverage?

How do different countries address the affordability problem?
Part I: Contrasting Ideal and Real Worlds of Insurance
- Chapter One: Purposes of this Book
- Chapter Two: An Introduction to Insurance in Practice and Theory
- Chapter Three: Anomalies and Rumors of Anomalies
- Chapter Four: Behavior Consistent with Benchmark Models

Part II: Understanding Consumer and Insurer Behavior
- Chapter Five: Real World Complications
- Chapter Six: Why People Do or Do Not Demand Insurance
- Chapter Seven: Demand Anomalies
- Chapter Eight: Descriptive Models of Insurance Supply
- Chapter Nine: Anomalies on the Supply Side

Part III: The Future of Insurance
- Chapter Ten: Design Principles for Insurance
- Chapter Eleven: Strategies for Dealing with Insurance-Related Anomalies
- Chapter Twelve: Innovations in Insurance Markets through Multi-Year Contracts
- Chapter Thirteen: Publicly-Provided Social Insurance
- Chapter Fourteen: A Framework for Prescriptive Recommendations
Session 6:
Supporting insurability and affordability – challenges and innovations

Some insights from Germany

Annegret Thieken

Institute of Earth and Environmental Sciences
Geography and Natural Risks Research
University of Potsdam

Availability of flood insurance in Germany

Since 1994, a voluntary natural hazards insurance as a supplement to the building or contents insurance is available in all of Germany.

Current market penetration: >15%

Until 1990 (in the GDR), flood losses were covered by the household insurance.

Current market penetration: >30%

Overall market penetration in Germany (residential buildings)
in 2002: 19%
in 2013: 34%

Until 1994, there was a compulsory flood insurance in Baden-Württemberg.

Current market penetration: 90%
Governmental disaster relief after major floods

<table>
<thead>
<tr>
<th>Impact indicator</th>
<th>August 2002</th>
<th>June 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fatalities</td>
<td>21</td>
<td>14</td>
</tr>
<tr>
<td>Financial losses (first estimates)</td>
<td>€ 22000 million</td>
<td>€ 14000 million</td>
</tr>
<tr>
<td>Financial losses (final expenses)</td>
<td>€ 11600 million</td>
<td>around € 6 - 8 billion</td>
</tr>
<tr>
<td>Governmental disaster funds</td>
<td>€ 7100 million</td>
<td>€ 8000 million</td>
</tr>
</tbody>
</table>

Empirical data base

Written surveys among property insurers on insurance conditions

In spring 2003
Response: 25 out of 119 (21%)

December 2012/ January 2013
Response: 29 out of 106 (27%)
Market share of the responding insurers:
46% (contents)
53% (buildings)

Telephone surveys among flood-affected residents
9 months after the flood
- Flood impact and damage
- Warning, response, mitigation, insurance etc.
- Socio-demographic characteristics

2002 N=1697
2013 N=1652
Insurability

Conditions that usually have to be fulfilled to receive Natural Hazards Insurance Coverage for residential buildings

<table>
<thead>
<tr>
<th>Assessment criterion</th>
<th>in 2002</th>
<th>in 2012/13</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZÜRS-Zone I</td>
<td>89%</td>
<td>89%</td>
</tr>
<tr>
<td>ZÜRS-Zone II</td>
<td>58%</td>
<td>85%</td>
</tr>
<tr>
<td>ZÜRS-Zone III</td>
<td>32%</td>
<td>74%</td>
</tr>
<tr>
<td>No damage in 5 years</td>
<td>89%</td>
<td>18.5%</td>
</tr>
<tr>
<td>No damage in 10 years</td>
<td>84%</td>
<td>63%</td>
</tr>
<tr>
<td>Up to 1 claim in 10 years</td>
<td>11%</td>
<td>11%</td>
</tr>
<tr>
<td>Up to 2 claims in 10 years</td>
<td>0%</td>
<td>11%</td>
</tr>
<tr>
<td>No restriction</td>
<td>0%</td>
<td>7%</td>
</tr>
<tr>
<td>Number of valid cases</td>
<td>19</td>
<td>27</td>
</tr>
</tbody>
</table>

In case these conditions cannot be fulfilled, 25 of 29 insurers offer individualized conditions including loss mitigation measures (18 or 62%); in 2002: only 6 of 19, only 2 insurers considered loss mitigation measures.

Flood hazard and insurability

ZÜRS: Flood zoning system of the German insurers

- Hazard zone IV: flooded on average once in 10 years
- Hazard zone III: flooded on average once in 10 to 50 years
- Hazard zone II: flooded on average once in 50 to 200 years
- Hazard zone I: flooded on average less than once in 200 years

Natural Hazards Insurance Coverage among surveyed flood-affected households

Possible reasons for the increase
- Recurrent flood events
- Changes in disaster relief guidelines in Bavaria and Saxony
- Enhanced risk communication, e.g. flood hazard and risk maps
- Joint information campaigns of GDV and water agencies

Comparison of insured and uninsured households

<table>
<thead>
<tr>
<th>Percentage of households receiving compensation of...</th>
<th>Flood of August 2002</th>
<th>Flood of June 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>uninsured households (n = 963)</td>
<td>insured households (n = 673)</td>
</tr>
<tr>
<td>100%</td>
<td>4.88%</td>
<td>15.60%</td>
</tr>
<tr>
<td>At least 80%</td>
<td>7.37%</td>
<td>24.22%</td>
</tr>
<tr>
<td>At least 50%</td>
<td>17.03%</td>
<td>43.83%</td>
</tr>
<tr>
<td>Less than 50%</td>
<td>42.99%</td>
<td>25.66%</td>
</tr>
<tr>
<td>No compensation</td>
<td>22.43%</td>
<td>8.62%</td>
</tr>
<tr>
<td>No answer</td>
<td>17.55%</td>
<td>21.69%</td>
</tr>
</tbody>
</table>

Significant differences (in 2013):
- Insured get higher compensation payments than uninsured
- Insured are more satisfied with the process than uninsured
- Insured have higher content losses than uninsured and recover sooner (replacement of damaged items)

No significant differences (in 2013):
- Damage to the building and recovery
- Household income

http://www.gdv.de/2013/11/informationskampagnen-fuer-mehr-naturgefahrschutz/
What is private mitigation?

Property-level mitigation measures

- Collection of information
- Neighbourhood help, networks
- Flood-adapted building use
- Flood-adapted interior decoration
- Mobile water barriers
- Heating in upper floors
- Protection of oil tank
- Sealing of the building
- Preparatory measures (e.g. water pumps)
- Insurance

Property-level mitigation and insurance

Mitigation before the flood in 2002 and as of 2012
Private mitigation and insurance (cont.)

In 2013, German property insurers supported private mitigation by:
- Informing residents about their flood hazard potential (25 out of 29 insurers)
- Informing residents about appropriate mitigation measures (22 insurers)

If property-level mitigation measures are in place then
- flood insurance is offered despite a high flood hazard by individualized contracts (25 out of 29 insurers)
- the deductible is reduced (8 insurers)
- the insurance premium is reduced (7 insurers)
- the deductible is omitted (3 insurers)
SUPPORTING INSURABILITY AND AFFORDABILITY
CHALLENGES AND INNOVATIONS

DON FORGERON
PRESIDENT AND CEO
INSURANCE BUREAU OF CANADA

200+ DISASTERS
(1970 TO 2014)

$6.8 BILLION
$5.2 BILLION FLOOD-RELATED

$37 MILLION PER YEAR
FEDERAL DISASTER RELIEF SPENDING

$608 MILLION PER YEAR

$900 MILLION PER YEAR
FUTURE LIABILITIES ESTIMATE
INDUSTRY ALONE CANNOT FULLY ADDRESS HIGHEST RISK PROPERTIES

ACCURATE MAPPING TARGETED INVESTMENT WIDESPREAD AWARENESS GOVERNMENT INVOLVEMENT
8.6 MILLION RESIDENTIAL PROPERTIES

10% HIGH RISK / HIGH PREMIUMS

90% MARKET-BASED APPROACH

AFFORDABILITY

• To be sustainable, must be priced on actual risk
• Average risk-based rates could be prohibitively expensive
• Without flood strategy, coverage would be unavailable or unaffordable
CHALLENGES

• Subsidization of high risk properties
• Take up rates
  • Optional vs. mandatory coverage
• Non-regulated line of business
• Federal – provincial jurisdictional challenges

NEXT STEPS

• Adapting to climate change a priority of new government
• Continue forward with government
• Build partnerships
• Advocate for a national flood strategy
SUPPORTING INSURABILITY AND AFFORDABILITY
CHALLENGES AND INNOVATIONS

DON FORGERON
PRESIDENT AND CEO
INSURANCE BUREAU OF CANADA

IBC BAC
Supporting Insurability and Affordability

Recently, there have been various efforts to establish the conditions for a private residential flood insurance market in the U.S.

- What are the major impediments to the development of a private flood insurance market in the U.S. and what can be done to address those challenges?

- If the NFIP stopped offering flood insurance tomorrow – would the private sector be able to fill the gap?
Brief Overview of Current Program

- NFIP legislation enacted in 1968
- Currently > 5 million policyholders – but declining base
- FEMA estimates > 10 million properties with flood risk
- NFIP premiums > $3b annually
- Program needs to be reauthorized by 30 September 2017
- U.S. private insurance market in strong capital position
  - "Combined" ratio under 97% in 2014 and 97.8% in 2015
  - Premiums-to-surplus ratio of .74:1 – 2014 and .76:1 – 2015
  - 57-year average 1.38:1
- Provisions in current laws – pools and reinsurance
- Biggest challenges for private sectors:
  - Primary insurers: pricing/regulation
  - Reinsurers: low interest government loans

NFIP Reauthorization Legislation

- HFSC leadership (Rs) want significant privatization of the NFIP
- Others interested in limiting private sector role
- Stalemate = lapses/short-term extensions
- Biggert-Waters law phasing in higher federal rates (esp. 2019+)
  - HFIAA rollback only for primary residences - adds a $250 surcharge to 2nd home and business policies ($25 on all others)
  - Surcharge is forcing more properties to market rates (or higher)
- Strong primary and reinsurer interest in underwriting flood in the private market
- House unanimously passed legislation to encourage lender acceptance of private flood insurance on 28 April 2016
PCI Board Working Group on Flood

• Board established to develop PCI policy in response to Congress
  o Mixture of surplus lines, small and large admitted, and WYOs

Long-Term Vision

• The private sector can model and price flood risk
• Need a gradual transition
• Private insurance requires rate adequacy; most NFIP consumers are being subsidized
• Continued govt. program necessary where policymakers determine ongoing subsidies are necessary
  • Federal insurance should be serviced by private WYOs

Pro-Market Flood Insurance Reforms

PCI supported pro-free market reforms:

• Improve/streamline NFIP (reduce complexity/increase certainty)
• Eliminate WYO non-compete clause
• Reexamine NFIP Direct
• Increase lender acceptance of private flood insurance
• Encourage NFIP purchase of reinsurance
• Make NFIP underwriting data available to insurers
• Publish updated NFIP rating information
  • Comparison to private with transparent subsidies
• Encourage education of consumers, state legislators and regulators regarding the need for flood insurance and community participation in the program
Flood Insurance
Restructuring Options

- Limit eligibility of non-primary residences
  - Commercial (5.4%) [$500k cap on structures/contents]
  - 2nd homes [$250k cap on structures; $100k on contents]
  - Homes > $1m assessed value (perhaps with a sliding scale)

- Analysis of additional top comprehensive restructuring options, how they could be implemented, and pros/cons
  - Cedent option (insurers assume a small % of risk like FHCF)
  - Negotiate take-outs (like FL Citizens)
  - NFIP created industry pools
  - FHA approach
  - Depopulate NFIP by rate increases, mitigation, & buy-outs

- NFIP residual market necessary where continued subsidies – through WYOs or private market with a govt. backstop

U.S. Flood Insurance: Other Issues

- $23b debt
- $250 surcharge
- Funding NFIP’s ongoing mitigation
- Controversy over mapping
- Limited purchase of flood insurance where not mandated

The Future?! 

- Advocate PCI’s long-term vision: 
  - Support private sector underwriting 
  - Gradual transition 
  - Stress need for rate adequacy (private market levels) 
  - Support NFIP w/private WYO servicing where p/m require subsidies 

- Advocate targeted reforms: 
  - Improve/streamline NFIP 
  - Eliminate WYO non-compete clause 
  - Reexamine NFIP Direct 
  - Increase lender acceptance of private flood insurance 
  - Encourage NFIP purchase of reinsurance 
  - Make NFIP data available 
  - Encourage flood insurance purchases 

- Bring to table narrowing NFIP eligibility (commercial; 2nd homes; $1m+) 
- Provide analysis of other restructuring options
Flood Insurance and Prevention in Switzerland

Thomas Luder, 13 May
OECD Conference on the Financial Management of Flood Risks

Insurance of …

- Business Interruption
- Buildings
- Car/Motor/Auto
- Content of Buildings
- Accident, Health, Life
Insurance in Switzerland for buildings and content: Hazards


Two Systems for Nat Cat Insurance

26 Cantons (=states) in Switzerland.

19 cantons: local cantonal monopole building insurers.

7 cantons: coverage provided by private insurers.
### Two Systems: Monopolies + Private Insurers

<table>
<thead>
<tr>
<th>Cantons (= States)</th>
<th>Building Insurance</th>
<th>Content Insurance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insurer</td>
<td>Sum insured</td>
<td>Base coverage is compulsory.</td>
</tr>
<tr>
<td>NW, VD, GL</td>
<td>CHF 2 300 bn</td>
<td>Yes</td>
</tr>
<tr>
<td>ZH, BE, LU, ZG, FR, SO, BS, BL, SH, AR, SG, GR, AG, TG, NE, JU</td>
<td></td>
<td></td>
</tr>
<tr>
<td>State Monopolies</td>
<td>CHF 830 bn</td>
<td>CHF 87 bn</td>
</tr>
<tr>
<td>Private Insurers</td>
<td>CHF 550 bn</td>
<td>Yes</td>
</tr>
<tr>
<td>AI, TI, VS, GE</td>
<td>No, but almost complete penetration.</td>
<td></td>
</tr>
<tr>
<td>Private Insurers</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Nat Cat coverage by Private Insurers

- **Where:** In 7 out of 26 Cantons the building insurance coverage is provided by private insurance companies.
- **Having a base building coverage:** is compulsory in 3 of these cantons. In the remaining 4, almost every building is insured.
- **Regulation:** These insurers are regulated by federal law.
- **Premiums:** The rate is flat and regulated by federal policy, currently (since 2006)
  - Content: 0.21 Permill of sum insured ~ 170 Mio. CHF
  - Buildings: 0.46 Permill of sum insured ~ 250 Mio. CHF
- **Loss Pool:** Insured losses are shared among the insurance companies proportional to market share. This prevents insurers from selectiv underwriting.
Private Insurers: **Loss Pool** (Nat Cat Losses)

Illustrative example, simplified

- Loss Payment: 100%
- Premium

Private Insurer A
- 25% market share
- 75% compensation due to loss pool arrangement.

Private Insurer B
- 75% market share

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**Resulting Nat Cat Coverage by Private Insurers**

- (Almost) every building is insured.
- A range of hazards, including flood, is covered.
- Premium:
  - is affordable due to “99%” penetration level.
  - is self sufficient at the aggregate level (no subsidies)
  - is flat, i.e. not risk based for individual buildings and content
- As the premium is regulated, insurers would tend to selectively underwrite only the good risks. This is prevented by the loss pool.
Nat Cat Coverage by State Monopolies

- **Where:** In 19 out of 26 Cantons the base building insurance coverage is provided by local cantonal insurers. Each holds a local monopoly.
- Building owners are obliged to purchase building coverage in all of these cantons.
- Total sum insured: CHF 2 300 bn
- Collected Premium: ~ CHF 1 bn (includes fire coverage.)
- **Regulation:** These monopoly insurers are regulated by cantonal law.
- **Premiums:** Different from canton to canton. Premium is partially risk based.
  - Base rate + additional premium for increased loss potential.
  - Base rate e.g. is 0.5 permil of sum insured (includes a fire coverage.)
  - Premium to be increased for buildings with bad loss experience.

Resulting Nat Cat coverage by State Insurers

- Every building is insured.
- A range of hazards, including flood, is covered.
- **Premium:**
  - is affordable
  - is self sufficient at the aggregate level (no subsidies)
  - is partially risk based at the individual building level.
Flows of money
All natural hazards, without earthquake
Simplified

Private Owners -> Insurers -> Loss Payments
Prevention + Getting prepared -> Research

Annual spending:
• ~ CHF 2.5 bn overall
• ~ CHF 300 per habitant
• ~ 0.07 % of sum insured
• ~ 0.4 % of GDP
• ~ CHF 50 bn : Value of existing protective structures

Public Prevention Measures
Water Construction law in 1877 and Forest Law in 1876 after a series of flood events in 19 century.

Protection of the area
• Structural, technical
  • Dams
  • Widening river beds
  • Equalising reservoirs
• Biological, e.g. forestation (natural water reservoir, avalanches)
• Urban planing
  • Hazard maps;
    • prohibition to build in “red” areas.
  • Additional construction requirement in “blue” areas.
  • Buffer area for peak volumes of water
Equalising reservoir

Drawing: Canton Solothurn

Image source: http://www.planat.ch/en/images-list-view/

Widening River Beds + Dams

Image source: http://www.planat.ch/en/images-list-view/
Bars and dams

Image source: http://www.planat.ch/en/images-list-view/

Relief Valve for Peak Water Volumes

Prevention costs
CHF 26 Mio.

Resulting reduction in loss amount in 2005 event:
CHF 160 Mio.

Image source: http://www.planat.ch/en/images-list-view/
Hazard Maps

Red: New buildings are prohibited. Limited exceptions only, if hazard can be mitigated locally.
Blue: New buildings possible if certain measures are taken.
Yellow: Risk exists. New buildings without measures are allowed.


Prevention by state monopol insurers

State insurer use approximately 25% of collected premium for prevention:

- Financial support for fire and rescue service.
- Financial support for the improvement of individual existing buildings.
- General education and improving awareness of risks.
- Providing individual advise to building owners free of charge.
- Establish building guidelines.
- Online warning systems (www.wetteralarm.ch)
- Support the update of hazard maps.
- Financial support to dedicated foundations.
Prevention Measures by Individuals

• Protection measures for individual buildings.

• State insurers can increase the premium after a series of losses, if the building owner does not take prevention measures.

Cellar window with concrete shell.

Underground oil tank prevented from swimming

Image source: http://www.planat.ch/en/images-list-view
Conclusion

- Two insurance approaches which:
  - Cover almost all buildings against natural hazards.
  - At an affordable price (e.g. less than 0.5 permill of sum insured).

- Public prevention at the national, cantonal/state and community level.

- Prevention by individual building owners: state insurers can increase premium after loss events, if prevention measures are not taken.
The Zurich Flood Resilience Program
- investing in resilience to reduce social, economic and insured losses caused by floods

Sean Kevelighan, Group Head of Public Affairs, Zurich Insurance Group

Who is Zurich?
What do this images have in common?

It wasn’t the first time...

Why flood resilience?
Looking beyond risk-based pricing

- Research shows that investing in pre-event risk reduction pays out
- Human behavior is often the biggest obstacle to taking action
- Risk reduction and mitigation activities need to build resilience

Measuring resilience is the first step

“Flood resilience is the ability of a community to pursue its social, ecological and economic development and growth objectives, while managing its flood risk over time, in a mutually reinforcing way”
Driving behavioral change

- Psychology plays a major role in flood risk management
- Moral hazard remains a barrier for risk reduction
- Show the real costs if no action is taken

Clarifying roles and responsibilities

- Who is responsible for which risk reduction and mitigation activity
- Improve coordination across jurisdictions
- Multi-stakeholder dialogues to resolve conflicting objectives
“Those who cannot remember the past are condemned to repeat it.”
George Santayana, *The Life of Reason*, 1905

**Improving resilience means building forward**
- Behavior of critical infrastructure can create cascading failures
- Repetitive losses of same magnitude is a reality
- Resilience can be enhanced during the reinstatement period
Developing standards for resilient reinstatement

- Standards can reduce costs but also increase awareness and uptake
- Underlying loss reduction can overbalance the costs of resilience investment

Investing in resilience needs a multi-stakeholder approach

- We need to work together to make it happen
Thank you!