Overview
Insurance-related actions in the context of adverse effects of climate change

Joanne Linnerooth-Bayer
IIASA
M.J. Mace
Field
Roda Verheyen
University of Hamburg

Insurance-Related Actions and Risk Assessment in the Context of the UN FCCC

- Background
- The challenge
- Risk analysis for insuring extreme weather events
- Risk transfer, collective loss sharing and public-private partnerships
- International legal responses to risk and approaches to insurance
- Opportunities, challenges and possible partners

Key Issues (case studies?)

How do (can) countries (individuals, businesses, governments) cope with the large unanticipated financial losses from disasters? (Prevention, reconstruction and loss sharing)

What is (can be) the role of insurance-related financial instruments?

What is (can be) the role of the international community?

Disaster risk management

Pre-disaster
- Risk assessment
- Prevention
- Emergency planning
- Financial planning

Post-disaster
- Emergency response
- Victim relief
- Reconstruction
Insurance-related instruments: Risk transfer and collective loss sharing

**Risk Transfer:** Contractual hedging instrument generally paid for by persons, enterprises or governments at risk, e.g., insurance, cat bonds. Governments, international bodies can subsidize risk-transfer systems, e.g., World Bank support of Turkish system.

**Collective loss sharing:** Non-contractual arrangement for sharing losses after a disaster. A pre-disaster instrument, e.g., fund, may be put into place. The collective can be
- Taxpayers (governments) e.g., Fondem calamity fund
- The international community, e.g., AOSIS proposal
- Parties or enterprises imposing risks, e.g., nuclear power liability regime, oil pollution regime
The collective can transfer its risk though insurance or other risk-transfer instruments, e.g., nuclear power operator insurance.
Risk transfer for governments

- By ensuring that sufficient liquidity exists after a disaster, risk transfer can help to speed economic recovery, higher economic growth
- Pro-active
- Shift from post-disaster charity to planning
- Cost

Government financing alternatives

**Post-disaster**
- Borrowing (domestic and international)
- Budget diversions
- Taxes
- Donor aid
- Loan diversions

**Pre-disaster**
- Catastrophe fund
- Risk transfer
  - Insurance, cat bonds
  - (Prevention)

Poor countries have difficulty with post-disaster financing

- Credit ratings worsen
- Diversions limited
- Citizens taxed to limit
- Therefore, dependent on international loans and donations
Honduras financing gap
(Me切尔 and Pflug, 2003)

Opportunity for the international community

Provide pre-disaster support to developing country governments
- Contingent credit
- Subsidize risk transfer

Tie this to prevention.

(may also be private market opportunities to provide support)

Turning to private sector insurance

Private sector insurance

- Demand: too expensive for households, businesses (Possible exceptions: micro-insurance; weather hedges)
- Supply: insurers increasingly reluctant to offer cat insurance
- Problem: Governments cannot absorb large liabilities that occur in the absence of private insurance
**Public private partnerships**

Government Collective loss sharing ➔ Public Sector ➔ Private Market Risk Transfer ➔ Donor Aid International Financial Community

**National Insurance Schemes**

<table>
<thead>
<tr>
<th>Scheme</th>
<th>Government Fund</th>
<th>Taxpayer Support</th>
<th>Public Insurance</th>
</tr>
</thead>
<tbody>
<tr>
<td>US National Flood Insurance Program (NFIP)</td>
<td>World Bank</td>
<td>Taxpayer Support</td>
<td>Voluntary</td>
</tr>
<tr>
<td>Credit from U.S. Treasury (no taxpayer support)</td>
<td>World Bank</td>
<td>Private Insurance</td>
<td>All hazards policy</td>
</tr>
<tr>
<td>French National Insurance System</td>
<td>World Bank</td>
<td>CCR Public Reinsurance</td>
<td>Bundled</td>
</tr>
<tr>
<td>Private Insurance</td>
<td>World Bank</td>
<td>Flat rate premiums</td>
<td>Community must qualify</td>
</tr>
<tr>
<td>Turkish Catastrophe Insurance Fund (TCIF)</td>
<td>Government Fund</td>
<td>Private Reinsurance</td>
<td>Risk-based premiums</td>
</tr>
</tbody>
</table>

**Opportunity for international community?**

Government Collective loss sharing ➔ Public Sector ➔ Private Market Risk Transfer ➔ Donor Aid International Financial Community

**Opportunity for the international community**

Provide support to public-private systems
- Financing of reinsurance premium
- Contingent capital
Insurance-related instruments: Risk transfer and collective loss sharing

Collective loss sharing: Non-contractual arrangement for sharing losses after a disaster. A pre-disaster instrument, e.g. fund, may be put into place. The collective can be

- Taxpayers (governments) e.g. Fondem calamity fund
- The international community, e.g. AOSIS proposal
- Parties or enterprises imposing risks, e.g., nuclear power liability regime, oil spill regime

The collective can transfer its risk through insurance or other risk-transfer instruments, e.g., nuclear power operator insurance

<table>
<thead>
<tr>
<th>Tier</th>
<th>Source of Funds</th>
</tr>
</thead>
<tbody>
<tr>
<td>III</td>
<td>Proposed EU Fund (EU cargo interests)</td>
</tr>
<tr>
<td>II</td>
<td>International cargo interests</td>
</tr>
<tr>
<td>I</td>
<td>Operator Insurance</td>
</tr>
<tr>
<td></td>
<td>Hazardous Substance Transport</td>
</tr>
<tr>
<td></td>
<td>Nuclear</td>
</tr>
</tbody>
</table>

Legal regimes for disaster loss sharing

<table>
<thead>
<tr>
<th>Government Collective loss sharing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collective Loss sharing E.g. operators</td>
</tr>
<tr>
<td>VICTIMS Households Businesses Agriculture</td>
</tr>
<tr>
<td>Public Sector</td>
</tr>
<tr>
<td>Donor Aid International Financial Community</td>
</tr>
<tr>
<td>Private Market Risk Transfer</td>
</tr>
</tbody>
</table>

Opportunities for the international community

- Supporting data collection and building analytical capacity
- Supporting collective loss sharing
- Supporting public-sector risk transfer
- Supporting new risk hedging instruments
- Supporting micro insurance
- Supporting public-private systems
Challenges

• How to adapt burden-sharing precedents to the climate change process?
• How to link burden-sharing arrangements to vulnerability reduction?
• What kinds of institutional arrangements?
• How to tailor insurance-related systems to individual country needs?

<table>
<thead>
<tr>
<th>Probability</th>
<th>Rate/Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>15.0%</td>
<td>17.0%</td>
</tr>
<tr>
<td>5.3%</td>
<td>8.3%</td>
</tr>
<tr>
<td>3.5%</td>
<td>6.6%</td>
</tr>
<tr>
<td>2.5%</td>
<td>5.8%</td>
</tr>
<tr>
<td>1.5%</td>
<td>4.9%</td>
</tr>
<tr>
<td>1.2%</td>
<td>4.2%</td>
</tr>
<tr>
<td>0.9%</td>
<td>3.9%</td>
</tr>
<tr>
<td>0.7%</td>
<td>3.8%</td>
</tr>
<tr>
<td>0.4%</td>
<td>3.6%</td>
</tr>
<tr>
<td>0.2%</td>
<td>3.4%</td>
</tr>
</tbody>
</table>

Risk transfer/insurance in low-income countries

[Bar chart showing percentage of insurance coverage across different per capita income levels]