



From Data to Decisions – Using actuarial science in the fight against poverty

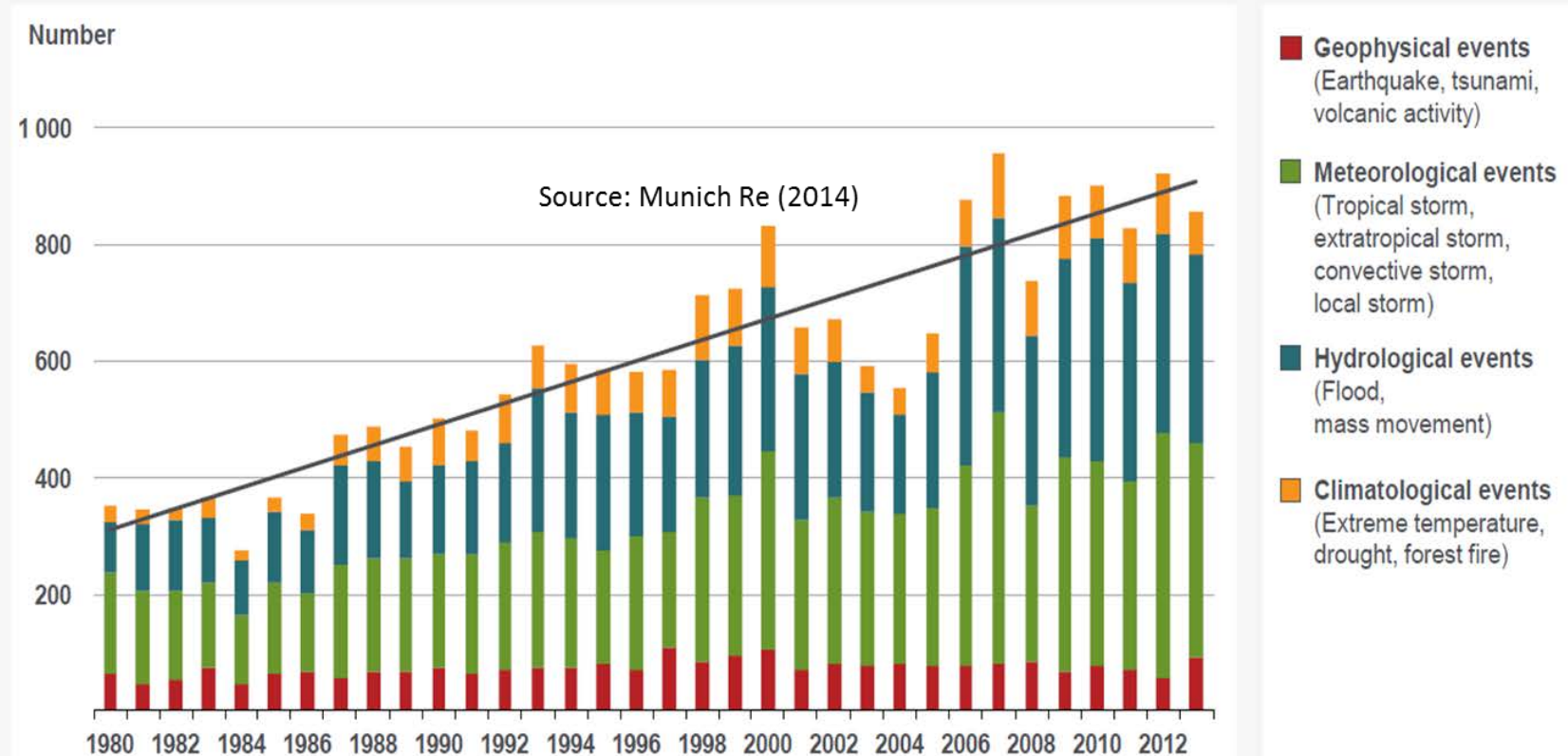
*This presentation has been prepared for the Actuaries Institute 2015
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1. Financial losses from natural disasters continue to rise, with low-income populations feeling the greatest effects.
2. Disaster risk financing (DRF) is integral to the solution
3. Actuarial analysis is a critical input in DRF decisions:
 - i. The design of a scalable social protection program
 - ii. The design of a sovereign disaster risk financing strategy

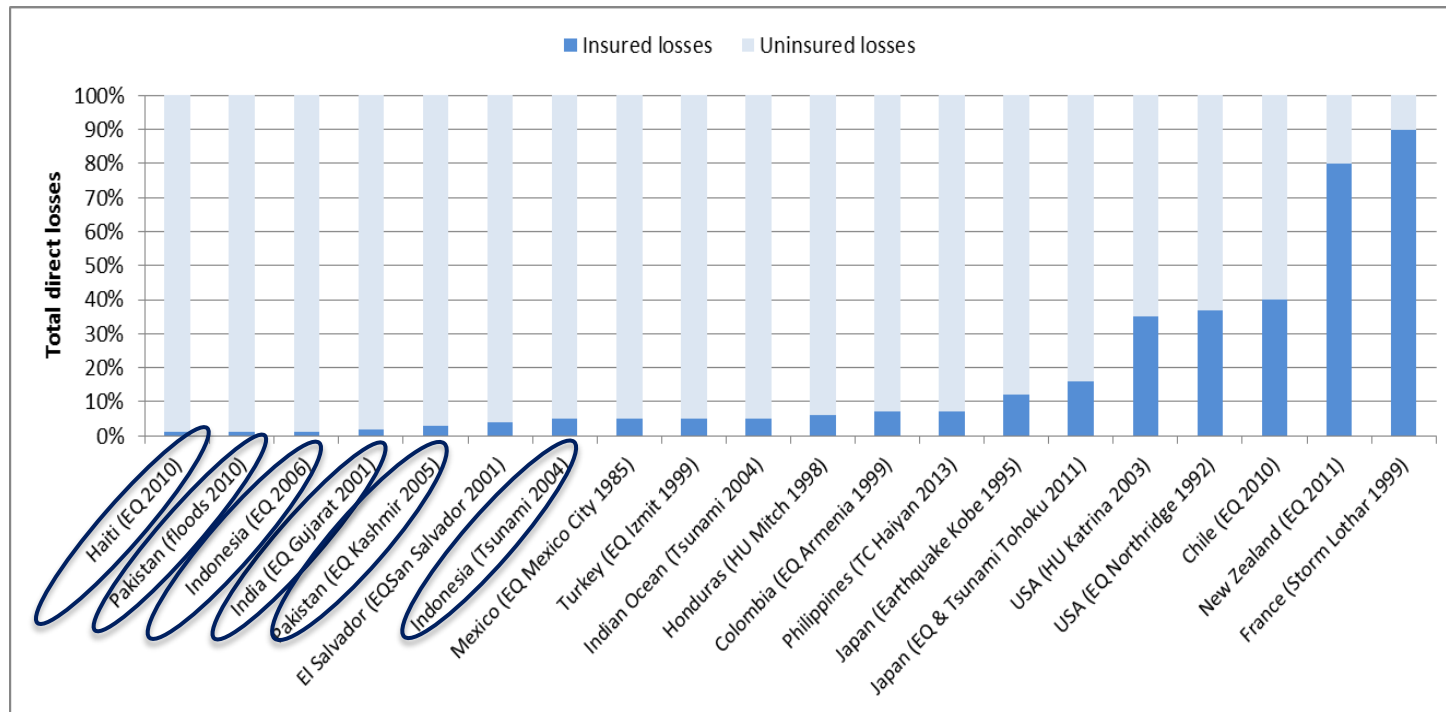
Natural disasters continue to rise in frequency and severity across the world

Number of events



Source: Munich Re (2014)

Yet, there is a major gap between economic losses and insured losses especially in low-income countries



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Risk Financing is integral to Disaster Risk Management

Pillar 1: Risk Identification

Improved identification and understanding of disaster risks through building capacity for assessments and analysis

Pillar 2: Risk Reduction

Avoided creation of new risks and reduced risks in society through greater disaster risk consideration in policy and investment

Pillar 3: Preparedness

Improved capacity to manage crises through developing forecasting and disaster management capacities

Pillar 4: Risk Financing

Increased financial resilience of governments, private sector and households through financial protection strategies

Pillar 5: Resilient Recovery

Quicker, more resilient recovery through support for reconstruction planning

DISASTER RISK FINANCE: Protecting Livelihoods and Development



FINANCIAL COSTS ARE STILL INCREASING

- ECONOMIC GROWTH
- ASSET CONCENTRATION
- URBANIZATION
- CHANGING CLIMATE

AVERAGE DIRECT FINANCIAL LOSS During the last 10 years

\$165 BILLION

Losses exceeding \$100billion in 6 of these years

OFFICIAL DEVELOPMENT ASSISTANCE in 2013

\$135 BILLION

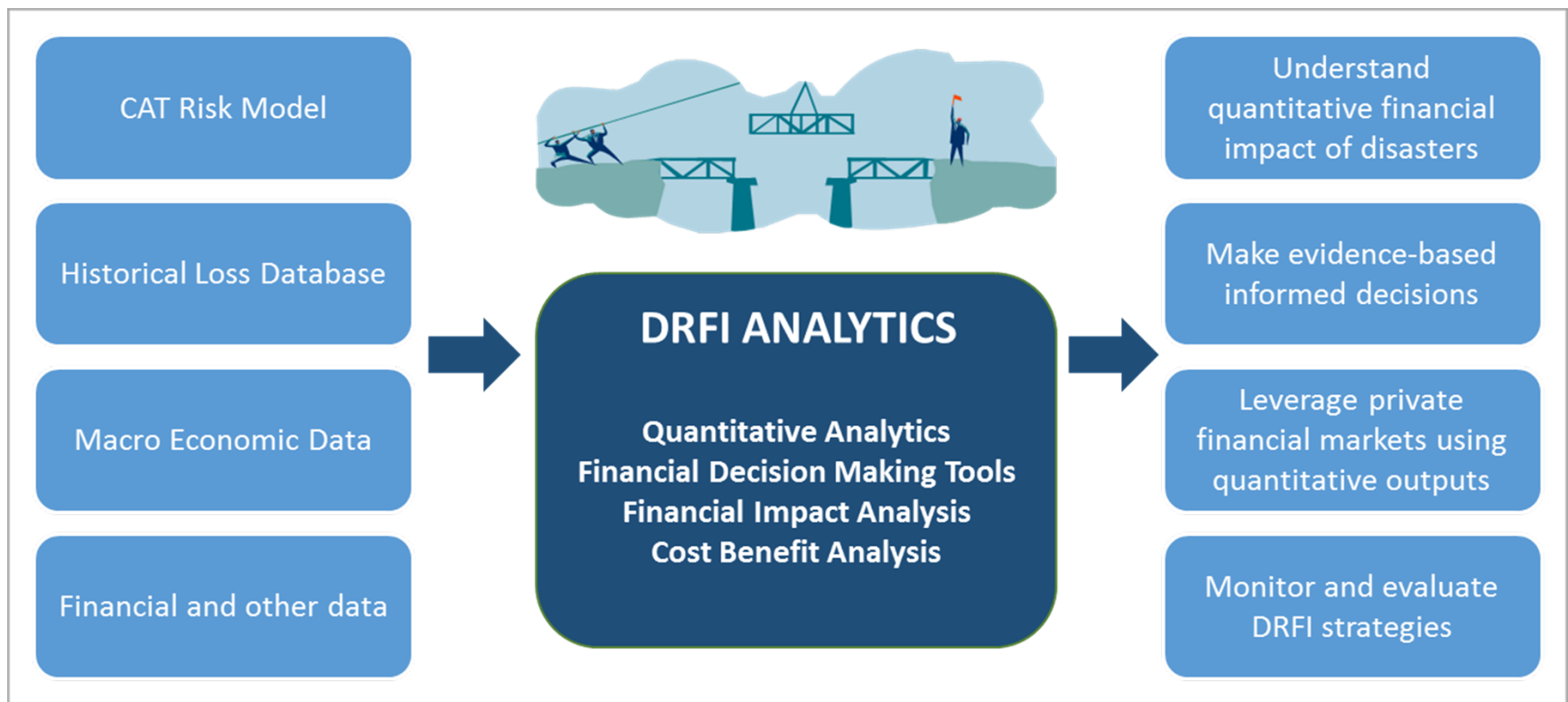


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Actuarial analysis bridges the gap between risk data and evidence based decision making



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Kenya's Hunger Safety Nets Program

HSNP is a social protection program in 4 northern counties in Kenya

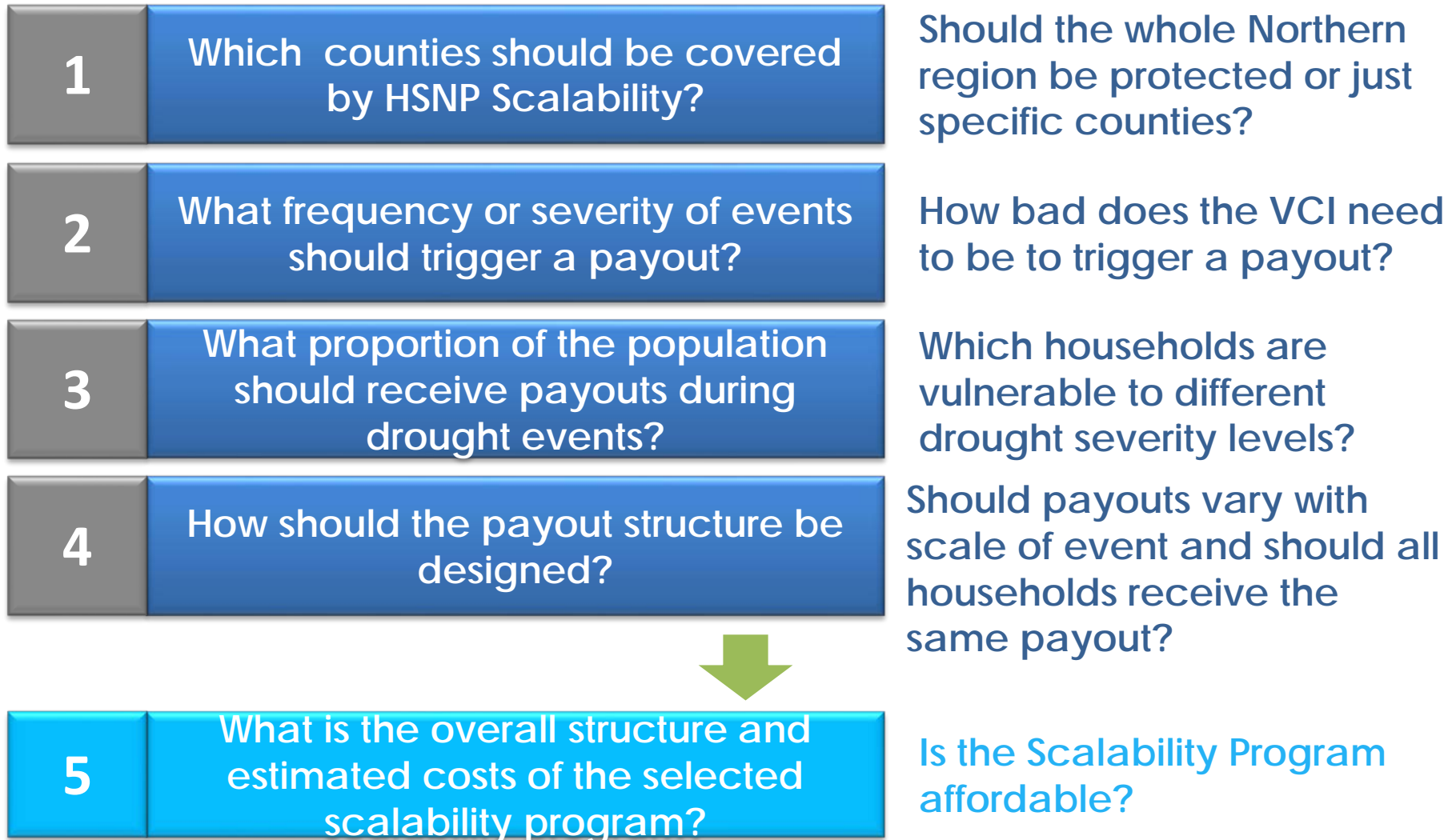
Provides regular cash transfers to the poorest households c. 90,000

Designed with the intention of being able to scale up in times of drought

- Registration of households
- Bank accounts activated



Excel model developed to estimate financial costs of scaling up the safety net, addressing key questions:



The scalability tool: Inputs and estimated scalability costs

1. Exchange Rate (enter rate)

Currency	USD
Exchange Rate: KSH to USD/GBP	91.64

2. Geographical Coverage (on/off option)

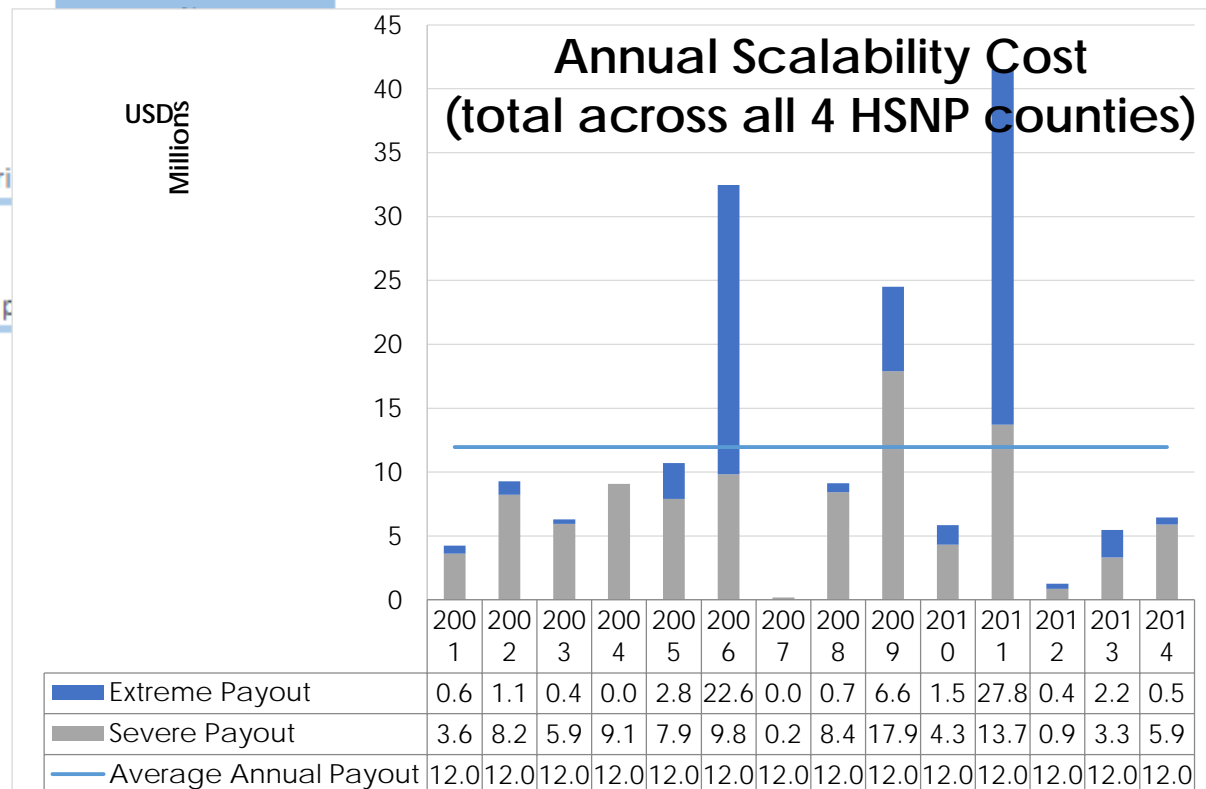
Mandera	Yes
Marsabit	
Turkana	
Wajir	

3. Scale Type (select one trigger or two triggers)

Choose

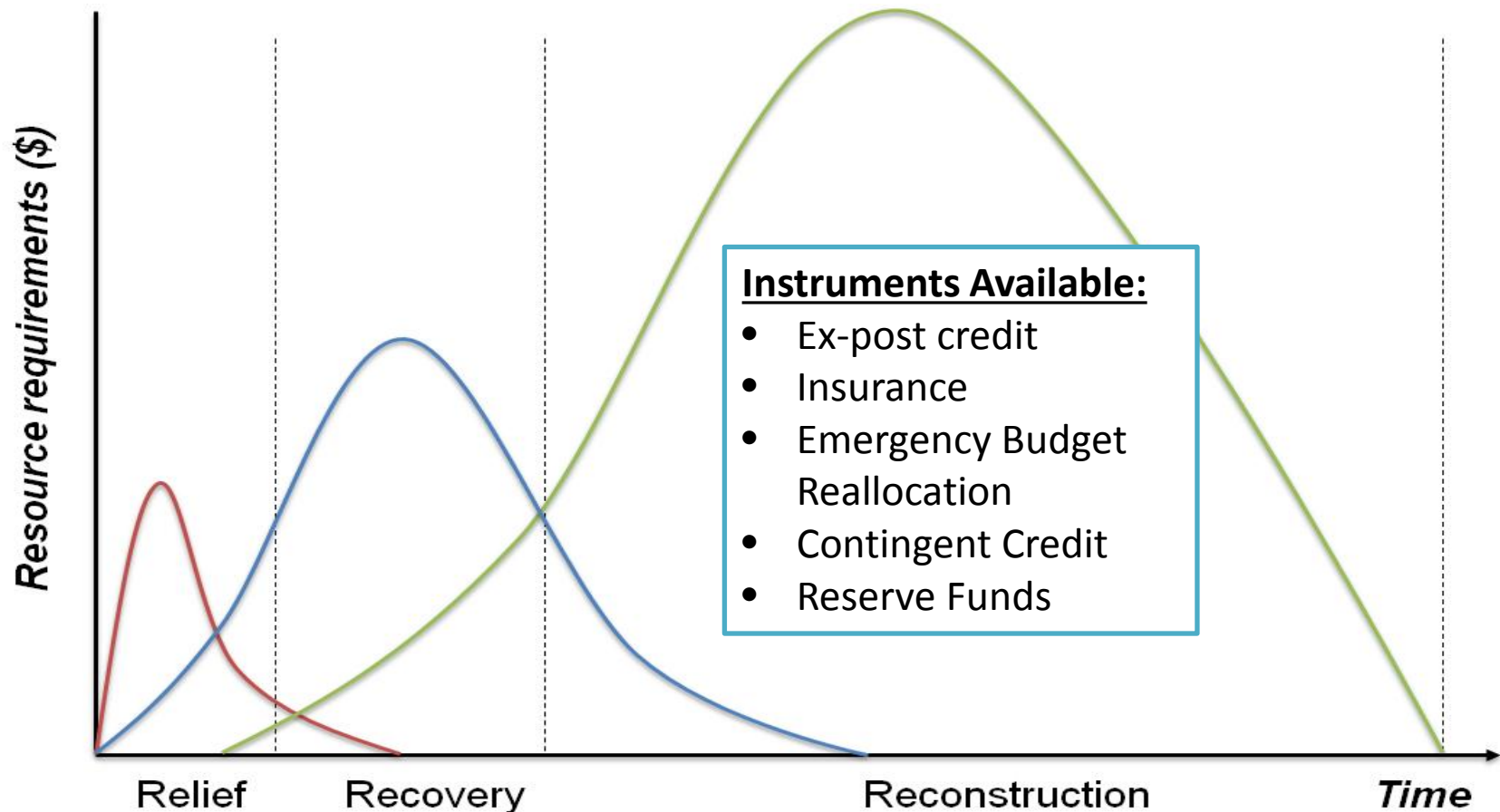
4. Population Coverage (input scale out population)

- Routine Households
- First Scale Out
- Second Scale Out

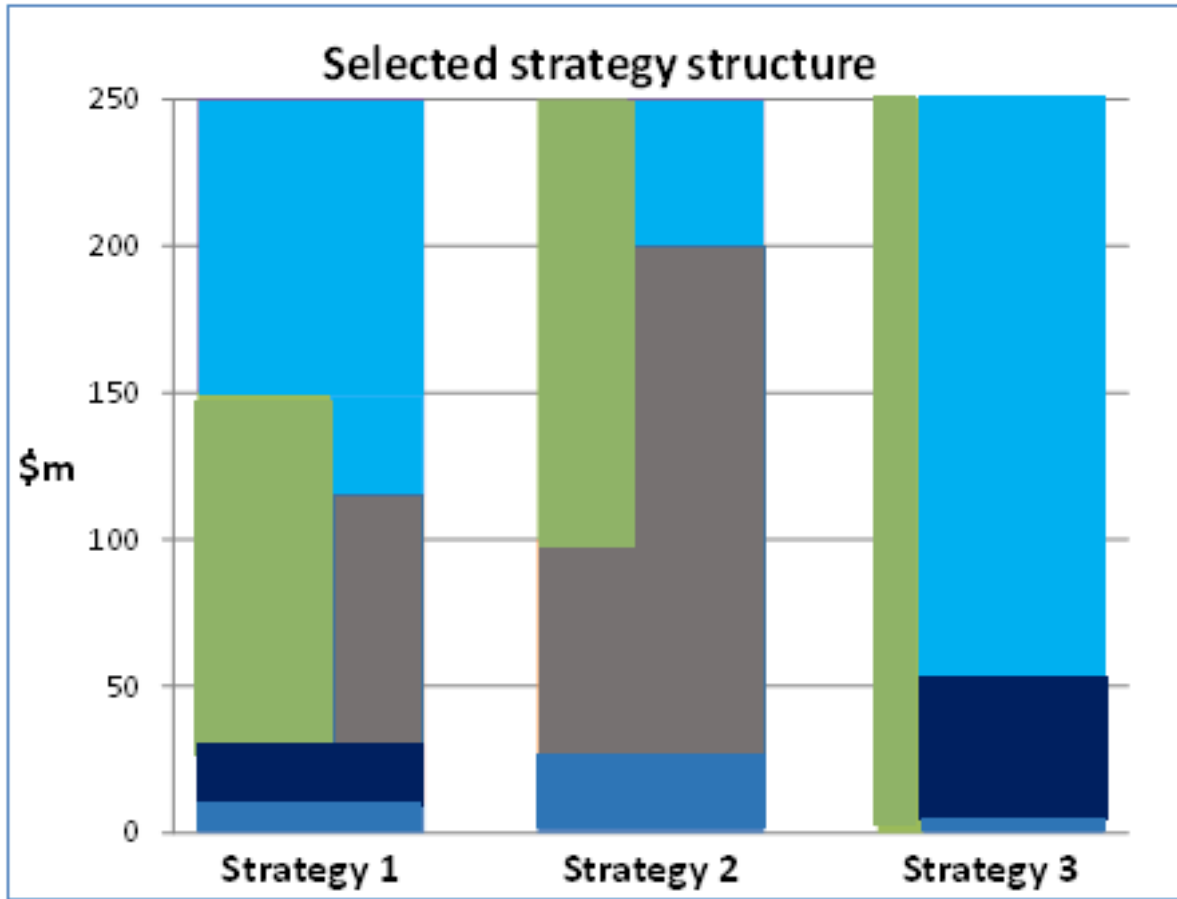


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How can governments develop strategies to secure timely and sufficient financing?



CBA tool: quantifies the financial costs of different sovereign risk financing strategies

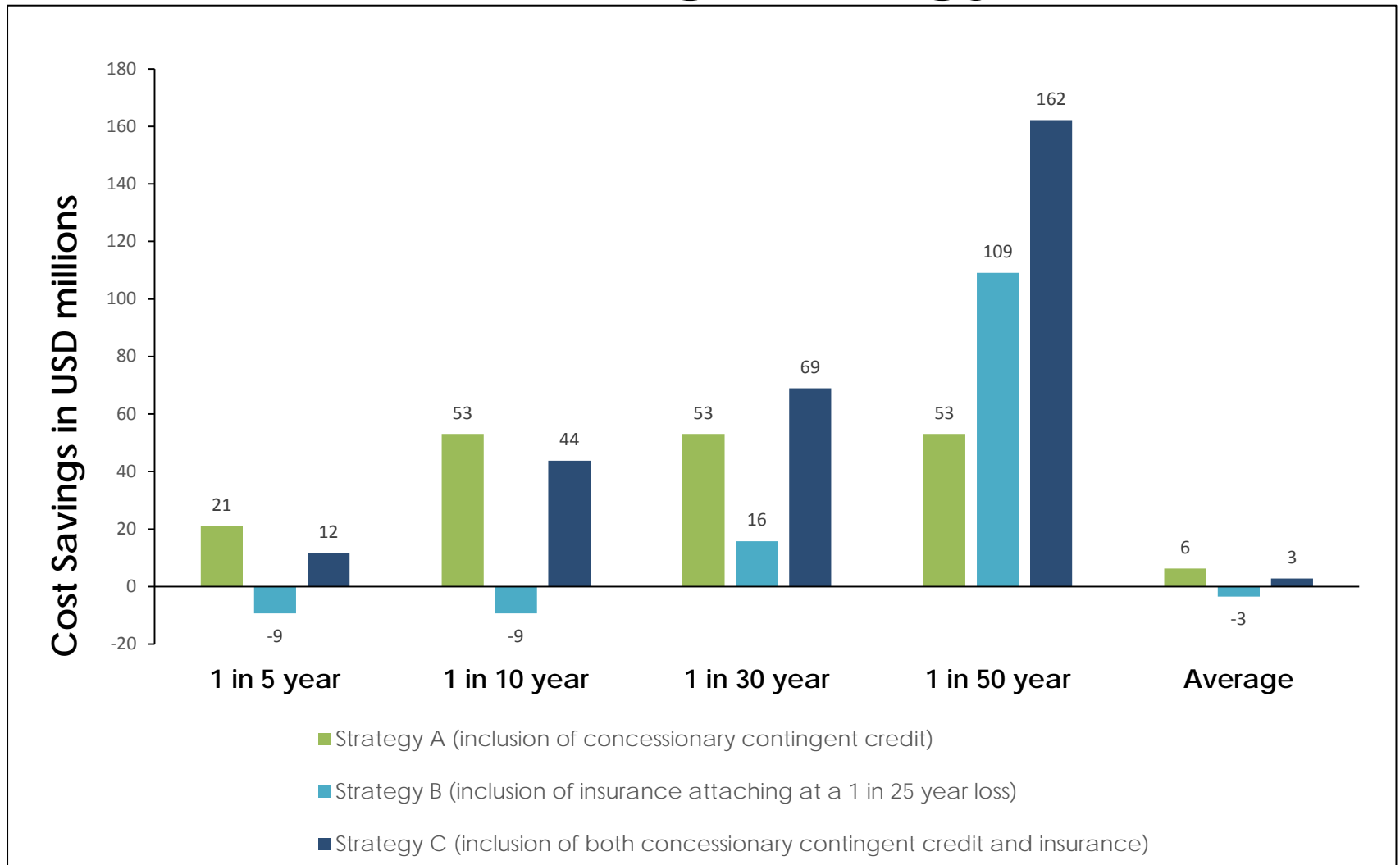


A middle income country:

- large diversified economy
- high recurrent risk of earthquakes and tropical cyclones
- very high borrowing capacity
- no delays or increased cost of borrowing in the capital market (even post disasters)

■ Ex-post credit
 ■ Insurance
 ■ Emergency Budget Reallocation
■ Contingent Credit
 ■ Reserve Funds

Cost savings relative to the existing risk financing strategy



Actuarial science in the fight against poverty

- The high and rising economic and fiscal costs of disasters often reverse development gains and exacerbate poverty
- Disaster Risk Finance is integral to increasing the financial resilience of governments, private sector and households against the impact of natural hazards
- Actuarial science is a critical input in public policy decisions for financial protection

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Disaster Risk Financing Instruments

Low ↑ Probability of Event ↓	Major ↑ Severity of Impact ↓	Insurance-linked Securities	Catastrophe bonds	MultiCat program Capital-at-Risk program	Risk Transfer
		Insurance Pools	Natural Disaster Derivatives	Insures against weather or geologic losses, based on an index	
		Contingent Loans	Caribbean & Pacific	Regional facilities pooling risks to cover against natural disasters in 16 Caribbean countries and 5 Pacific countries	
			Cat DDO	Provides immediate liquidity following a natural disaster	Risk Retention

