Actuarial Implications of Innovative Insurance Products – Key Considerations for the Livelihood Protection Policy

CAIR 2019 Annual Conference & Workshop

Guyana, 20th June 2019

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Outline of Presentation

1. Why Climate Risk Insurance?

2. Implementing the Climate Risk Adaptation and Insurance in the Caribbean (CRAIC) Project

3. Review of Index-based insurance

4. Livelihood Protection Policy (LPP)
   - Technical Considerations
   - Marketing, Distribution & Link to DRR
   - Performance to date

5. Key Takeaways

What Strategies Will Help Us Adapt To Climate Change?

- Consider the increasingly devastating financial impacts of climate change.

- Insurance is a feasible adaptation measure to address extreme weather events, including insurance for:
  - households (e.g., micro-insurance),
  - farms (e.g., index based crop insurance)
  - governments (sovereign risk pools)

- Another recent development has been the use of alternative risk transfer (ART) products to handle more difficult risks, like:
  - **Captive** insurance companies for corporate risks,
  - **Weather derivatives** for non-catastrophic variability, and
  - Catastrophe bonds (**CATS bonds**) for catastrophic risks like earthquake and hurricane

Insurance-related mechanisms can dampen the negative effects of global warming and minimize the financial risks of an increasing number of natural catastrophes.

Benefits of Climate Risk Insurance to Resilience Building

CONTRIBUTIONS OF CLIMATE RISK INSURANCE		DETERMINANTS OF RESILIENCE
CATALYSING	✓ **Risk assessment**	ANTICIPATE
PROTECTING	✓ **Improving financial liquidity after a disaster** ✓ Reducing distress asset sales ✓ Increasing food security ✓ Enabling rapid recovery	ABSORB
PROMOTING	✓ Increasing savings ✓ Increasing productivity and investments in higher-return activities ✓ **Improving creditworthiness**	ADAPT
SPURRING TRANSFORMATION	✓ Incentivizing risk reduction behaviour ✓ **Fostering a culture of risk management**	

Climate Risk Adaptation and Insurance in the Caribbean Project (CRAIC II)

CRAIC Project Vision

Seeks to address climate change, adaptation and vulnerability by promoting weather-index based insurance as a risk management instrument in the Caribbean.

"Climate Risk Adaptation and Insurance in the Caribbean (CRAIC)" project is led by the Munich Climate Insurance Initiative (MCII), in collaboration with CCRIF SPC (formerly the Caribbean Catastrophe Insurance Facility), DHI, ILO and Munich Re.

The project is funded by the International Climate Initiative (ICI) of the German Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety (BMU).

MCII

CCRIF SPC
The Caribbean Catastrophe Risk Insurance Facility

ILO International Labour Organization

IMPACT INSURANCE

Munich RE

DHI

How is the **Climate Risk Adaptation and Insurance in the Caribbean (CRAIC)** project implemented?

Steps to Implementation: Initial Phase

1. Identify countries/areas of interest

2. **Enlist insurance partner(s) interested in offering the protection**
   - MoU agreements
   - Reinsurer engagement
   - Determine local regulatory approval requirements for an index-based microinsurance product and engage with regulator as needed

3. Country specific risk identification & assessment
   - Answer ***who*** are we trying to protect, ***what*** protection do they value most
   - Focus groups, demand side surveys, stakeholder engagements

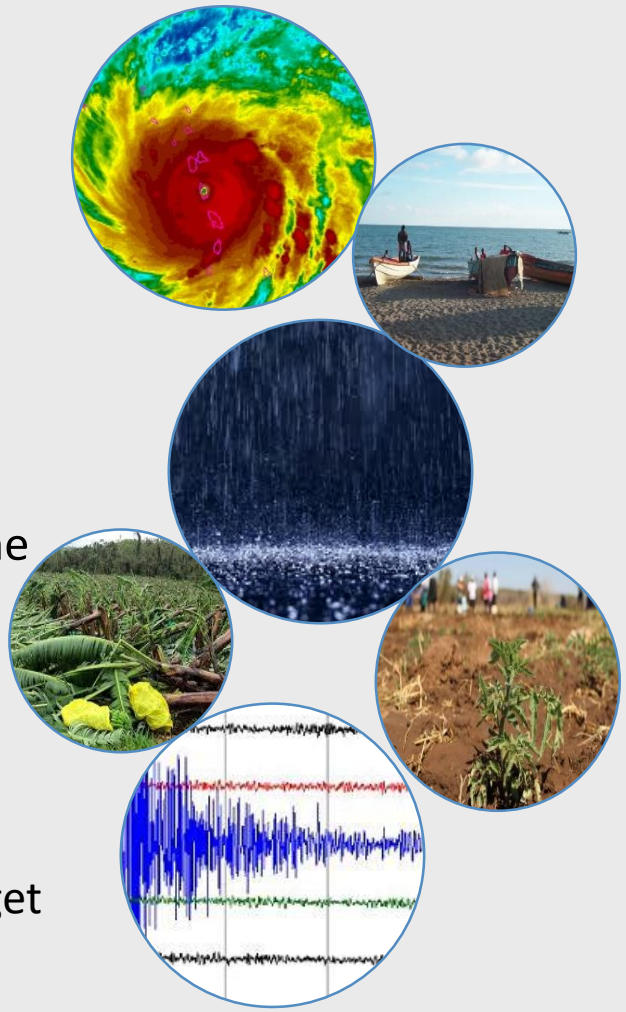
LPP in my Country: Bringing concept to market

Steps to Implementation: Design Phase

4. Determine feasibility of addressing the priority needs
   - Practicality of index-based microinsurance for specified risks
   - Acknowledge any limitations of reaching the target market
   - Test ideas in the market, use feedback to shape the general approach

5. Gather findings from the market research to feed into the overall product design
   - Structure, pricing and design:
   - Identify distribution partners/channels

6. Market Testing of the product prior to launch
   - Offer the product in a controlled environment with target audience present
   - Recalibrate product design as needed



Steps to Implementation: Approval & Launch

7. Complete regulatory requirements, documentation and submit for approval

- Develop business plans, draft policy wordings, risk models/pricing, etc as required by local authorities

8. Build capacity of the local insurer and distribution partners

- Ensure there is sufficient knowledge, resources and capabilities to administer product
- Linkages to calculation/measuring agent
- IT infrastructure integration

9. Gain regulatory approval

10. Proceed to product launch
    - Insurance education and awareness activities with defined target groups

Role of the Insurance Regulator: A Balancing Act

- Microinsurance products focus on the poor, and thus may need special consideration as compared to traditional insurance regulations.
- Addressed in some markets by creating microinsurance-specific regulation or the granting of special exemptions to established standards.

(1) Creating Enabling Frameworks

- Tax exemptions or reductions in fees
- Lower capital requirements
- Revision of sales agent and/or distribution channel requirements

(2) Consumer Protection

- Supervision of stakeholders and product distribution practices
- Acceptable basis risk levels & basis risk management protocols
- Establishing protocols for dealing with complaints

Review of Index-based Insurance

Index Insurance

- …a type of insurance whereby the claim pay-out is linked to an index rather than to an actual measured loss of the policyholder
- An index is a variable that is highly correlated with losses and that cannot be influenced by the insured
- Examples:

Rainfall (excess or lack of)	Wind speed	Temperature
Crop yields	Earthquake intensity	Flood Levels

Index Insurance should be SUAVE

- **Simple:** policies, conditions, marketing, procedures
- **Understood:** risk pooling, procedures, coverage
- **Accessible:** purchase, premium payments, claims
- **Valuable:** matches needs, fair price and coverage
- **Efficient:** for insurers, delivery channels, policyholders

(source : Michael J. McCord)

Livelihood Protection Policy:

Product Overview

What is the Livelihood Protection Policy (LPP)?

- Parametric insurance product

- Triggers are based on Excess rainfall & Strong wind speed (future: drought)

- **<u>Not</u> linked to a specific asset**
- Covers both actual and related losses

Microinsurance: providing market-based protection in exchange for premium payments proportionate to the likelihood and cost of specific perils involved.

Who is the target group for LPP?

Any and all individuals and businesses whose lives are impacted by extreme weather.

- Farmers
- Fishers
- Market vendors
- MSMEs
- Tourism workers
- Food vendors
- Construction workers
- Other vulnerable groups

Specifically designed to provide coverage for livelihoods of low-income populations after an extreme weather event.

How the LPP Works

Currently operational: Saint Lucia and Jamaica.

To be implemented in Grenada, Belize, and Trinidad & Tobago.

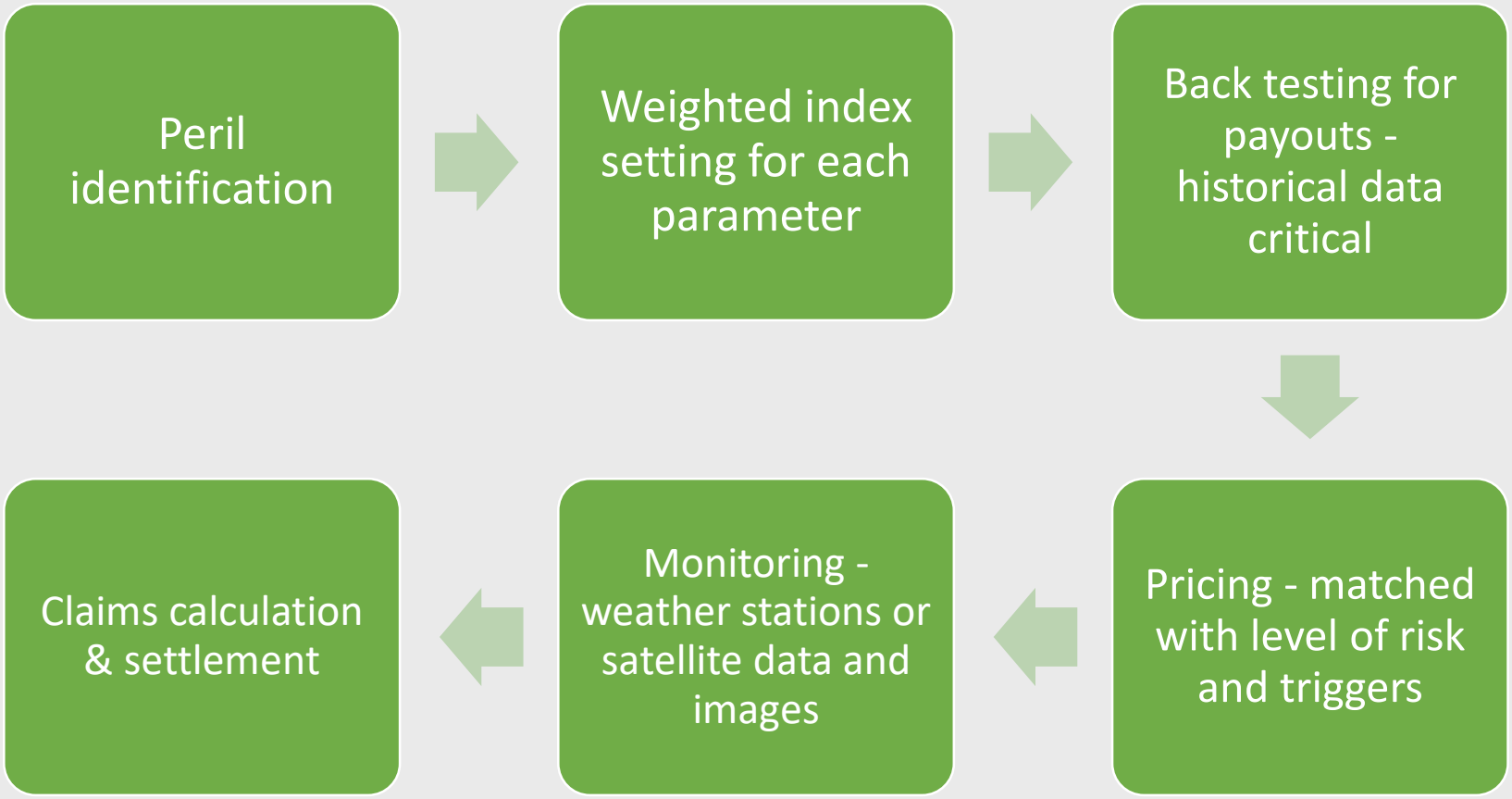
MCII

Key Features of the LPP

Premium	Paid by the **individual**.
Claims	A pay-out (claim) requires no documentation or proof of loss and is made **within 10-days**
Flexible	**ANYONE** can buy the LPP regardless of occupation. Coverage is available for individuals **and groups**
Affordable	Polices sold in units where persons can **purchase their required amount** of coverage up to 10 policies/units
Coverage	A 10-day waiting period once the premium is paid, after which the insured party receives **protection for 12 months**
Basis Risk	There is a chance that the **pay-out calculated does not match** damages experience on the ground

Technical Considerations for the LPP

Index Insurance Process



LPP Model Development

LPP Risk Models developed by DHI & validated by the reinsurer:

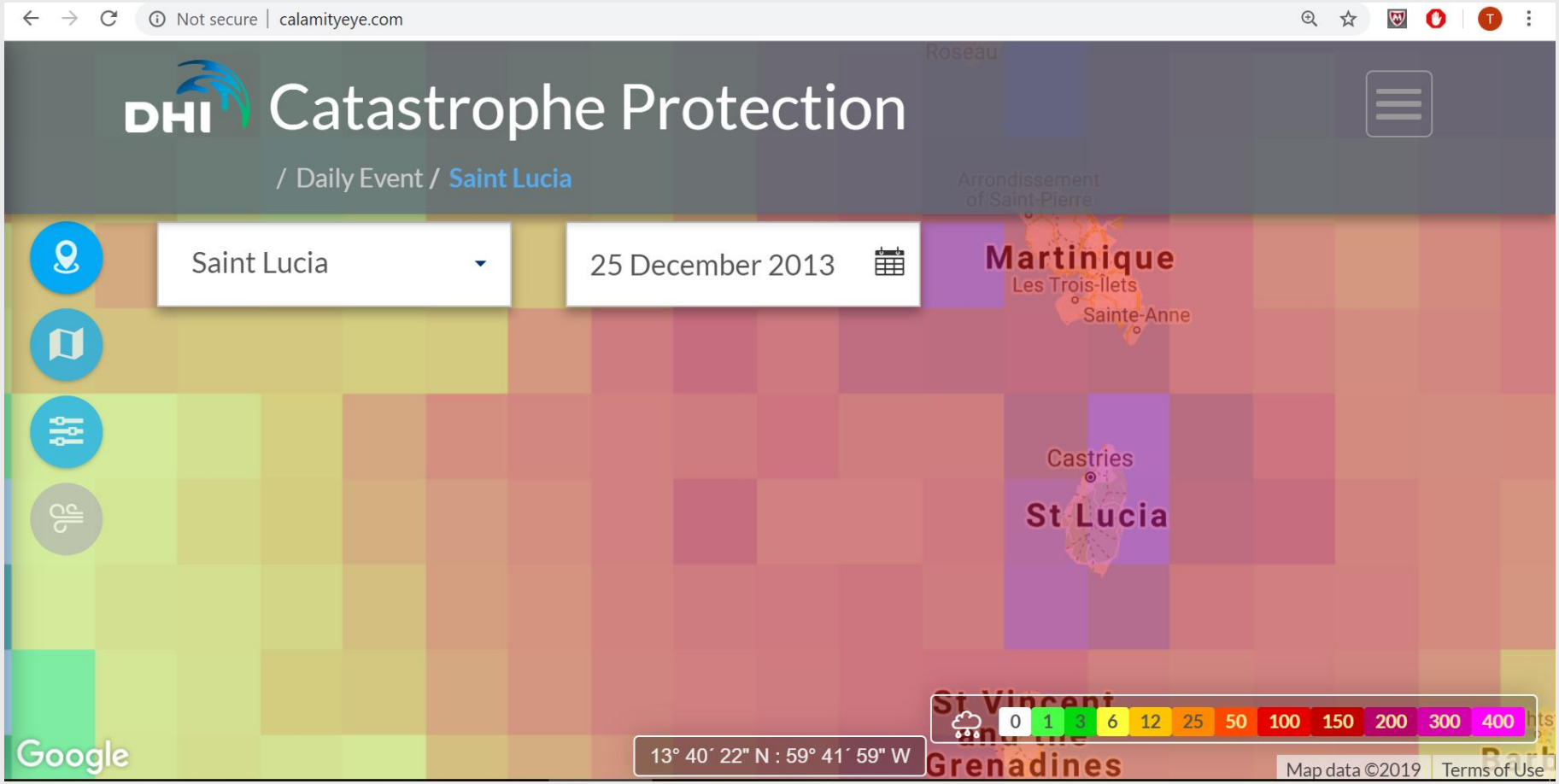
- Rain Model
  - Tropical Rainfall Measurement Mission (TRMM) satellite data
    - A joint mission between NASA and the Japan Aerospace Exploration Agency (JAXA)
  - Maximum accumulated rainfall over 24 hours

- Wind Model
  - National Hurricane Center (NHC) wind data
    - A division of the National Weather Service responsible for tracking and predicting weather systems in the Caribbean.
  - Maximum 1-min sustained winds

- Satellite vs. local weather station?
  - Publicly available
  - Consistent with limited time delays
  - Distributed spatially

- Real-time monitoring & Claims notification
  - Transparency via online tracking system www.CalamityEye.com
  - SMS notification sent to policyholders 72 hours after triggering event

Screen capture from **Calamity Eye**



Pricing:

- Done on a per country basis:
  1. Risk profiles determined by the weather-monitoring/calculation agent (DHI)
  2. Risk price validated by the reinsurer and regulator
  3. Risk price integrated into the retail premium by the local insurer and regulator

- Countries divided into grids, each with an individual risk profiles
  - 14 parishes in Jamaica
  - North & South in St Lucia

Reinsurance Capacity:

- Support from global reinsurance industry
  - Munich Re – already providing capacity for wind/rain in existing markets
  - Hannover Re – on board to provide additional capacity, with particular emphasis on drought products

LPP Marketing, Distribution & Link to Disaster Risk Reduction

LPP Marketing and Distribution

Back office & Claims Processing

Before Event:

- Insurer/distribution channels sign up policyholders
- Portfolio information is shared between distribution channel, insurer and calculation agent on an ongoing basis

During Event:

- Real-time monitoring via Calamity Eye
- **Trigger exceeded?** DHI notifies stakeholders: Insurer, reinsurer, project consortium
- Data on grids impacted and trigger level is shared

After Event:

- Final data on the event is validated
- Affected policyholders are notified of the trigger and payout amount via SMS and/or e-mail
- Payments made directly from insurer to beneficiary bank accounts
- Payments made within 7-14 days

Why Disaster Risk Management is important

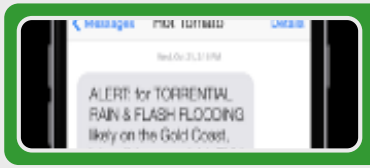
1. Important to understand that insurance is **not a silver bullet**
2. **Insurance is best for low frequency/high impact events**. Other RM options must be adopted for more frequent events.
3. In order to become resilient, **risk prevention and preparedness measures** need to be applied
4. These measures will **minimize how much** of the payout is spent on **repairs**

Methods for linking DRM to the LPP

Video

Trainings

DRM Guides



SMS Messages

Group DRM Solutions

Increasing Awareness of Insurance through Volunteers in the Caribbean

- 6 United Nations Volunteers active in Jamaica and St. Lucia in 2018
- More than 1000 people were trained over a 6 month period

2 in St. Lucia

4 in Jamaica

Their objective was to raising awareness about:

1) Disaster risk reduction
2) Climate risk insurance
3) Linkages between them, advantages and limitations
4) Availability of LPP in the region

Uptake & Distribution Challenges

Uptake:

- Slowed uptake in Jamaica due to a number of factors including extended dry conditions
- Individual sales distribution model proven inefficient for target groups
- Low profit margins for insurers and distribution channels:
  - Challenge to keep premiums affordable
  - Limited price improvement for group policies
- Low financial literacy of target groups

Other Challenges:

- Adverse selection and moral hazard
  - Transparency – trigger information publicly available online cannot be tampered with
  - 10 day waiting period for inception
- Basis risk
  - Ongoing challenge as some basis risk will always remain with remotely sensed data
  - Model developed by testing historical events for correlation
  - Events are analysed as they occur and information used during periodic model adjustments.

Get it right, and it works:
Payouts to Date

LPP – Payouts

Payouts to policyholders

- Saint Lucia: First payouts made in January 2014, following a trough in December 2013.
- Saint Lucia: In 2016, small farmers and other individuals received payouts due to TC Matthew - 31 policyholders received payouts totalling US$102,000 - an average of US$3,290 per policyholder
- Jamaica: Policyholders received payouts following excess rainfall events in May 2017 and in April 2018

Promotion of the LPP is expected to support the Climate Risk Insurance in Developing Countries initiative of the G-7, which aims to increase the number of people with access to direct or indirect climate risk insurance coverage by up to 400 million by 2020 within the framework of the InsuResilience Global Partnership.

Final Thoughts/Key Takeaways

Advantages of Index Insurance

1. Simplified documentation process
2. Lower administration costs
3. Transparency
4. Minimized adverse selection and moral hazard
5. Potentially faster claims settlement and turnaround times
6. 90% losses weather related

Limitations of index-insurance

1. May not be suitable for non-weather related risks or pest attacks
2. Lack of enabling environment
3. Distribution through relevant partners
4. Awareness creation
5. Basis risk – spatial, temporal, value
6. Lack of high quality weather and yield data

Key Considerations for the Caribbean

Lessons Learned from Phases I & II of CRAIC

Pricing the product for sustainability

- Providing affordable risk-transfer for individuals and commercially viable to insurers
- High frequency events such as excessive rainfall result in higher insurance premiums

Limits to insurance as a tool to manage climate risk

- Lowest income groups often unable to access market-based insurance, unless premiums are subsidized or other supporting measures are provided
- Non-weather related risks are not covered (such as pests in agriculture)

Education is needed on insurance

- Need to explain the premium/trigger/payout mechanism and the basis risk.
- Frequent payouts vs. meaningful payouts & cost

Distribution and Scaling up

- Relatively small populations
- Reaching target market in rural areas and who do not participate in financial systems
- Requires commitment by private, local insurers to increase risk awareness and overcome the reluctance to buy insurance

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Climate Risk Adaptation and Insurance in the Caribbean Project (CRAIC II)

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Thank You for your Attention!

Website: *http://www.climate-insurance.org*

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