

Insuring low-income people against catastrophes in developing countries

CAS 2020 Virtual Spring Meeting

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12 MAY 2020

**MicroInsurance
Centre** at Milliman

Photo: Curt Carnemark / World Bank

Dr. Jerry Skees



Minnie Green



Michael J. McCord






Why this session?

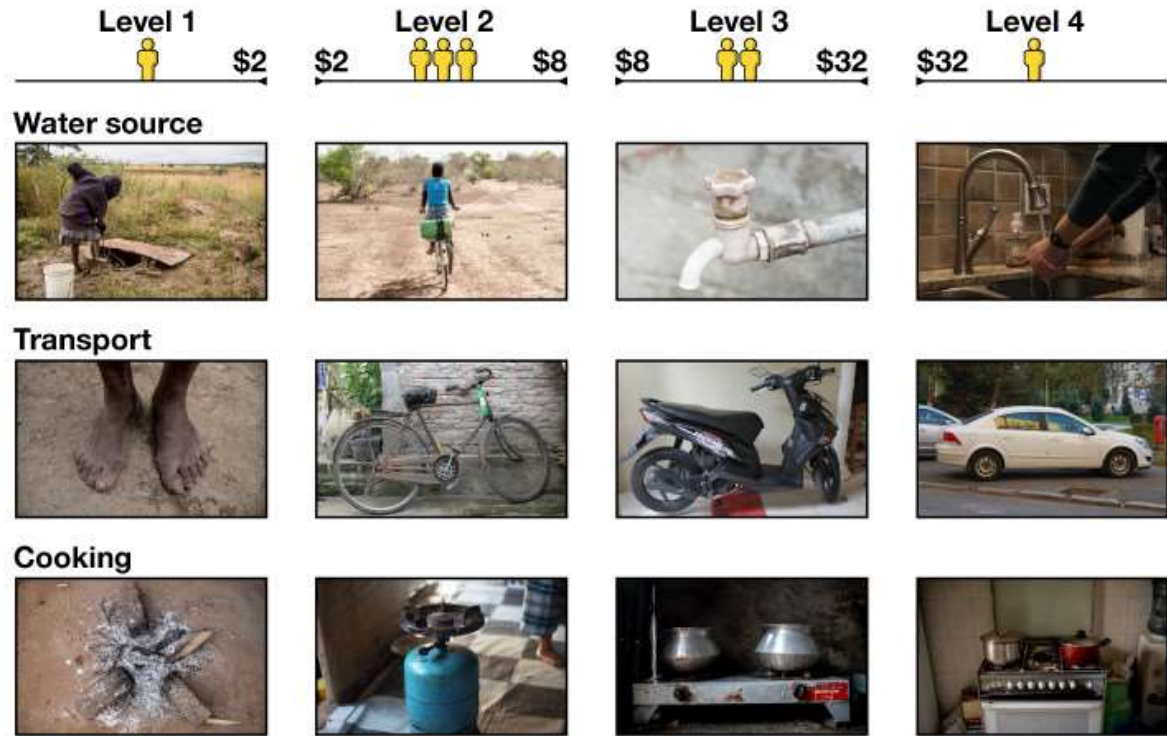
SUSTAINABLE DEVELOPMENT GOALS



A more accurate world view

How the world looks if we categorize by four income levels

 = 1 billion people in 2017



Source: Gapminder

*Income per person in dollars per day adjusted for price differences

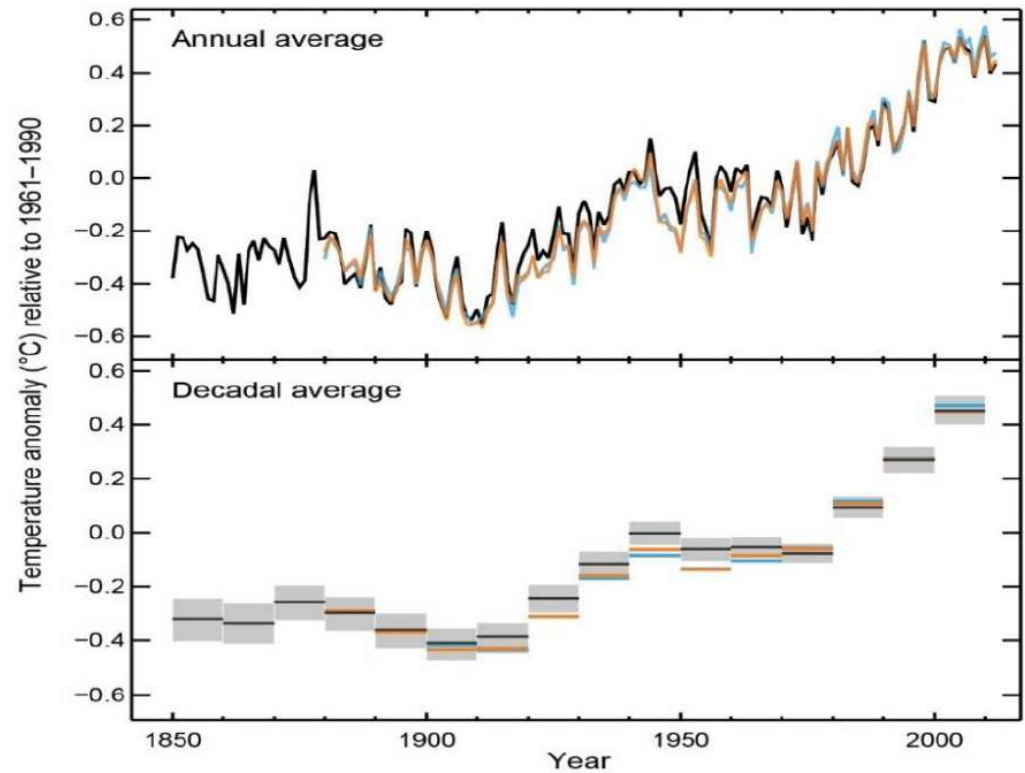
Climate Change, Insurance and Vulnerable Populations

IAA Discussion Paper

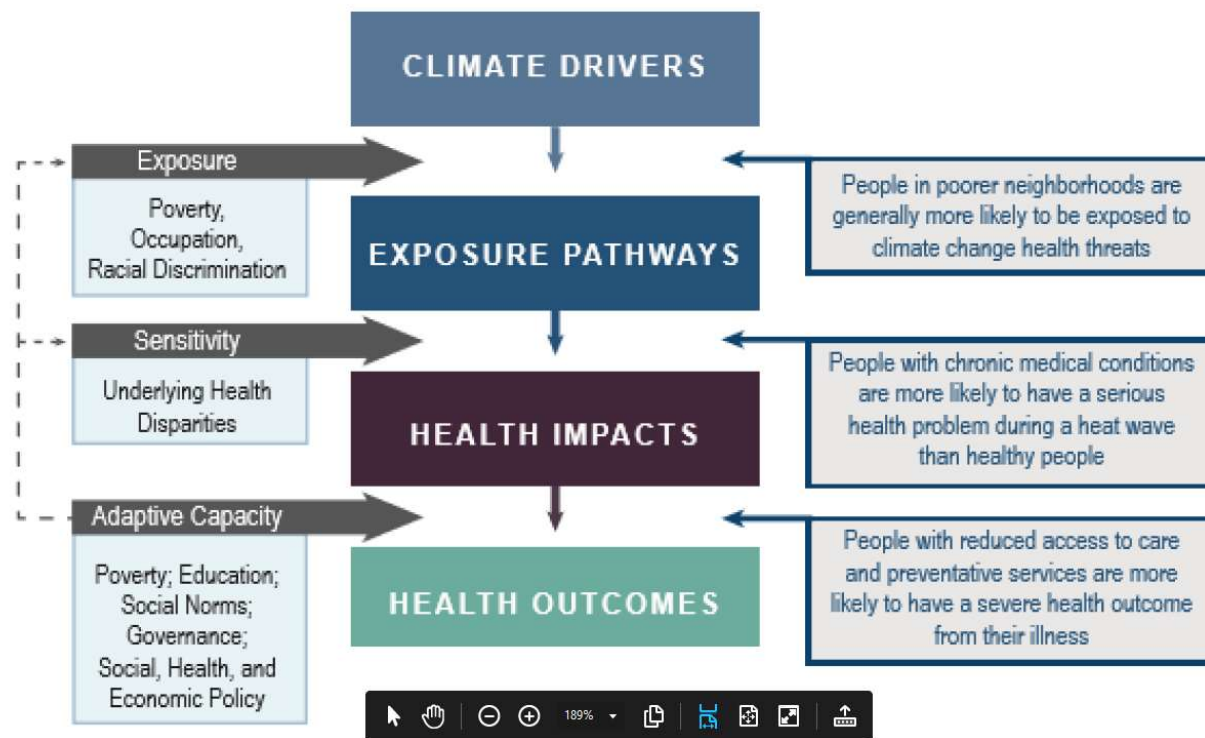


Climate Change, Insurance and Vulnerable Populations
Discussion Paper

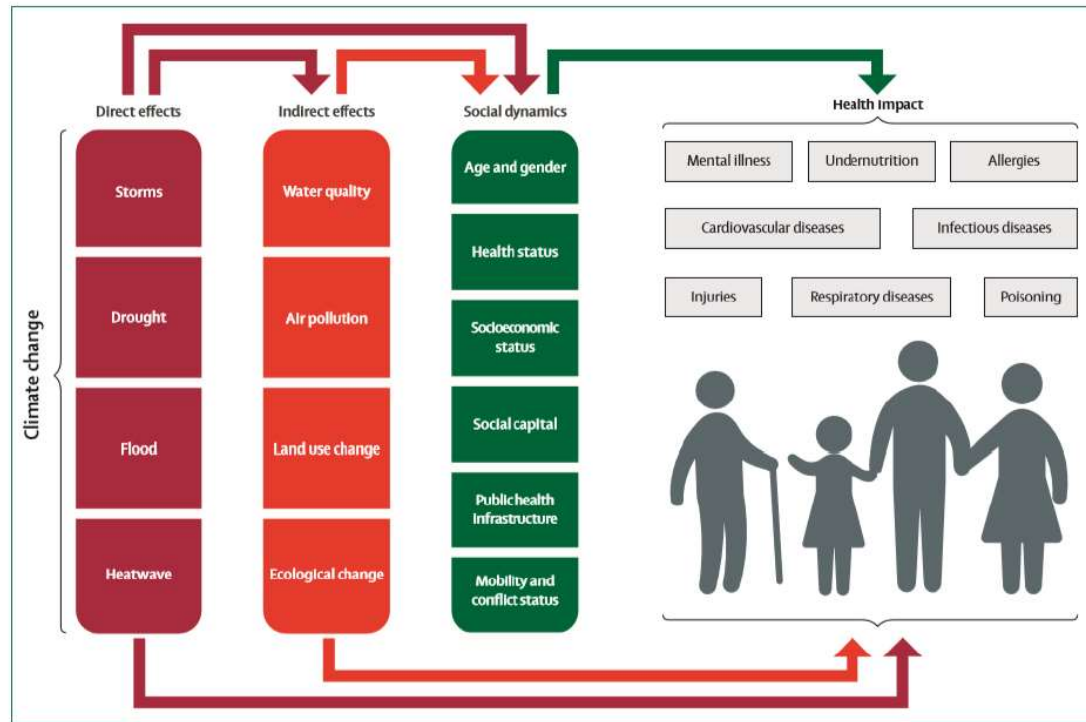
Resource and Environment Working Group
October 2019



Intersection of Social Determinants of Health and Vulnerability



Health Effects of Climate Change



What we do

Global Parametrics provides clients with tailored risk transfer products to better manage climate and natural disaster risks.



STRUCTURE

We structure tailored climate & disaster risk indices with pre-agreed payment thresholds and amounts.

MONITOR

We monitor, which also includes forecasting, the index throughout the pre-agreed period of risk.

FINANCE

Client receives cash payment from GP NDF within days of (or before) a disaster event if a pre-agreed payment threshold is met.

We have products for drought, excess rain, flood, earthquake, tropical cyclone, volcano, forest fire, wind speed, solar, etc.

B-Ready Project – promoting disaster resilience in the Philippines



The Actuary – April 2020

Forecast-based financing targeted to **those working with** the poor (we don't do retail products).

- **Humanitarian groups**
 - Oxfam
- **Financial institutions**
 - VisionFund
- **Agribusinesses**
 - South Africa
- **Governments**
 - Via World Bank

Getting cash in before the impact can turn the idea of insurance paying for losses slightly on its head –paying to prevent loss

Early financing is a critical reinforcing mechanism to build resiliency



GP Partnered with VisionFund on Recovery Lending

The Economist January 27th 2018

...come, holdings and spending, it will create new sources of value. The firm employs 20,000 financial advisers (formerly known as brokers) who, over time, may form teams made up of people with very different skills, such as in taxes or inheritance law. A linked online offering that the firm hopes will appeal to millennials was recently launched, enabling investment decisions to take into account preferences such as environmental concerns.

The firm sees its best opportunities in cossetting its clients so well that they bring in some of the vast investments they hold elsewhere. The rub is that others doubtless feel the same. Wells Fargo and Bank of America Merrill Lynch have somewhat similar approaches and are doing well, as are many independent financial advisers. Electronic start-ups such as Wealthfront and Betterment claim to do most of what the older firms do, but at a fraction of the cost. They are attracting younger customers. Betterment says its clients are, on average, 37; Morgan Stanley's are in their late 50s or early 60s. A harder-to-track cohort of investors ignore advisers altogether and instead invest directly in cheap, passively managed funds.

In short, with so many ways to fail, even Mr Gorman's decade-long record cannot quell all doubts. But scepticism is countered by the fact that it all seems to be working. And enough consistent progress has been made to suggest Morgan Stanley's returns may one day climb beyond the "barely adequate". ■

Microfinance and climate change

Bucks after the bang

Using microcredit in disaster relief

BOTH, in different ways, worry about liquidity. And global warming may, indeed, be bringing meteorologists and financiers together. On January 18th, VisionFund, a microlending charity, and Global Parametrics, a venture that crunched climate and seismic data, launched what they billed as the "world's largest non-governmental climate-insurance programme". The scheme will offer microfinance to about 4m people across six countries in Asia and Africa affected by climate-change-related calamities.

Natural disasters are becoming more frequent and severe. They disproportionately affect poor countries, where many eke livings from vulnerable agricultural land. Yet it is often in the aftermath of disaster that credit is hardest to obtain. As non-performing loans rise and the percep-

Small pots of liquidity



tion of risk increases, microfinance institutions (MFIs) rein in lending; they receive little support from donors and relief programmes, which tend to favour humanitarian aid. Stewart McCulloch, VisionFund's insurance boss, says that "recovery lending"—small loans with special terms—can act as a "safety net" by helping stricken households restart businesses.

Evidence suggests the money is usually paid back. In 2016, using a £2m (\$2.7m) grant from the British government's development arm, VisionFund's MFIs provided microloans to 14,500 families in Kenya, Malawi and Zambia hit by El Niño, a weather system that caused severe droughts and floods. In all three countries, MFIs ended up lending far more than expected. Yet 93% of loans were repaid by May 2017, and missed payments were rarer than usual. Many borrowers made their livelihoods more disaster-proof by starting more drought-tolerant activities such as trading or horticulture. MFIs, for their part, found new clients among those their normal lending criteria excluded—without jacking up interest rates.

Encouraging though this is, expanding operations at such a juncture is difficult. According to Jonathan Morduch of New York University, the effectiveness of such loans relies heavily on their speedy disbursement. Yet MFI staff often live near affected areas and so need time to get back on their feet after disaster strikes; many lack, for example, backup IT systems. Lots of lenders are inhibited from offering more flexible terms to their unfortunate borrowers by loss-provision rules, and write-down formulas set by regulators.

But the biggest difficulty is in raising finance for recovery lending. Grants may not be available. This month's initiative will give MFIs prompt access to liquidity

after a disaster, helping them meet increased demand, for an annual premium of about 0.5% of the value of their portfolios, in addition to the normal cost of funds. Global Parametrics provides insurance cover through a contingency-credit facility from the InsuResilience Investment Fund (formerly known as Climate Insurance Fund), an initiative of KfW, a German government development bank, and risk capital from the Natural Disaster Fund, backed by the British government. Both also aim to raise money from private investors.

Other institutions could help. The World Bank has created a disaster risk-pooling system that covers the Pacific Islands, which are very prone to climate-related hazards. The countries pay a premium into a common pot, from which they can draw cash after a calamity. Some of the bank's programmes also include a "zero" component, where funds allocated to a project can be switched to emergency disaster relief at the government's request. If a disaster is declared. In both cases, a share of the proceeds could go to recovery lending.

Whether MFIs would qualify for that money is up to the government. And that hints at a broader problem. Though independent, microlenders may be hindered in times of crisis if they are not part of national disaster-contingency plans, says Michael Goldberg of the World Bank. Private dollars can help make recovery lending a bigger thing. But to gain greater currency, local regulators and governments must also be convinced it works. ■

Private debt in Europe

The direct route

MILAN Some investment funds will lend where banks fear to tread

WHEN Caronte & Tourist, a Sicilian ferry company, needs a new ship, it is cheap and easy to borrow from a bank. But in 2016, when Caronte's controlling families wanted to buy back the minority stake held by a private-equity firm, banks balked at the loan's unusual purpose. Edoardo Bonanno, the chief financial officer, also worried that the €30m (\$33m) in extra bank debt might make shipping loans harder to obtain from them in future. So he turned instead to a direct-lending fund run by Muzinich & Co, an asset manager.

Such funds are only about a decade old in Europe (and not much older in America, where they started). Assets under management at Europe-focused funds increased from a mere \$330m at the end of 2006 to \$73.3bn by mid-2017, which includes \$27.9bn of "dry powder", or funds yet to be

Finance and economics 65

The Economist Jan 2018

VisionFund INTERNATIONAL | World Vision

InsuResilience InvestmentFund | GLOBAL PARAMETRICS

A²RDIS

African & Asian Resilience in Disaster Insurance Scheme

15 January 2018

4 million beneficiaries
690 thousand families protected
 Cambodia, Kenya, Mali, Malawi, Myanmar, Zambia

\$10m InsuResilience Investment Fund
Contingent credit facility
\$3.2m Global Parametrics Natural Disaster Fund
Catastrophe protection

KFW | **BlueOrchard** Impact Investment Managers | **Department for International Development**

Development Partners:

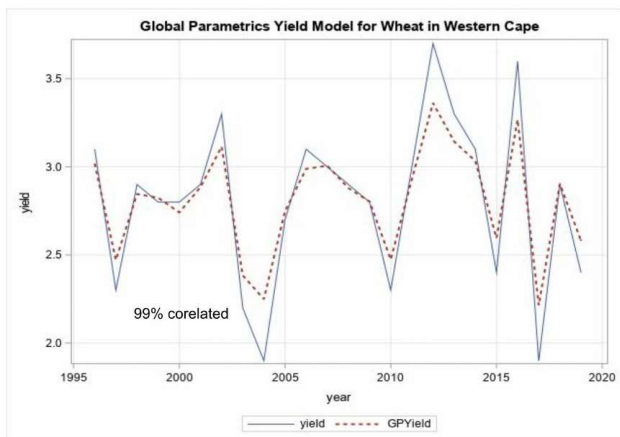
THE ROCKEFELLER FOUNDATION | **FMO** Entrepreneurial Development Bank | **ADB** Asian Development Bank

GP GLOBAL PARAMETRICS

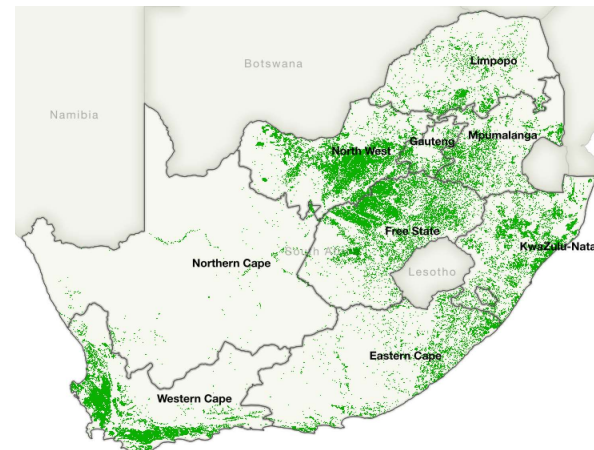
Crop Modeling in South Africa: GPYield

- GP uses state-of-the-art random forest + machine learning to construct a state-based GPYield. The same model can be used for any current growing season to predict that year's yield using both real time and **forecast data**
- Given GP's modular methods for crop yield prediction, analysis can be applied in an identical manner for any geography where there is reliable yield history

GPYield for Wheat in Western Cape



Focus Exposure on Cropland (GFSAD)





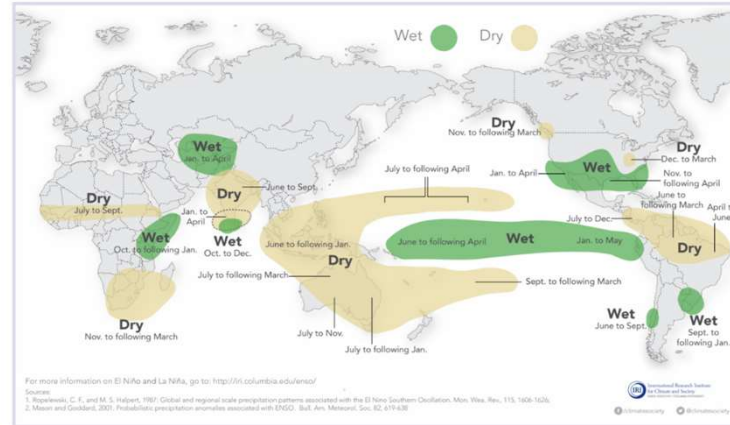
2019 World Bank Challenge Winner
Work in DRC and S. Africa

F³ Forecast and Financing for Food Security
Supply Shock → Price Shock → Food Insecurity



El Niño and Rainfall

El Niño conditions in the tropical Pacific are known to shift rainfall patterns in many different parts of the world. Although they vary somewhat from one El Niño to the next, the strongest shifts remain fairly consistent in the regions and seasons shown on the map below.



1

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Going
forward

Key
takeaways

Questions?

Resources

- Jerry Skees and Alin Radu. [Before the impact](#). The Actuary. April 2020.
- Subgroup of the Resource and Environment Working Group (REWG) of the International Actuarial Association. [Climate Change, Insurance and Vulnerable Populations: Discussion paper](#). IAA. October 2019.
- Global Parametrics, Oxfam Philippines, Plan International. [B-Ready Project – promoting disaster resilience in the Philippines](#). December 2019.
- Solveig Wanczeck, Michael McCord, Martina Wiedmaier-Pfister, Katie Biese. [Inclusive Insurance and the Sustainable Development Goals: How insurance contributes to the 2030 Agenda for Sustainable Development](#). GIZ. August 2017.

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