

DISASTER RISK FINANCING AND INSURANCE PROGRAM (DRFIP)



Understanding Risk Forum 2016



# Agenda for today

**9:00 – 9:25**

- Introduction to DRFIP

**9:25 – 10:30**

- Block 1: An Introduction to DRFI Analytics & Case Studies

10:30 – 10:45 Coffee Break

**10:45 – 12:00**

- Block 2: Risk Metrics & Monte Carlo Simulation. A country case study (part 1)

12:00 – 13:00 Lunch

**13:00 – 14:30**

- Block 2: Risk Metrics & Monte Carlo Simulation. A country case study (part 2)

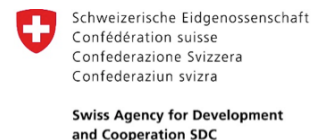
14:30 – 14:45 Coffee Break

**14:45 – 16:00**

- Block 3: Study case: risk metrics applied to six Central American's countries

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# Training on concepts and terminology for analytics related to disaster risk finance and insurance

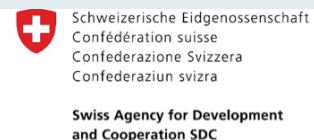
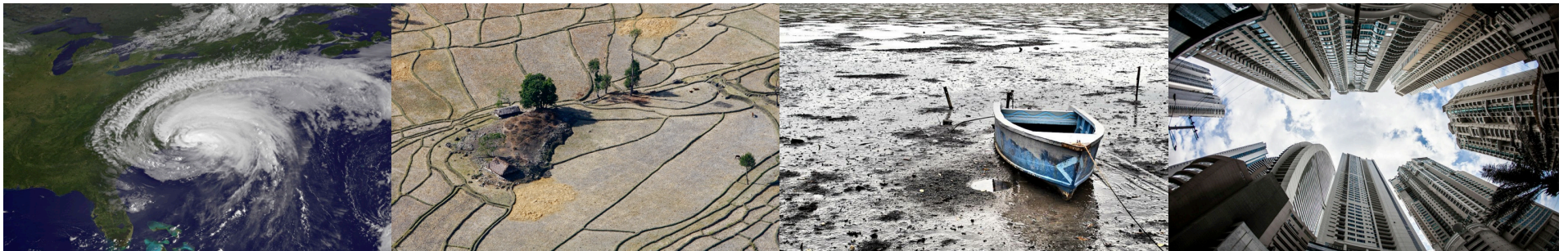
## Introduction

**Olivier Mahul**

Global Lead and Program Manager

Disaster Risk Financing & Insurance Program

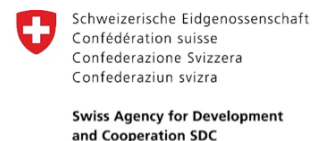
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# Disaster Risk Finance within the Disaster Risk Management Framework



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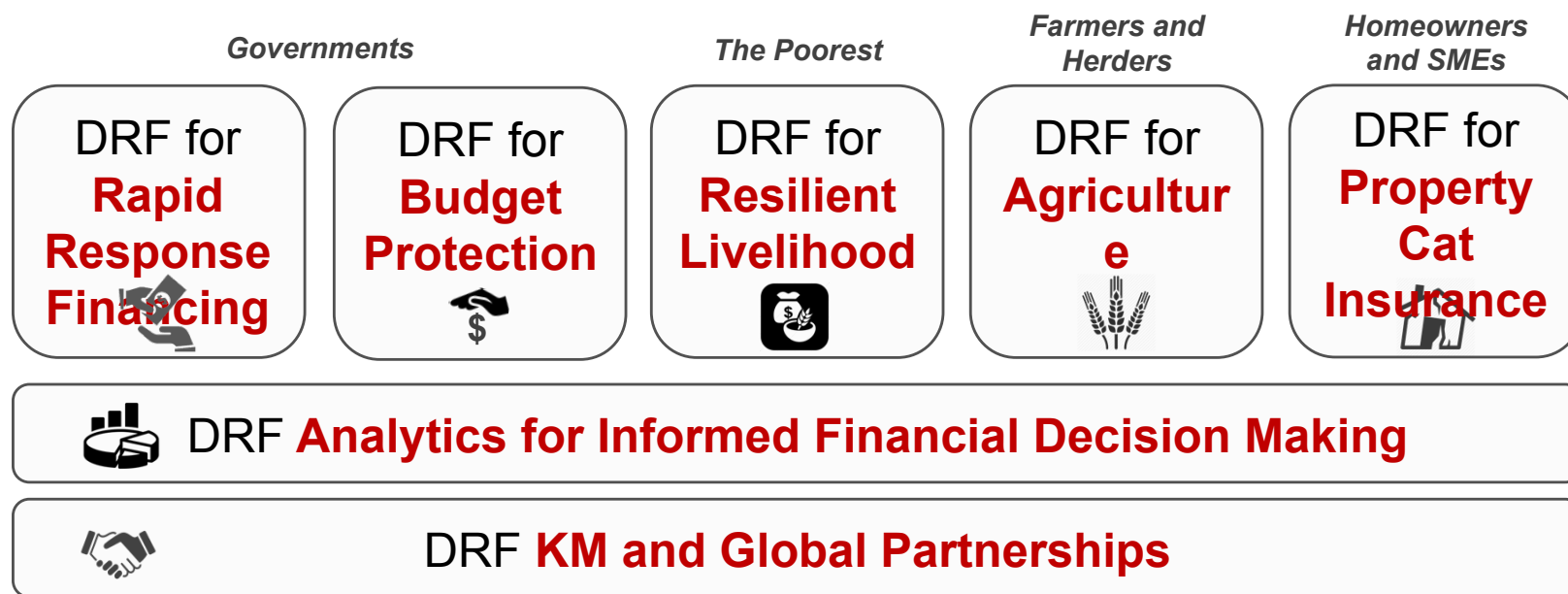


# Disaster Risk Financing and Insurance Program

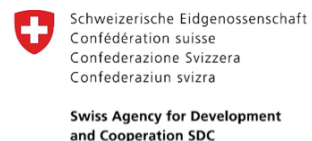
A joint program between WBG and GFDRR

DRFIP development objective to **increase financial resilience** of the countries through **minimizing the cost and optimizing the timing of meeting post-disaster funding**.

To achieve this objective, DRFIP provides the countries with **Analytical & Advisory Services, Financial Services and Convening Services** on Disaster Risk Finance.



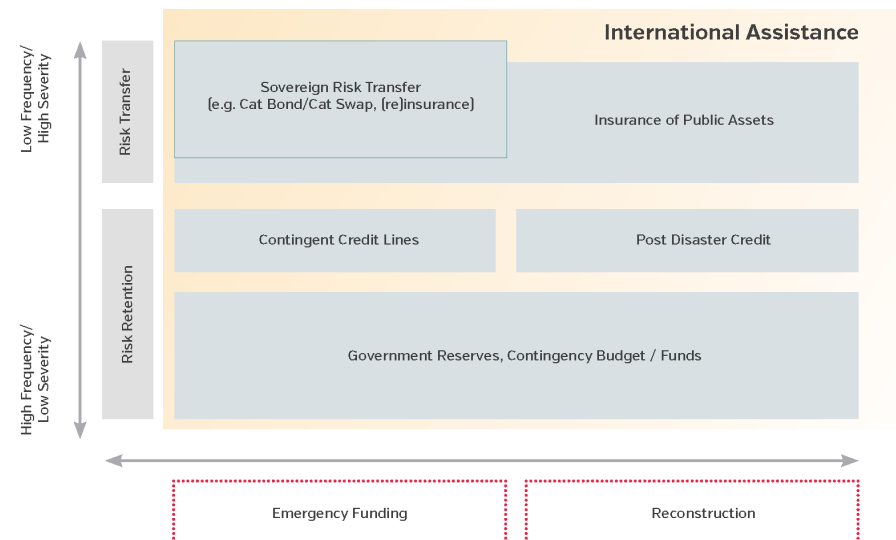
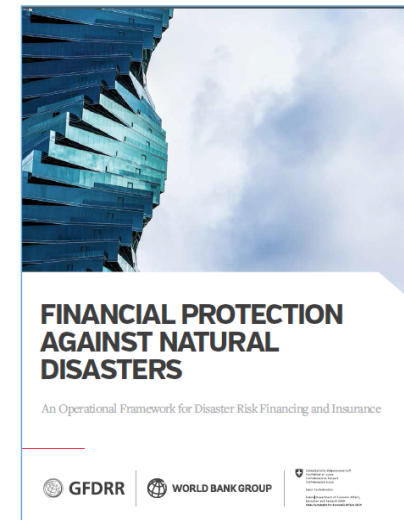
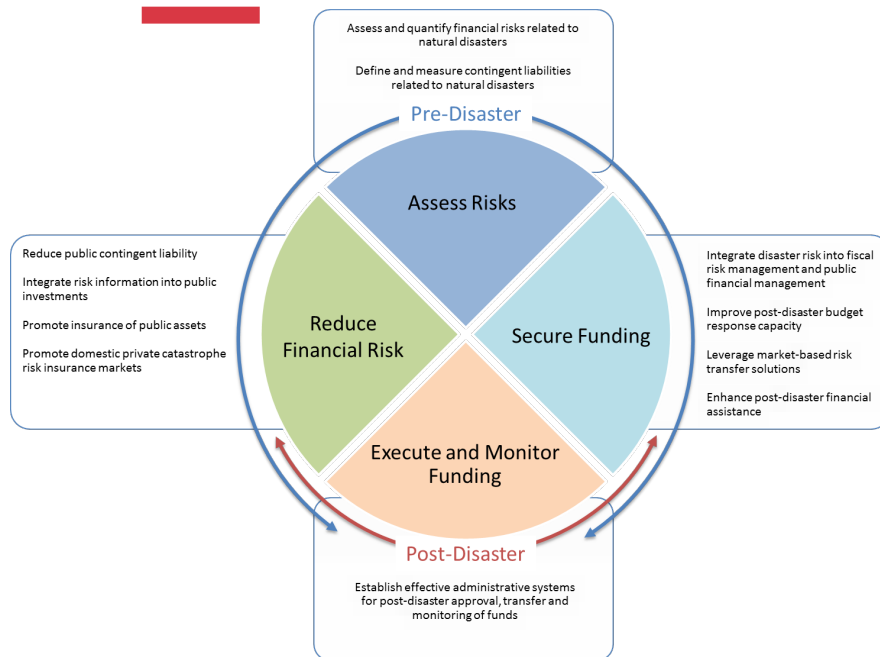
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# DRF Operational Framework



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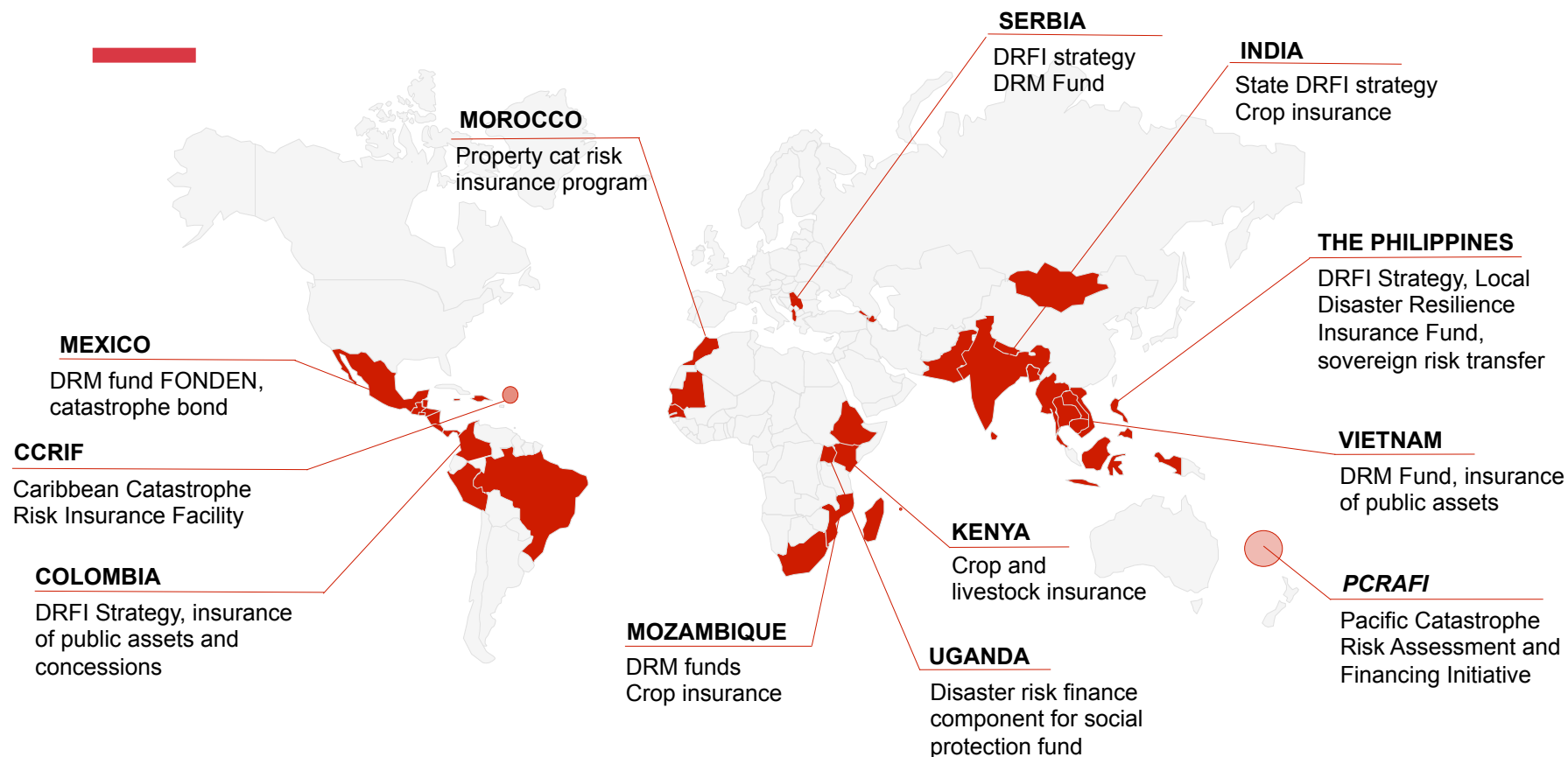
**Swiss Agency for Development and Cooperation SDC**

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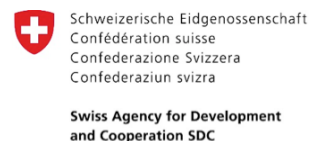


# DRFIP – Operational Engagement Worldwide

DRFIP is active in more than 50 countries



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# Disaster Risk Financing and Insurance Program

## Strong partnerships with GFDRR and donor partners

### DRF for MIDDLE INCOME COUNTRIES

Support Middle-Income Countries to become proactive risk managers to meet the cost of disasters and climate shocks.



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### DRF for AFRICA

Support African countries to manage the financial impact from disasters as part of building their overall resilience to climate and disaster shocks.



### DRF for RESILIENT LIVELIHOODS

Support governments to integrate social protection schemes in their DRF strategy to offer rapid and timely assistance to vulnerable households affected by shocks.



### DRF for GLOBAL POLICY, KNOWLEDGE & TRAINING

Leverage the WBGs convening power to invest in policy advice and knowledge management to support policy reforms and financial instruments.



**GFDRR**  
Global Facility for Disaster Reduction and Recovery

### DRF for SMALL ISLAND STATES

Support SIDS to strengthen their financial resilience as part of the broader disaster risk management and climate change adaptation agenda.



UKaid  
from the British people



### DRF for ASIA

Support Asian countries to manage the financial impact from disasters as part of building their overall resilience to climate and disaster shocks.

THE  
ROCKEFELLER  
FOUNDATION



UKaid  
from the British people



### DRF for AGRICULTURE

Support countries to implement sustainable, cost-effective public-private partnerships in agricultural insurance as part of broader agricultural risk.



USAID  
FROM THE AMERICAN PEOPLE



### DRF ANALYTICS

Provide governments with the information and tools to make informed financial decisions on managing disaster and climate risks.



UKaid  
from the British people



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**GFDRR**



**WORLD BANK GROUP**



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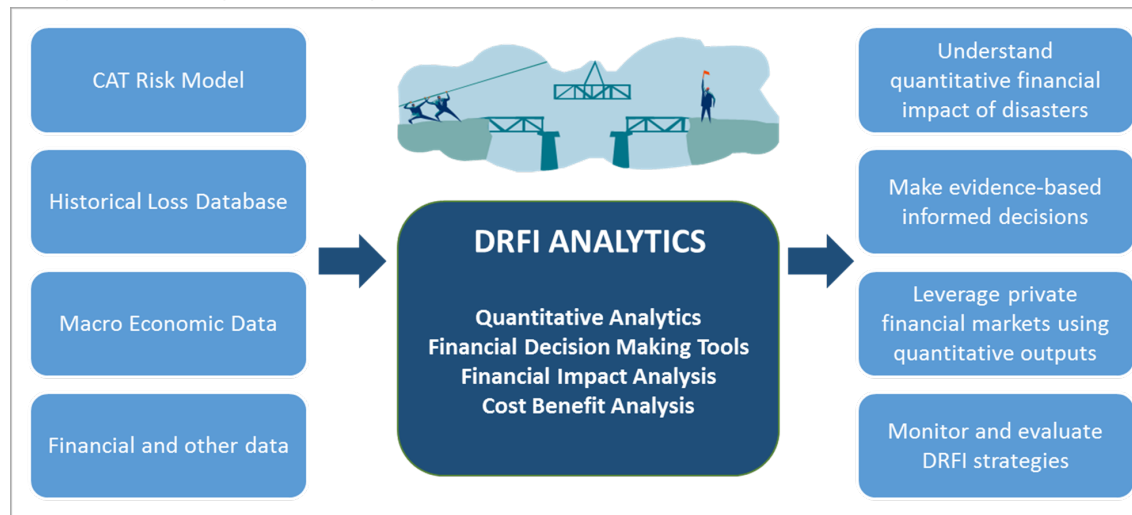
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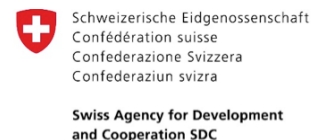
# DRF Analytics – Closing the Gap

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



- DRF analytics help analyze and evaluate risk and capacitate decision makers to better manage and prioritize risk.
- DRF analytics have supported WB client dialogue on financial resilience; but need to move to a structured approach for analytics

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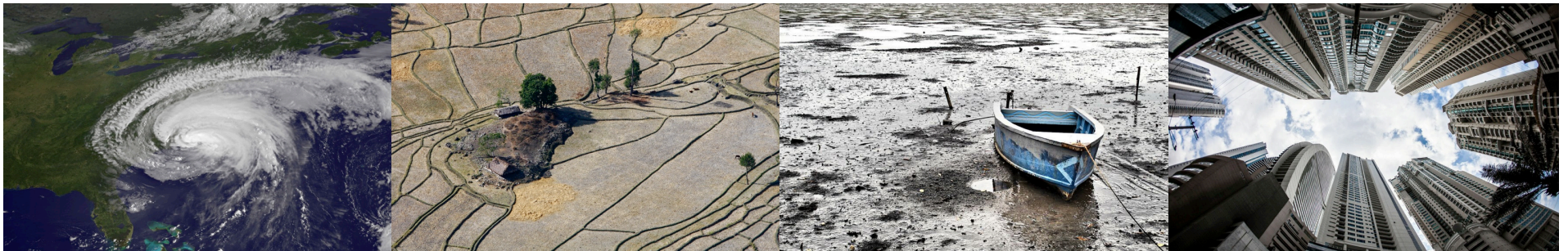
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# Training on concepts and terminology for analytics related to disaster risk finance and insurance

## Block 1: An Introduction to DRFI Analytics & Case Studies

**José Ángel Villalobos, Barry Maher and Darío Bacchini**



# Block 1: An Introduction to DRFI Analytics & Case Studies

## Agenda

**9:25 – 9:40**

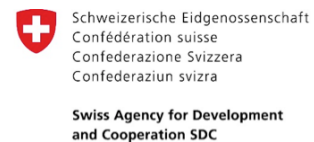
- Introduction to DRFI Analytics

**9:40 – 10:30**

- Three Case Studies

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# Disaster Risk Financing Analytics



# Objective of DRFI Analytics

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To help governments and other users of Disaster Risk Finance information

- **Understand** their financial risk related to natural disasters;
- Employ efficient **financial/actuarial analysis** in the development of DRF strategies;
- Improved **financial capacity** to meet financial needs immediately following natural disasters; and
- Increased capacity to **monitor and evaluate** DRF strategies.

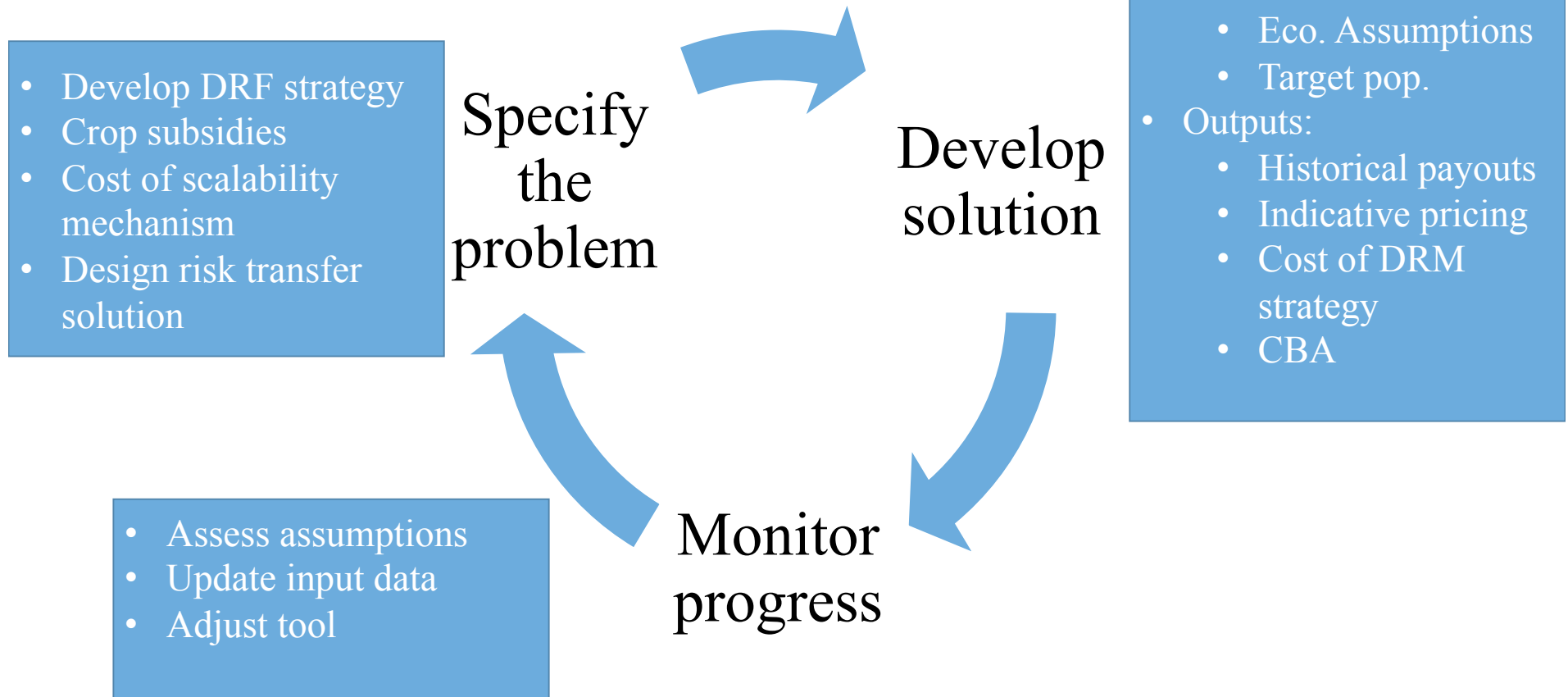
# Users of Analytics

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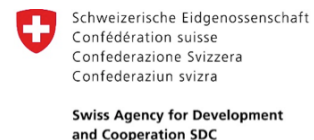
- The DRFIP analytics function applies expertise in actuarial and probabilistic catastrophe risk modelling, and economic analysis to increase capacity of stakeholders to take informed decisions on DRF based on sound financial analysis. Users include:
  - Client governments
  - Donors
  - Regulatory Bodies
  - Insurance Companies

# Process for analytics development

## Actuarial Control Cycle



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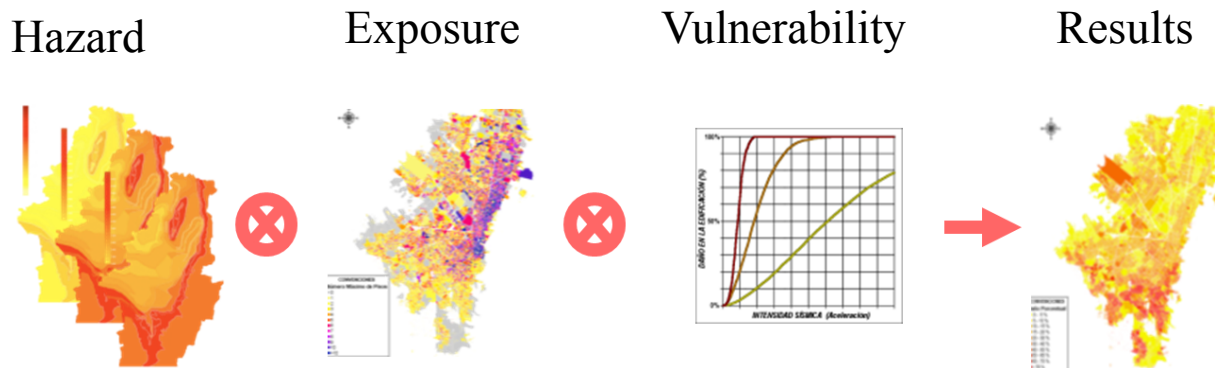
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# Process for analytics development

## Interdisciplinary approach is critical



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# Process for analytics development

## Interdisciplinary approach is critical

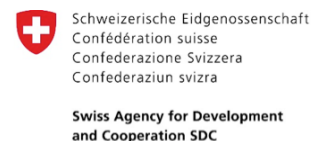
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- Hazard – how peril could affect region and / or economic sector
  - Earthquakes (Seismologists, engineers, etc.); Drought (Meteorologists, Agronomists, etc.); Flood (Meteorologists, Engineers, Agronomists, etc.)
- Exposure – what are the key assets
  - Crowd sourced / street mapped / insurance industry / government asset data
- Vulnerability
  - Engineers (buildings), Agronomists (crops), Economists (economy)
- Result: Obtain “Loss Distributions” or “Impact Assessment”

# DRFIP analytics delivered to date

Disaster Risk Finance Analytics for:	Analytics Tool/Approach
<b>Sovereign</b>	Cost Benefit Analysis
<b>Sovereign</b>	Risk Transfer Pool Analytics
<b>Sovereign</b>	Insurance Decision Making Tool
<b>Sovereign</b>	CAT in a Box Tool
<b>Sovereign</b>	Ad-hoc analytics
<b>Agriculture</b>	Agricultural Insurance Fiscal Costing and Product Design Tool
<b>Agriculture</b>	Agricultural Insurance Economic Impact Analytics
<b>Social Protection</b>	Social Protection Scale-Up Design and Financing Tool
<b>Social Protection</b>	Cost Benefit Analysis Framework
<b>Property catastrophe insurance</b>	Insurance Decision Making Tool and other ad-hoc analytics.

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# DRF Analytics Case Studies

## Central America: expansion of CCRIF

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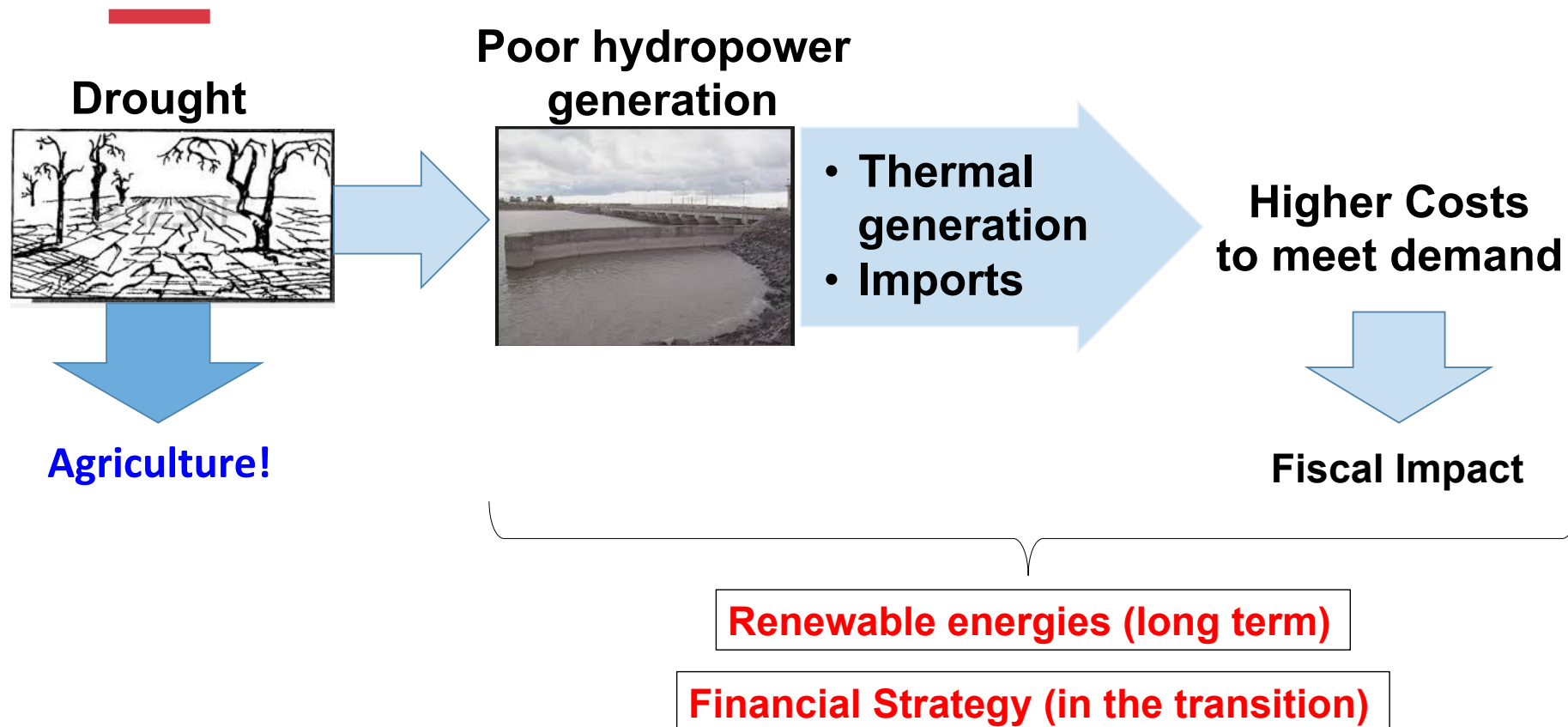
# DRF Analytics Case Studies

## Uruguay: risk management on energy sector



# Uruguay: DRM on electricity sector

## The problem and the strategy

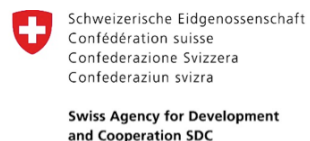


# Uruguay: DRM on electricity sector

- Partnership with Macroeconomics and Fiscal Management Global Practice to support Uruguay to strengthen resilience to drought.
- *Universidad de la República Oriental del Uruguay* developed an open-source software, SimSEE, which optimizes and simulates key variable related to Energy Sector.
- DRFI assessed, through a stochastic model, the financial risk that UTE faces due to an increase in the cost of meeting the electricity demand.
- Risk Management: change in Electricity Matrix (renewable)



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# Uruguay: DRF on electricity sector

## Financial Strategy (in the transition)

- Weather and Oil Price Insurance:
  - to cover the risk of high oil prices and insufficient rainfall
- Energy Stabilization Fund (FEE, in Spanish)
  - The rules of contributions and withdrawals of the FEE depend on the actual vs expected hydroelectric generation, and are regulated by Decree 305/2014.
- Contingent Investment Project Finance (CIPF)
  - Is aimed to be used in case a drought increases the costs of UTE.
  - The disbursement is triggered when the FEE's balance falls below a pre-specified trigger and a drought is in course.
- Cash Reserves
  - Available at the start of each year with money from UTE's day-to-day operations

# Uruguay: Dynamic Financial Analysis

## Inputs

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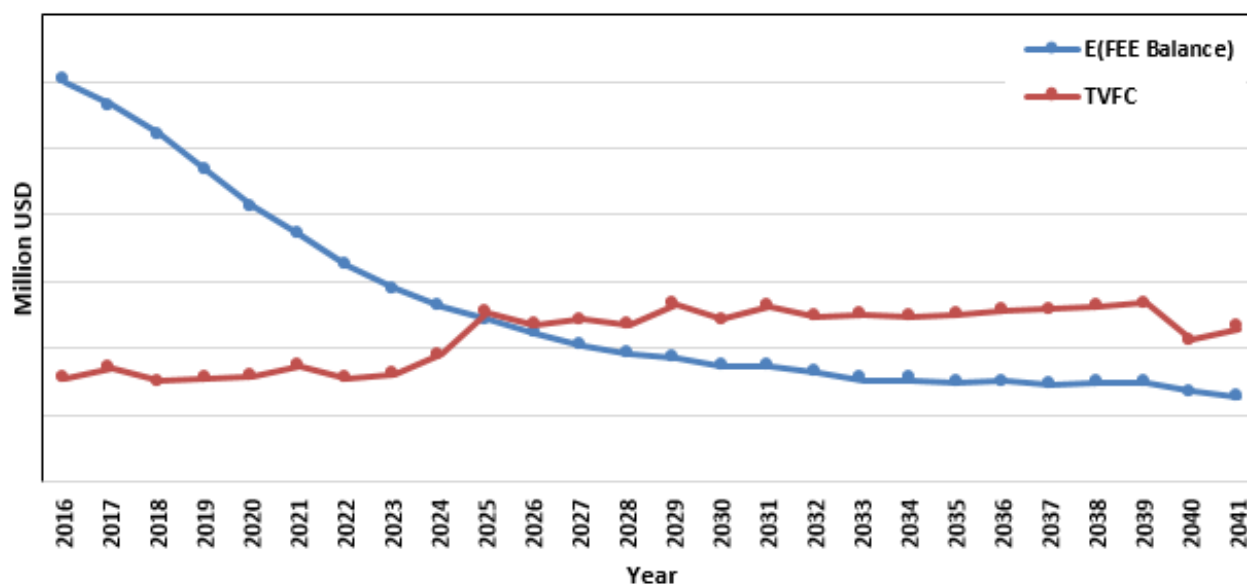
- Simulations from SimSEE
- Initial Balance of the FEE
- Wording of the Weather and Oil Price Insurance
- Contingent Loan specifications (2016 to 2018)
- Amount of the Cash Reserve

# Uruguay: Dynamic Financial Analysis

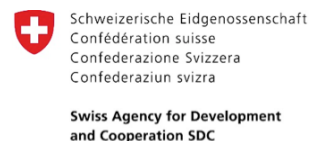
## Some outputs

Evolution of:

- Target Value of Fund Coverage (VOCF, in Spanish)
- Expected Value of FEE



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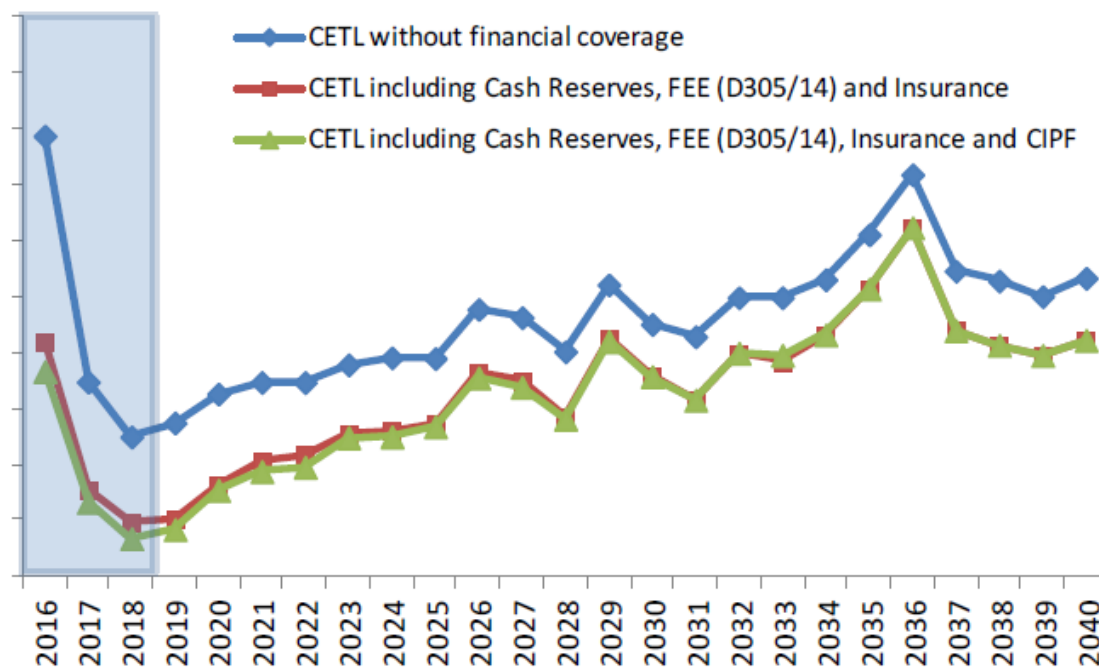
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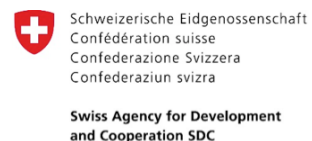
# Uruguay: Dynamic Financial Analysis

## Some outputs

- Amount that should be contributed by the Government (95% Confidence Level)



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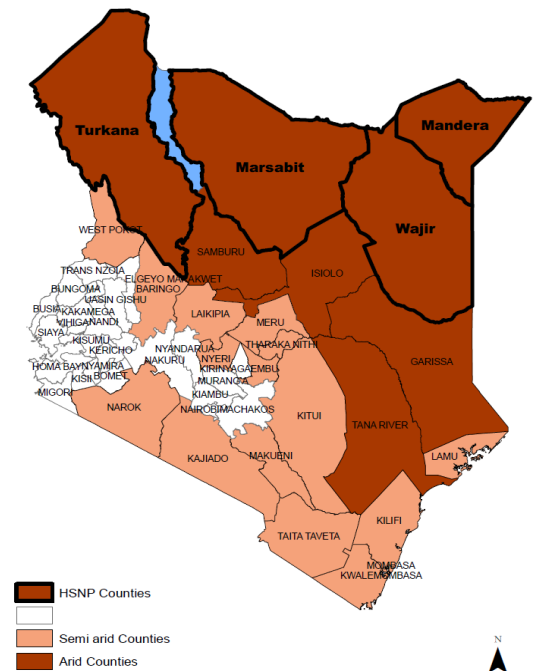
# DRF Analytics Case Studies

## Kenya: Hunger Safety Net Program

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# Hunger Safety Net Programme

- **HSNP Phase 2 (2013-17):** Operates in 4 poorest Counties in Kenya providing up to 100K HHs (*Group 1*) regular, unconditional electronic cash transfers (\$25 a month)
- Designed to **scale up and down in response to weather shocks** (e.g. drought/ El Nino), an extra ~300K HHs eligible for emergency CTs (*Group 2*)
- **Approx. 95% of HHs in 4 counties were voluntarily registered, ~60% of beneficiaries are women**
- Payments are **electronic**, directly into fully functioning **bank accounts** using biometric and pin enabled bank cards via banking agent network



# A DRF 'decision making' tool was developed to support the decision making process for financing HSNP scalability

## REQUIREMENTS FOR SCALABILITY (THE PROBLEM):

1. Ongoing social protection systems	CHECK
2. Early warning / data systems	CHECK
3. Safety net has capacity to absorb additional resources	CHECK
4. Risk financing strategies 1. <u>How much</u> 2. <u>How to finance</u>	???

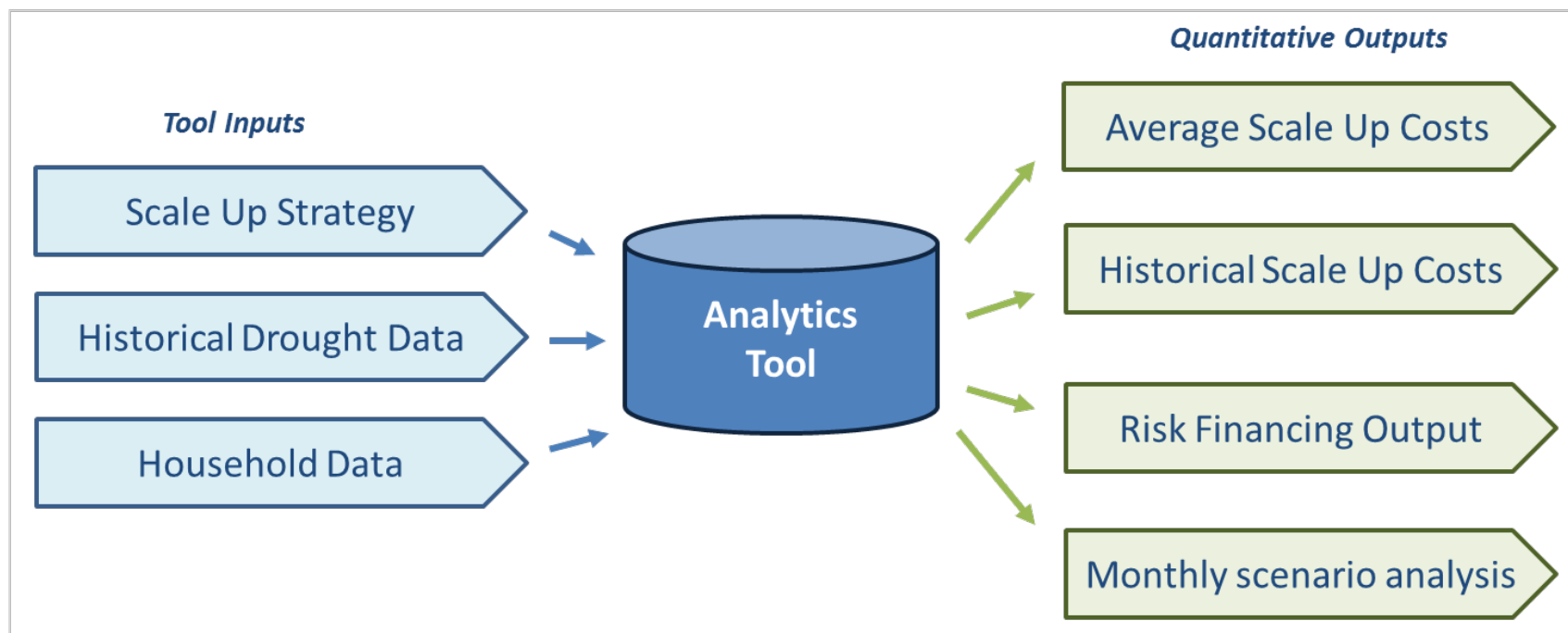
## THE SOLUTION:

- Developed *user friendly Tool* to *support policy dialog* in providing financial analysis surrounding these questions
- Output from Tool used to help decide how to fund costs and how *scarce resources* can be *allocated optimally*

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# DRF Tool/ Solution for SSN Challenge



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# The user interface of the DRF Tool was kept simple and intuitive to support capacity building efforts

INPUTS

**1. Exchange Rate (enter rate)**

Currency	USD
Exchange Rate: KSH to USD/GBP	91.64

**2. Geographical Coverage (on/off option)**

Mandera	Yes
Marsabit	No
Turkana	Yes
Wajir	Yes

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

Choose Severe and Extreme

**4. Population Coverage (input scale out percentage)**

Routine Households	27%
First Scale Out	50%
Second Scale Out	75%

**5. Transfer Amount per Household (input number for monthly payout amount)**

	Routine Households (Core Case Load) [Total Transfer Amount]	First Scale Out Additional Households	Second Scale Out Additional Households
Standard Payouts	\$27		
Payout in Severe Months (first trigger)	\$54	\$27	
Payout in Extreme Months (second trigger)	\$81	\$50	\$50

**6. HSNP Triggers (input values)**

	INDEX VALUE			
	MANDERA	MARSABIT	TURKANA	WAJIR
Set Triggers	Index Value	Index Value	Index Value	Index Value
First Trigger	20		20	20
Second Trigger	10		10	10

**7. Payout subject to bank account cap (select)**

Choose Yes

Paste sheet into new Workbook

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## The DRF Tool produced outputs that helped GoK assess the entered scalability design, and select one which is optimal



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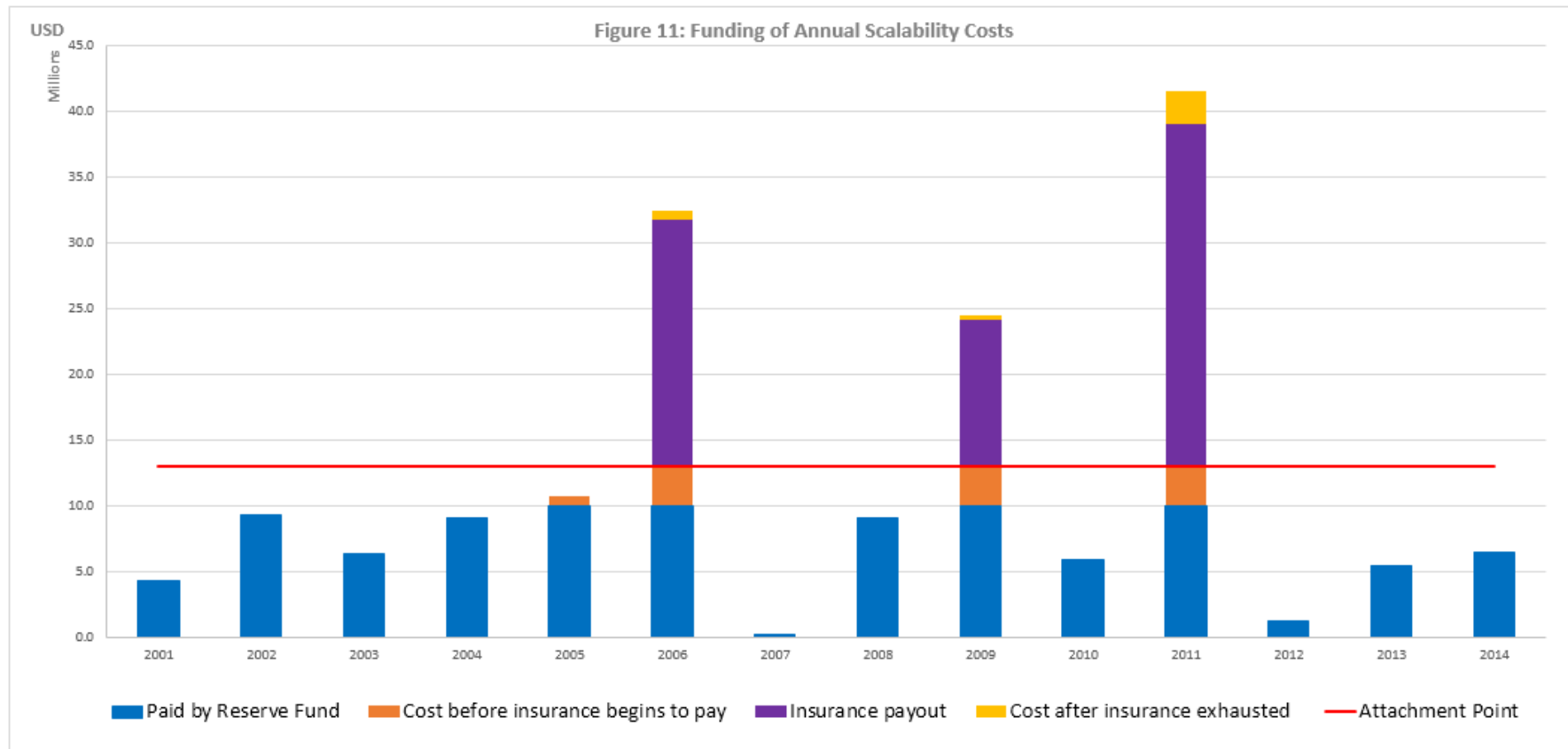


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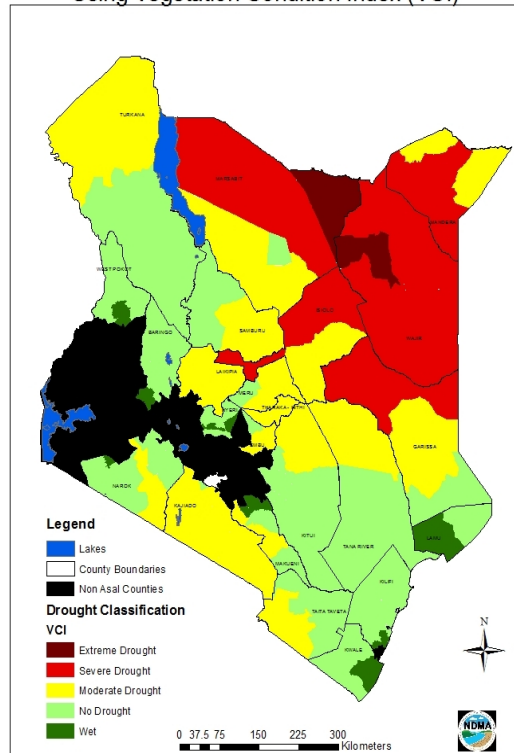
## The DRF Tool also produced indicative analysis on different financial instruments to manage the cost



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# The HSNP successfully scaled up in April 2015 in response to drought in Northern Kenya

Meteorological Drought Status as at 28th February 2015  
Using Vegetation Condition Index (VCI)



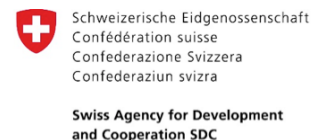
## Scalability Strategy Design:

- Counties in **serve drought**: payouts to **50% of households**
- Counties in **extreme drought**: payouts to **75% of households**
- Monthly payout per household is the same as current routine payout (KSH 2450 per month, approx. **US\$26 per month**)
- No extra funds to routine HSNP households

## The Results:

- Jan/Feb/Mar scale up payouts cost approx. **USD 4.5 million**
- Payout **funded by DFID** who have been a key partner in the design, development and operation of the HSNP

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# Key Takeaways

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1. Tool enabled GoK to meet one requirement of scalability
2. The Tool enabled GoK to 'monetize' policy decisions
  - Understand trade offs
  - Shaped the policy dialogue on scalability design
3. The Tools and results provide inputs into the discussion, but are not a silver bullet
  - Implications of operationalizing a program
  - Political implications of decisions