CLIMATE & DISASTER RISK FINANCING ONLINE TRAINING

SESSION 3:

FINANCIAL RISK MANAGEMENT AND DATA

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PERIPERI U | PARTNERS ENHANCING RESILIENCE FOR PEOPLE EXPOSED TO RISKS

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AFRICA ADAPTATION INITIATIVE

Outline

Part I:

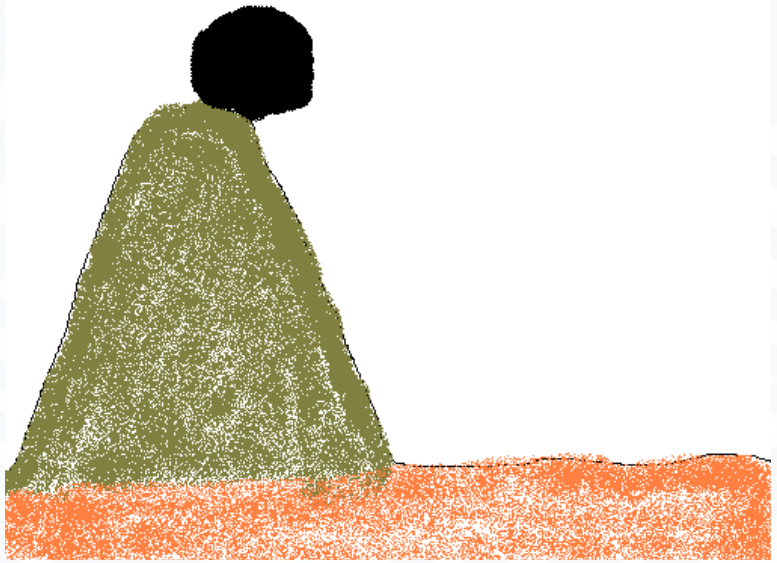
1. Key concepts in financial risk management of crises
2. When to implement a CDRF Policy
3. Internal and external stakeholders

Part II:

1. Data

Hazard

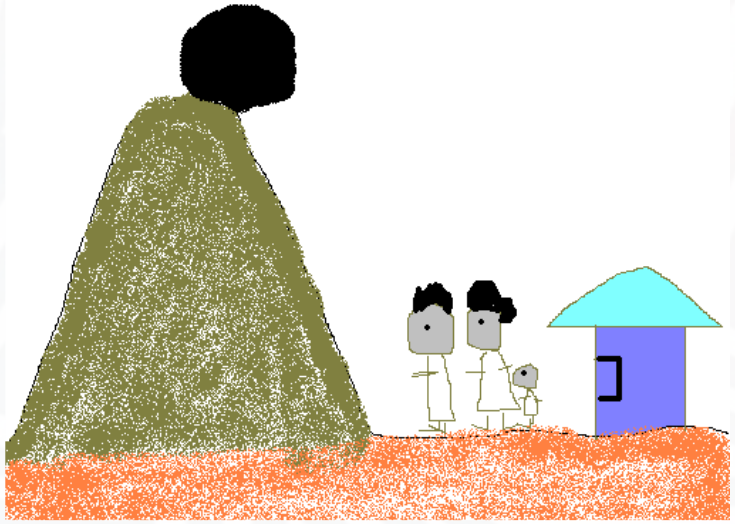
A process, phenomenon or human activity that may cause loss of life injury or other health impacts, property damage, socio-economic or environmental disruption



Vulnerability & Exposure

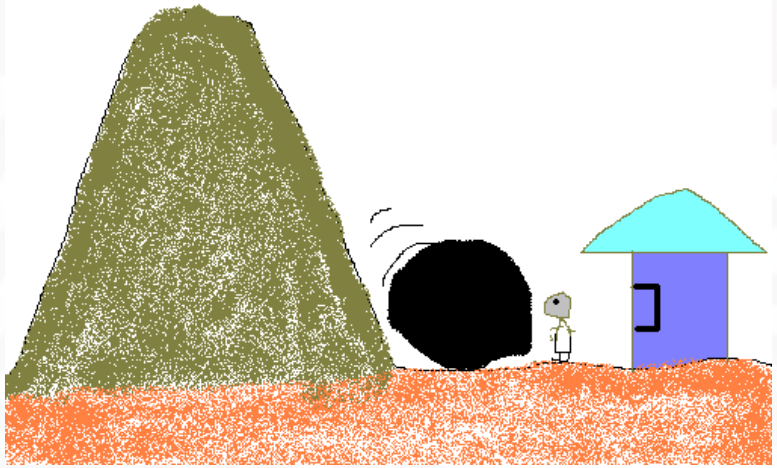
Set of characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard.

Degree of exposure to various types of hazards



Disaster

" serious disruption of the functioning of a community or society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society (UNDRR)



Resilience

Ability of a system, community or society exposed to hazards to resist, absorb, accommodate and recover from the effects of a hazard in a timely and efficient manner.

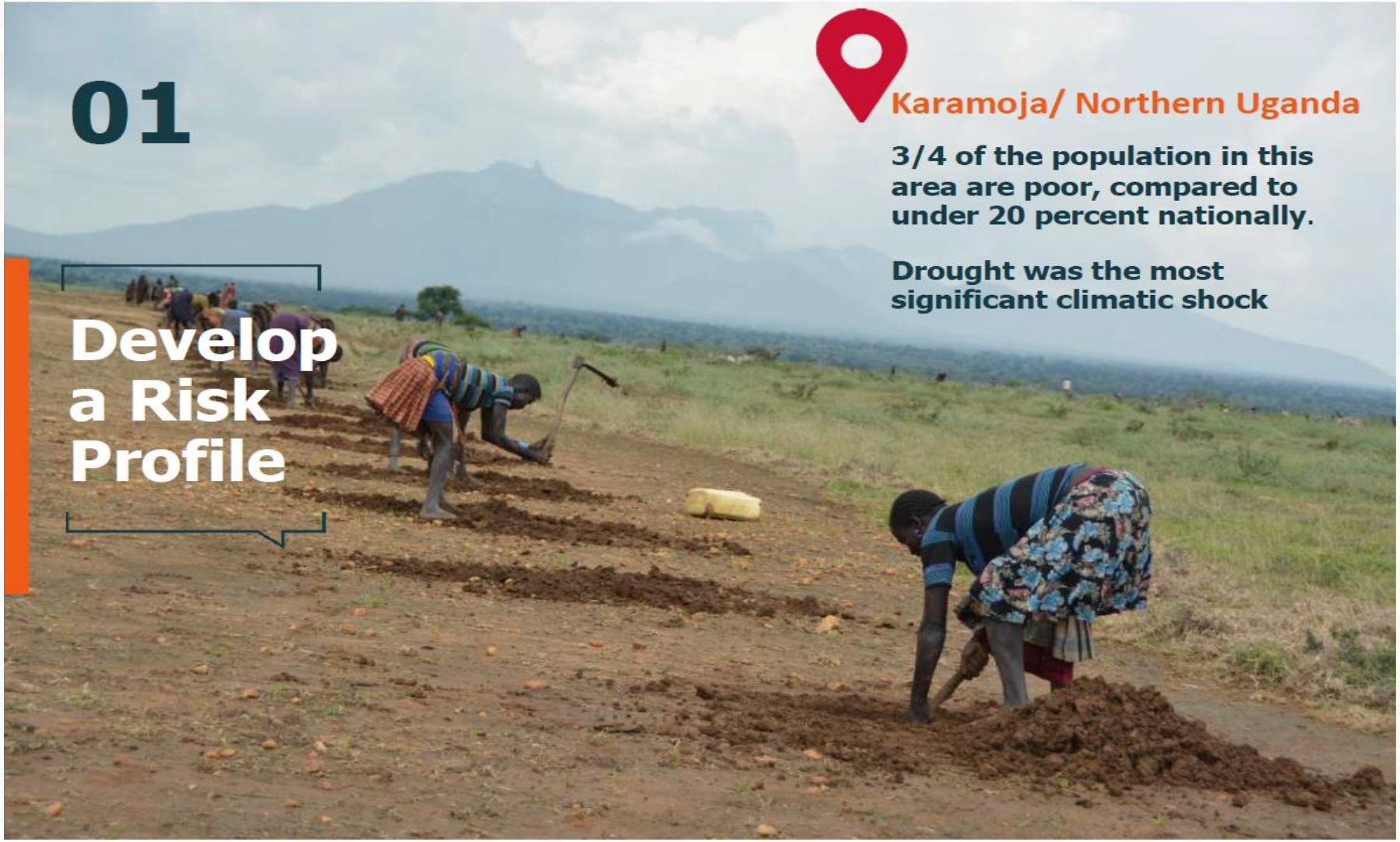
Financial Risk Management of crises

- Protect the economy by managing exposure to risk associated with disasters (before and after the disaster)
  - Risk assessment
  - Risk awareness
  - Risk prevention
- Develop a Disaster Risk Financing Strategy (see OECD guidelines)

Financial Risk Management

- [Cost] **Risk Profile -** threats to which individuals/regions are exposed. A risk profile is a useful way to mitigate potential risks and threats.
- **Relief Cost -** per person/per region – emergency or immediate expense
- **Average annual cost** per disaster – helps in planning or securing extra finance
- **Annual average loss** - absolute US$ or % of GFCF or % of GDP – assets exposed to disasters
- **Exceedance probability** of disasters - the probability that a certain value will be exceeded in a predefined future time period. The exceedance probability can be used to predict extreme events floods, droughts, etc. (Lambert et al., 1994; Kunreuther, 2002)
- **Threshold & Trigger**
- **Cost estimates** of actions – relief, scaling up interventions, etc

Risk profile

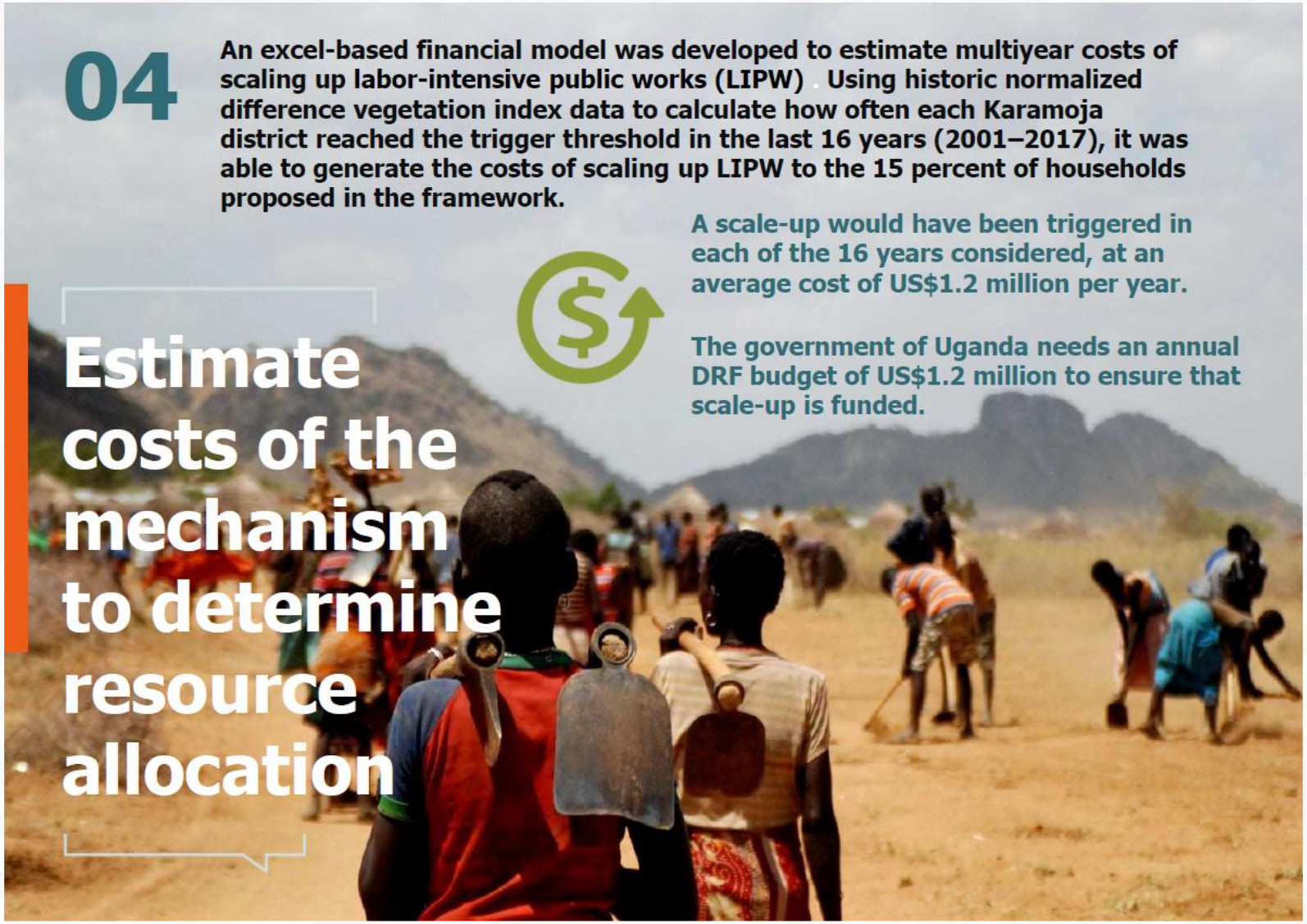


Policy priorities

Trigger


03
Design the scalability mechanism
Type of data and threshold to use in devising the trigger for the DRF mechanism
How scale-up process will unfold once triggered.
Type of monitoring to conduct
Geographical area scale-up is intended to cover & through what administrative unit
Number of Beneficiaries

Cost estimates



5 steps towards financial resilience

- Objective: Towards Strengthening Financial Resilience

Take Stock of how disaster response is currently financed

Gather risk information/carry out risk assessments

Decide on policy priorities

Build financial protection strategy

Work with and improve existing processes for DRF

WHEN TO IMPLEMENT A CDRF POLICY

When the **Decision Scenario or threshold** is triggered.

i. Who/what do we want to protect?

- Which perils?
- What sort of protection – rebuilding, food security, recovery, etc?

ii. What are our options?

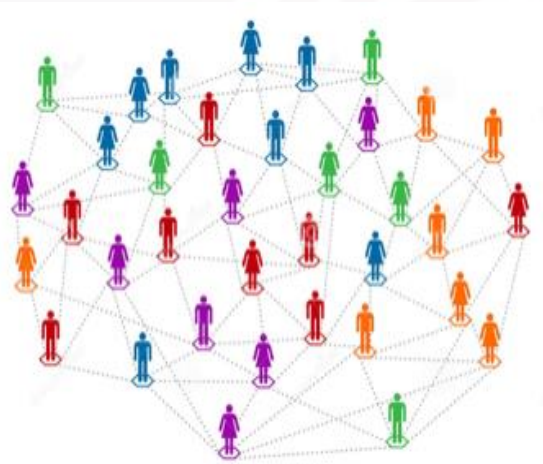
- Do nothing (now)
- Quantify risk and allocate resources internally
- Quantify risk and allocate resources across financing options

iii. Establish amount to be met from own budget, from financing options, left unprotected

iv. Develop contingency plans for each option

INTERNAL & EXTERNAL STAKEHOLDERS

- To develop a DRF policy, you need to exploit stakeholders, their interests in the DRF policy & the trade-offs you will have to make.
- People or groups with the power to respond to, negotiate with, and change the strategic future of DRF in the country
- NOT those who are affected by the presence or absence of DRF schemes, but who don't have any power to negotiate with those in positions of power
- NOT those who might provide services to support the creation of DRF instruments.
- Map them according to their Interest vs Influence

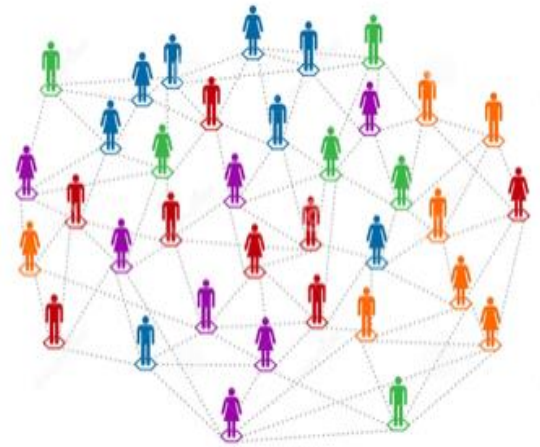


INTERNAL & EXTERNAL STAKEHOLDERS

- Stakeholder mapping:

i. By interest – identify your top 10

ii. By influence – identify your top 10



Mapping External Stakeholders

	Development organizations	Donors	Modelling companies	Market parties
Interest	Sovereign prosperity; Financial and physical resilience	Accountable and appropriate use of disaster relief funds	Access to quality data; Proprietary knowledge	Market penetration & growth at a risk-reflexive price
Influence	Provide resources, DRF know-how, experience on structure/organizing and legitimacy	Raising awareness; Start-up & operational funds	Risk identification; Measuring exposure; Pricing	Provide capital (payout); Risk transfer and risk management expertise

Mapping Internal Stakeholders

	Regional trade/ policy bodies	Politicians	Finance ministry	Other ministries & DRM functions
Interest	Sovereign prosperity; Regional stability	Remaining in power; Benefiting citizens	Appropriate/ cost-efficient use of funds/ budgets	Reconstruction; Resilience
Influence	Provide resources, Regional engagement, and legitimacy	Legitimacy; accountability; Decision-making power	Financial commitment; effective use of resources	Trust; Decision-making expertise; On the ground knowledge

Any Questions?

DATA USE IN CDRF: INTRODUCTION

3 questions to ask about data

1. **What** type of data do you need?
2. **Where** can you find the data?
3. Is the data **fit** for purpose?

THE VALUE OF ANALYTICS IS ONLY AS GOOD AS THE DATA THAT FEEDS INTO IT

I. WHAT TYPE OF DATA DO YOU NEED

Macro-economic data

Fiscal / financial data

Risk / loss data

BIG DATA SETS DOES NOT ALWAYS EQUATE TO USABLE INFORMATION

II. WHERE CAN YOU FIND THE DATA

Government agencies

Public sources

Humanitarian Organisations

Insurance companies

Risk Modelling Firms

III. IS THE DATA FIT FOR PURPOSE

Scaling data to current time period

De-trending data to remove trends in historical data

Removing unreliable data points

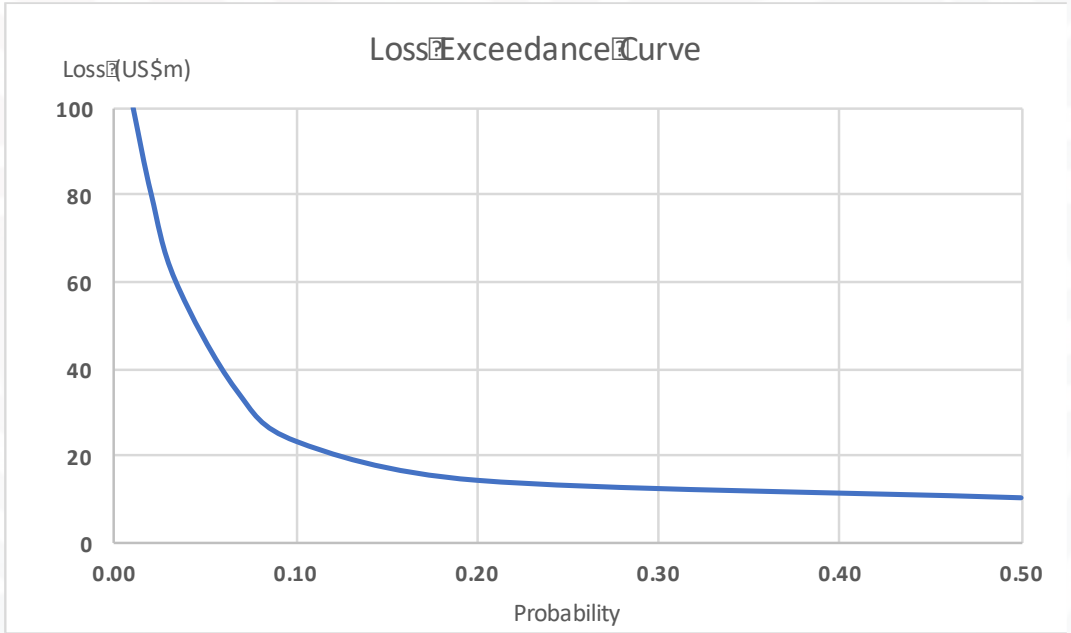
Adjustments to combine data from multiple sources

LIMITATIONS OF THE ANALYSIS GIVEN DATA FITNESS AND APPROPRIATENESS

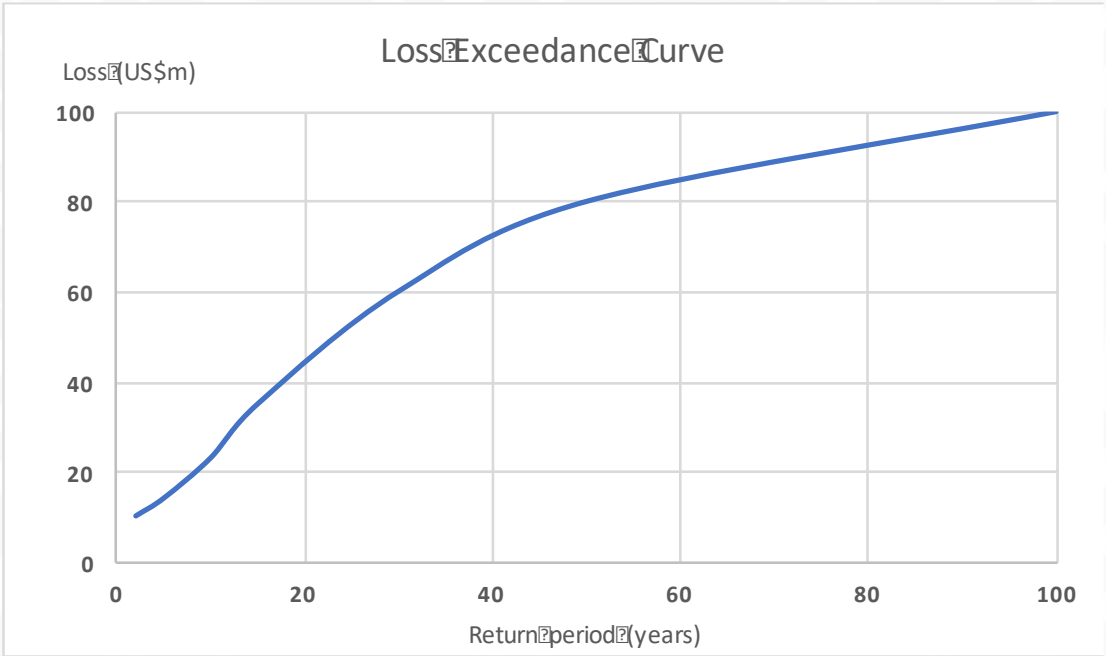
ANALYTICS = FROM DATA TO INFORMATION

Data	Analytics	Information
Macro-economic	Financial capacity building tools	For decision making
Fiscal / Financial	Financial impact analysis	For monitoring & evaluation
Risk/Loss	Economic, fiscal evaluation	For capacity building

Potential Disaster Losses = A Loss Exceedance Curve (LEC)



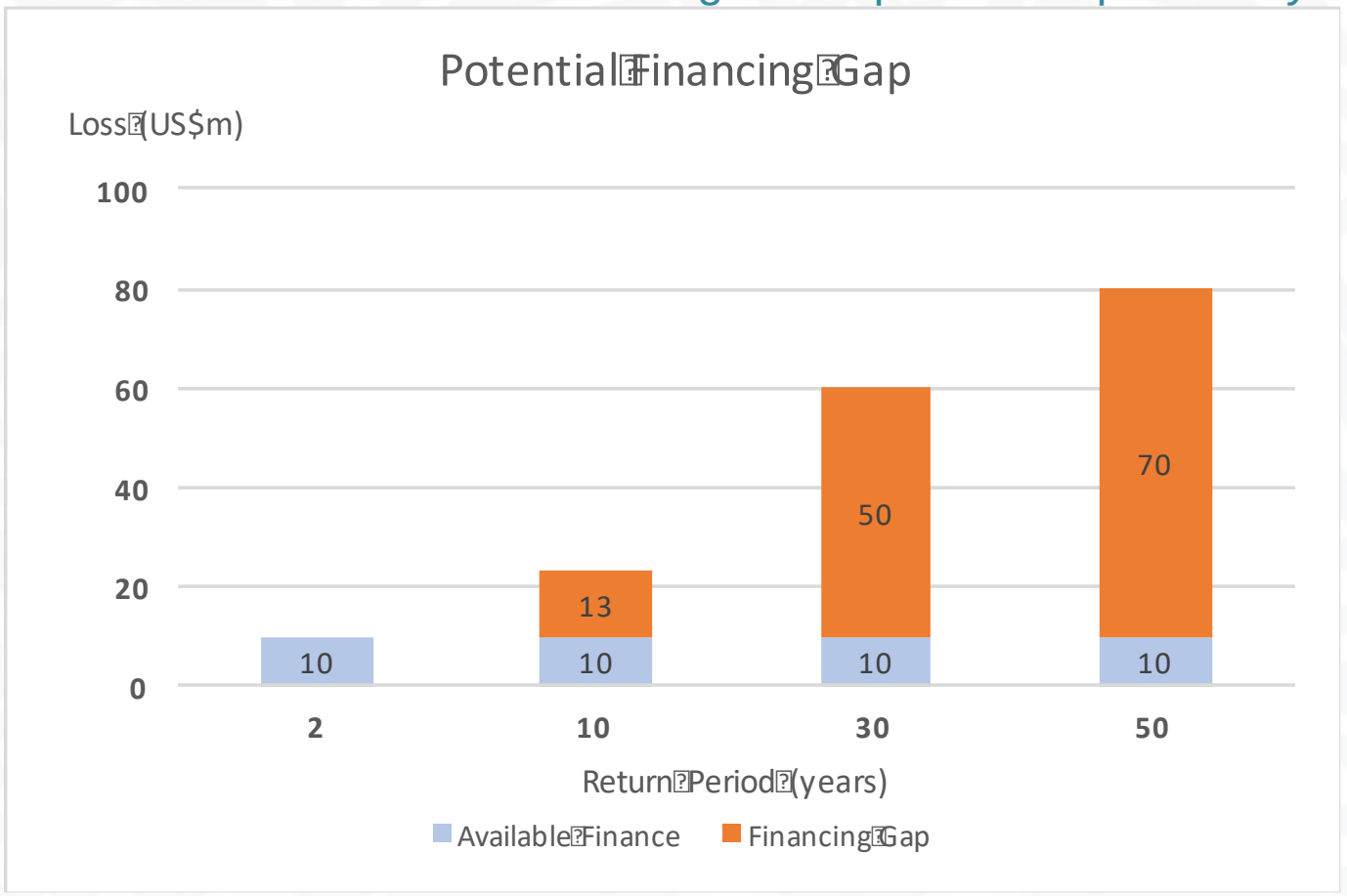
Type 1: x-axis showing probability



Type 2: x-axis showing return period = 1/probability

From Potential Disaster Losses to Financing Requirement

The **Financing Gap** = Potential Loss from Disaster *minus* Available Finance showing return period = 1/probability



III. WHICH DATA IS NEEDED & WHEN

- Trends and comparisons:
  - public/historical data, fiscal data from government sources

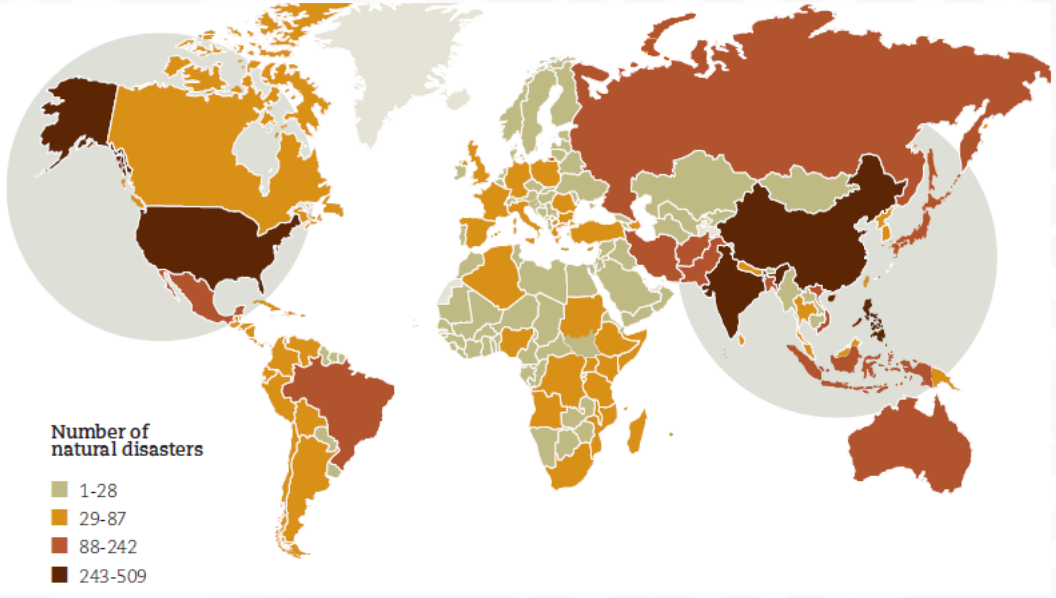
- Probabilistic Risk Assessment:
  - Hazard data - Degree of exposure data

- Empirical disaster risk Assessment:
  - Number and extent of damaged infrastructure
  - Amount of damage by sector

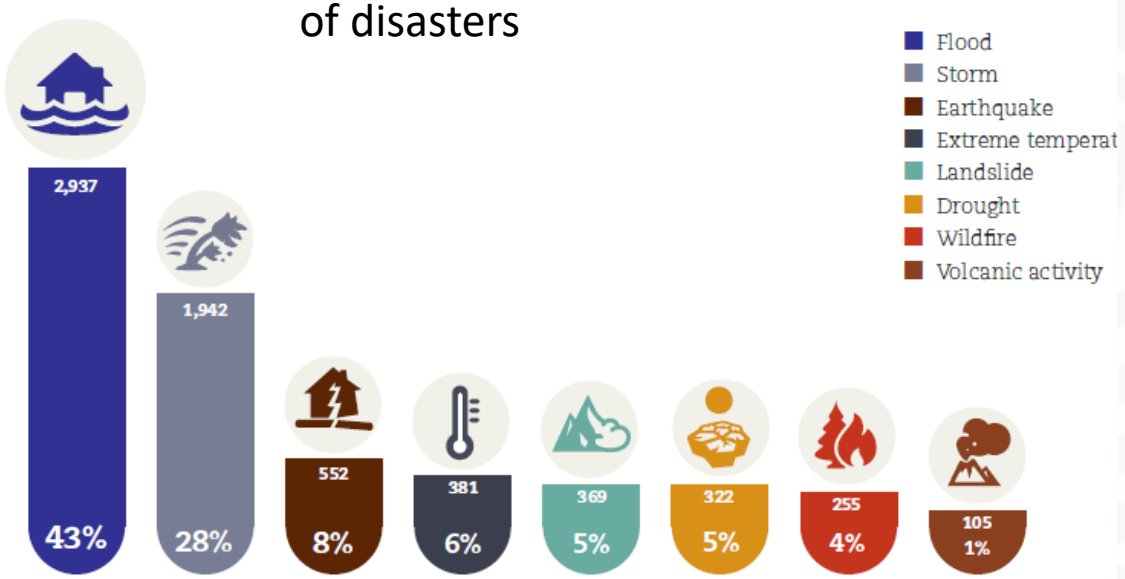
What data you need & when…..

- **HAZARD Data**: intensity/magnitude, frequency/occurrence/return period
  - Source: https://www.emdat.be/ https://www.undrr.org/
- **VULNERABILITY Data:** Degree of exposure to various types of hazards
  - Detailed information on buildings in various categories – commercial, industrial, residential, education/training institutions
  - Sources: www.worldbank.org/data/world
  - Data on vulnerabilities & exposures: www.cepii.fr/DATA www.fao.org/faostat/en/#data/TM

OPEN ACCESS DATA IS CHEAP BUT OFTEN STANDARDISED



Exposure to different types of disasters



IV. OVERVIEW OF SATELITE TECHNOLOGIES & DATA

Guest video:

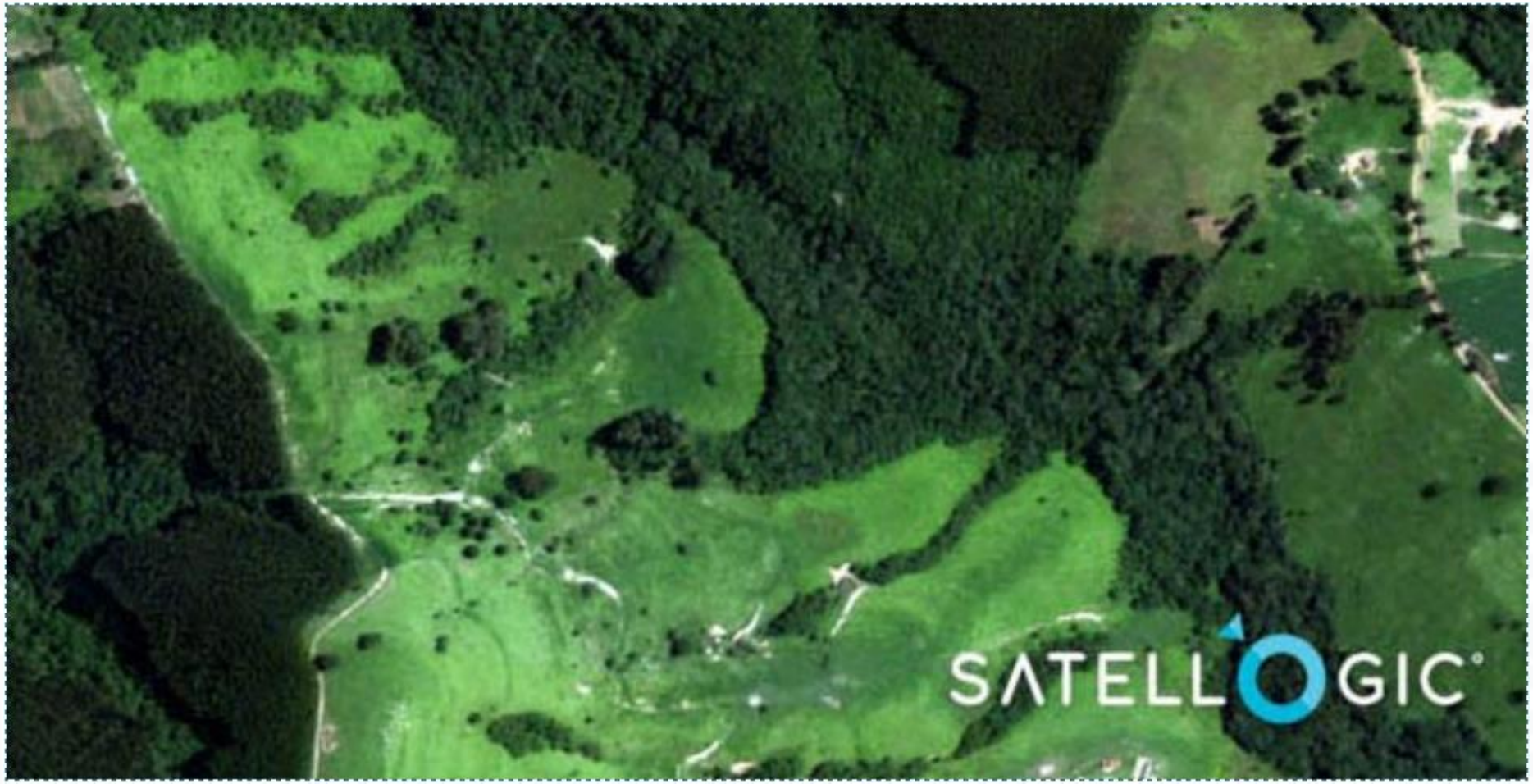
https://youtu.be/agZ-gEx3AOo

SATELITE TECHNOLOGIES

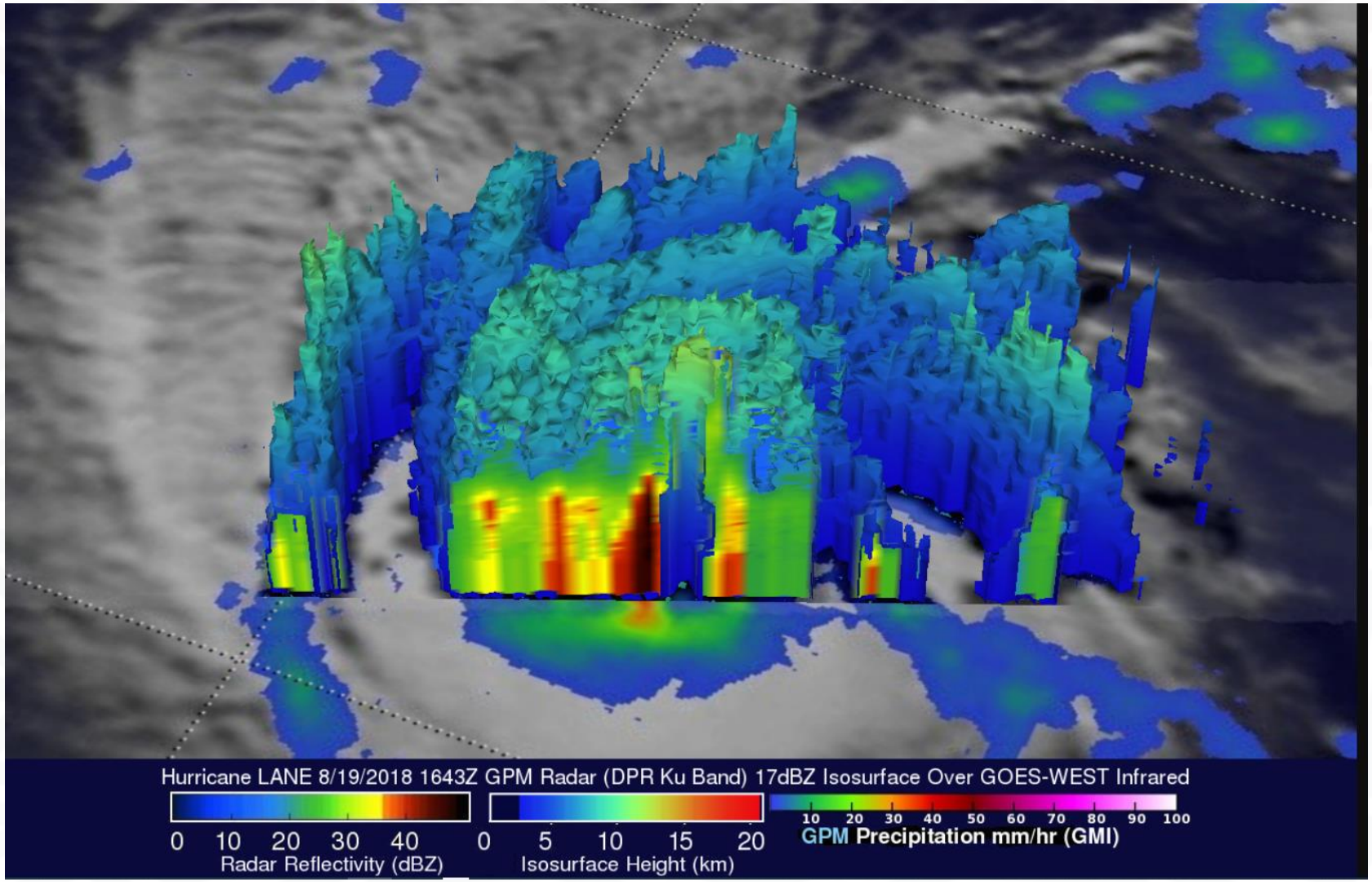
Satellite imagery, remote sensing and big data allow us to collect vast amounts of information

- Anticipating droughts: Next Generation Drought index (NGDI)
  - satellite-drought risk indicators are proxies for severity of a drought event before it happens
  - Data measurements of soil moisture, temperature, precipitation and vegetation greenness

SATELITE TECHNOLOGIES



SATELITE TECHNOLOGIES



SATELITE TECHNOLOGIES

- Modelling exposure to climate risk:
  - Satellite imagery provides information on asset-level exposure
  - Provides insights into the actual vulnerabilities
  - Two-thirds of the 50 essential climate variables (see Global Climate Observation System – GCOS) can only be observed from space, i.e. Earth observation is crucial
  - Simultaneous mapping of buildings, crops, assets, as well as droughts and flood-prone areas

  - Visual: https://youtu.be/D_TS-V6xAKQ

SATELITE TECHNOLOGIES

- Supporting the development of risk Financing Products:
  - Satellite imagery data currently used in advanced AI-training algorithms to develop satellite-based risk finance products in Morocco & Tunisia
- Global precipitation measurement (GPM):
  - satellite data used to improve forecasting, preparation, response, recovery, mitigation and insurance of natural hazards, including tropical cyclones, floods, droughts, wildfires, landslides, etc.
  - Study the internal structure of storms and changes over time, to make predictions that governments can use in decision making
  - https://gpm.nasa.gov/applications/disasters

SATELLITE DATA IS VERY EXPENSIVE

DISCUSSION (15 min)

- Perspectives on accessibility and reliability of data in selected regions
  - What is your country-specific experience on the data that you use?