SESSION 7

Deep Dive

Risk Information Systems

CAIP partners

ADB

Government of Ireland International Development Programme

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AIIB Asian Infrastructure Investment Bank

BCG

CIF

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ICIMOD

OECD Better Policies for Better Lives

UNDP

Urban Resilience Trust Fund

UK International Development Partnership | Progress | Prosperity

Institutionalizing Climate Adaptation Investment Planning

The Role of Risk Information & Technology in Building Resilient Investments

From Risk Intelligence to Risk-Informed Investment

CEO | National Disaster Risk Management Fund, Pakistan

16th September 2026

Risk Information: The Foundation of Resilient Investment

You Cannot Manage What You Cannot Measure

Climate and disaster risks are no longer occasional disruptions—they are material risks to development, public finances and infrastructure investment. Yet investment decisions are often made with incomplete answers to three fundamental questions:

Where is the risk?

How much could we lose?

What investment can reduce that risk most effectively?

THE FUNDAMENTAL SHIFT

FROM

Responding to disasters after they occur

TO

Anticipating risk and investing before losses occur

"Risk information must become a core input to development planning and investment decisions."

Why Invest in Risk Information Systems?

A strong Risk Information System enables governments to:

Identify Risk

Where are people, infrastructure and economic activity exposed?

Quantify Risk

What could be the potential physical and economic losses?

Prioritize Investment

Where can limited public resources achieve the greatest risk reduction?

Plan Financially

What future fiscal shocks and contingent liabilities could emerge?

Track Resilience

Are investments actually reducing risk over time?

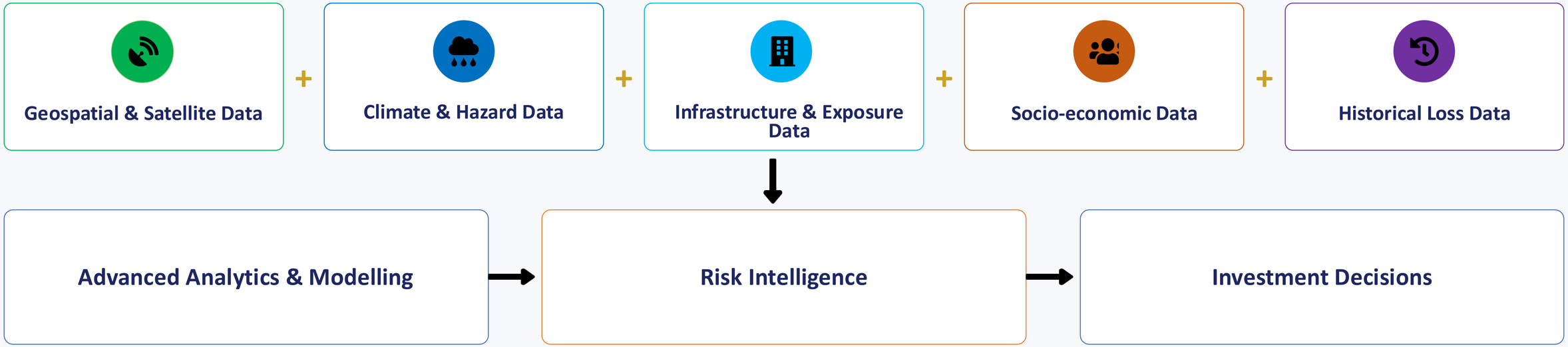
THE INVESTMENT LOGIC

Better Risk Information → **Better Investment Decisions** → **Better Targeting of Adaptation Finance** → **Lower Future Losses & Stronger Fiscal Resilience**

From Data to Decision Intelligence

Modern technology allows us to move beyond static disaster maps and historical records.

Technology can integrate:



Technology therefore transforms risk information from a technical repository into a decision-support system.

> ***"The real value of technology is not collecting more data—it is turning data into decisions."***

Embedding Risk into the Investment Cycle

Risk information should follow the investment decision—not remain within a specialized institution.

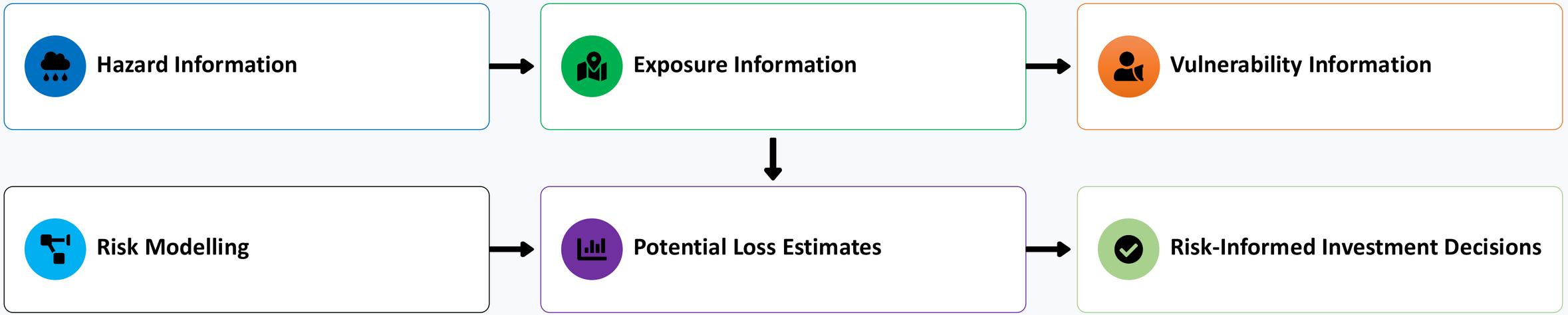
Investment Cycle	Role of Risk Information
National Planning	Identify priority risks and vulnerable areas
Sector Planning	Understand sector-specific climate exposure
Project Identification	Prioritize investments addressing significant risks
Project Preparation	Integrate resilience into project design
Investment Appraisal	Compare adaptation costs with potential avoided losses
Budgeting & Financing	Direct resources toward priority resilience investments
M&E & Learning	Measure risk reduction and improve future investments

THE OBJECTIVE **Make risk assessment as routine in investment planning as financial and economic analysis.**

NatCat — Building Pakistan's Risk Intelligence

Recognizing the need for a stronger evidence base for disaster risk management and resilient investment, NDRMF has developed NatCat as a technology-enabled catastrophe risk information and modelling system.

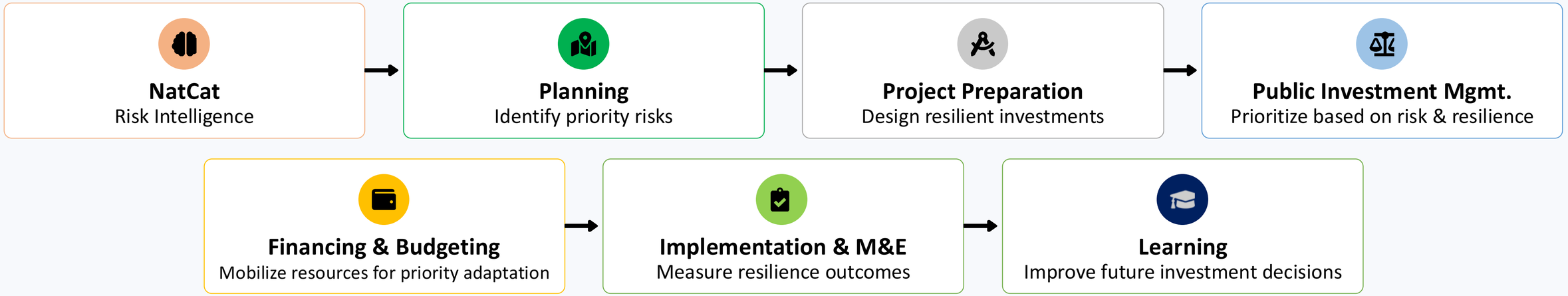
NatCat brings together:



The objective is to move from knowing that disasters happen to understanding: *where losses are likely to occur, how large they could be, and where investment can reduce them most effectively.*

From Risk Intelligence to Resilient Development

NatCat's greatest value will come when risk information is embedded into the national investment ecosystem.



“The objective is not simply to build a better risk information system. The objective is to build a better investment system—one where every major development decision is informed by the risks we face and the resilience we need.”

NDRMF's NatCat initiative can provide an important technological foundation for making this transition—from reactive disaster response to proactive, risk-informed climate adaptation investment.

NDRMF's National Catastrophe Risk Information Platform (NatCat)

Turning fragmented disaster risk data into actionable intelligence for resilient investment and financial protection

NDRMF
Making Pakistan Resilient

01 RISK DATA & INFORMATION

- Consolidates national disaster risk & loss data
- Integrates multiple data sources
- Single source of truth across key hazards

02 RISK ANALYTICS

- Hazard, exposure & vulnerability analysis
- Average Annual Loss (AAL)
- Probable Maximum Loss (PML) & scenarios

NatCat

National Risk Information & Analytics

03 DECISION SUPPORT

- Risk-informed planning & prioritization
- Hotspot and investment identification
- Evidence for policy and project decisions

04 DRF & INVESTMENT ENABLEMENT

- Informs disaster risk financing
- Supports risk transfer & insurance solutions
- Enables risk-informed investments

NDRMF VALUE PROPOSITION

Data Integration → Risk Modelling → Risk Intelligence → Better Decisions → Resilient Investment & Financial Protection

A common evidence base for DRR, climate resilience and disaster risk financing

Thank You !

Session 7: Risk information systems

Sharing by Jamie Bawalan (BCG)

16 September 2026

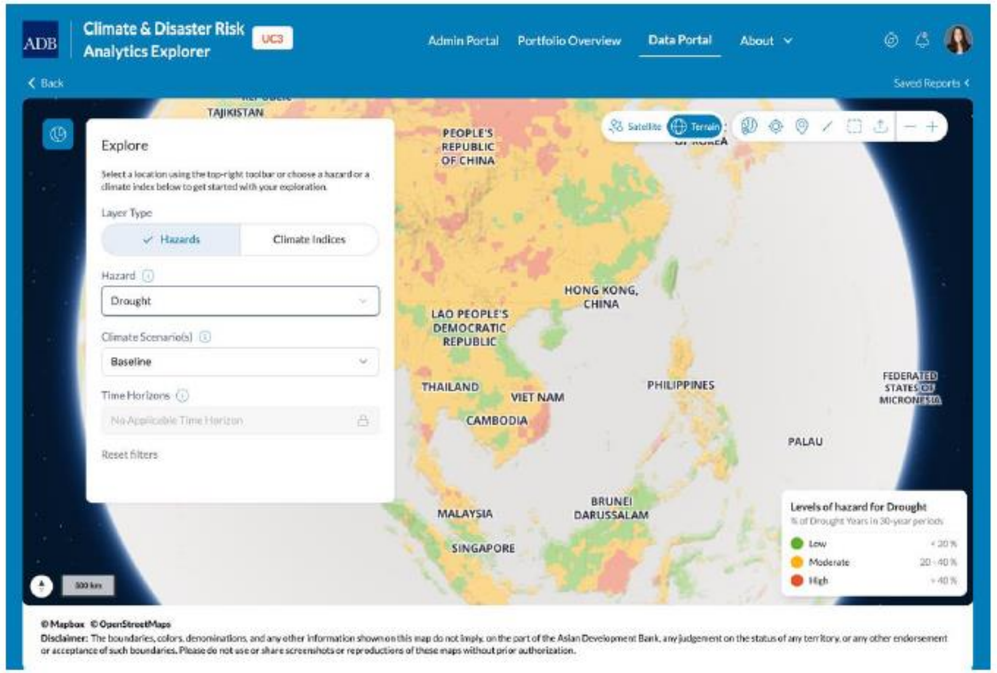
Risk Explorer is a unified platform that enables consistent disaster and climate risk analyses across ADB projects

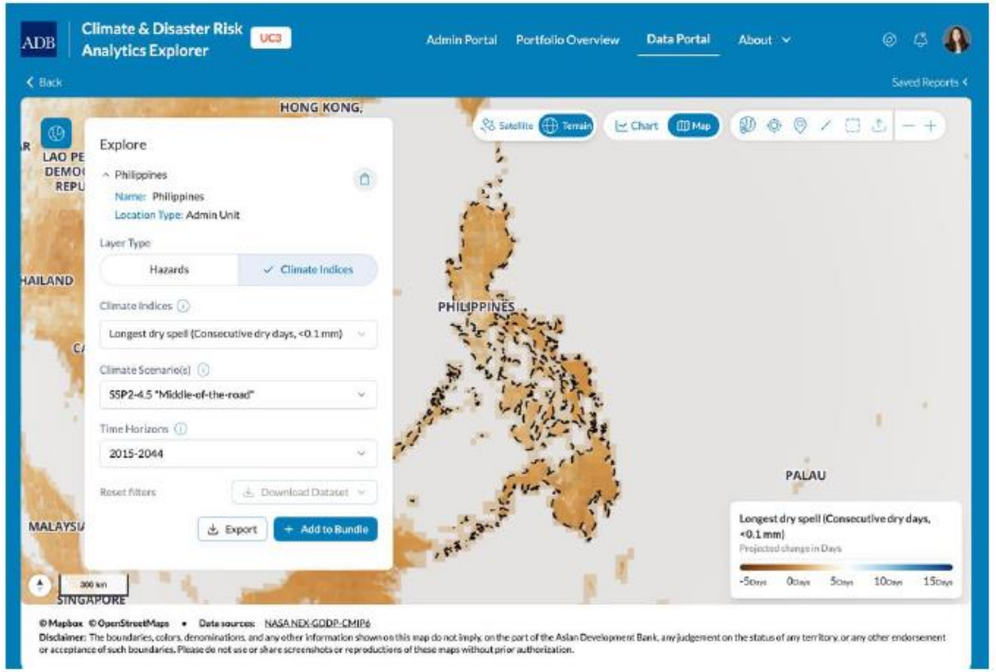
ADB's Risk Explorer is a platform that provides standardized analyses that powers the bank's portfolio planning and project processing activities, enabling bank-wide access to climate and disaster risk information & mitigating actions

Key Use Cases available bank-wide

- Climate and Disaster Risk Screening
- Light-Touch Climate Risk and Adaptation Assessment
- Paris Agreement Alignment Assessment
- Climate Change Assessment Annex
- Climate and Geohazard Data Portal

Climate and Geohazard Data Portal enables ADB teams in the portfolio planning processes





Key Features

1 Hazard and index customization

Interactive maps allow selection of hazards/indices, scenarios, and time horizons from authoritative datasets

2 Location tools

Users can specify administrative areas or draw custom polygons/lines/points

3 Bundle & report features

Multiple layers with different locations or overlays can be collated into a saved report

4 Export options

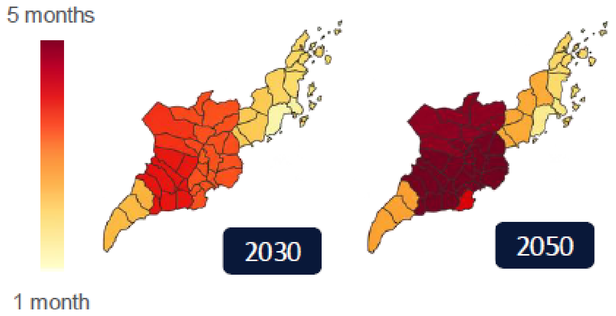
Reports can be downloaded into map images (PNG) or GIS-ready layers (TIFF)

Philippine Adaptation Investment Platform aims to institutionalize localized risk information in enabling a view of the climate cost of inaction to identify investments

Deep-dive example: Iloilo rice sector value chain project

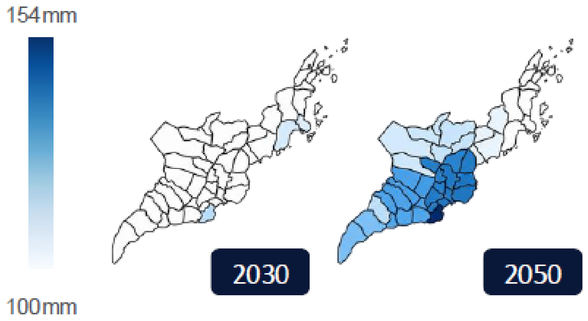
Climate change expected to drive longer dry spells and flooding…

Average dry spell[1] length



By 2030, **~35% of cropland exposed to dry spells** >2 months

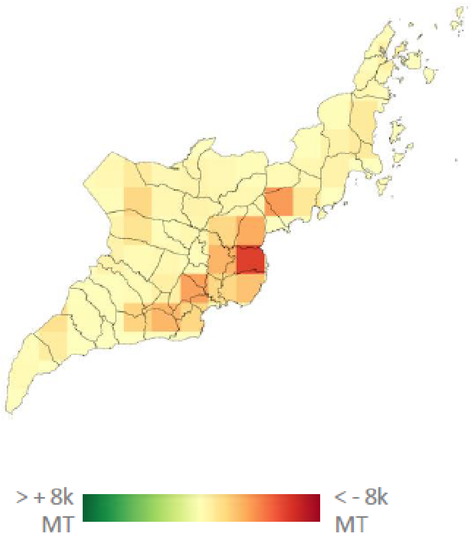
Maximum daily precipitation[2]



By 2050, **~55% of crop fields exposed to flooding** in a once-in-a-decade event

…resulting in production losses of 7% annually by 2030…

Change in paddy production in a do nothing scenario (2031-2040 vs 2025-2030)



7%

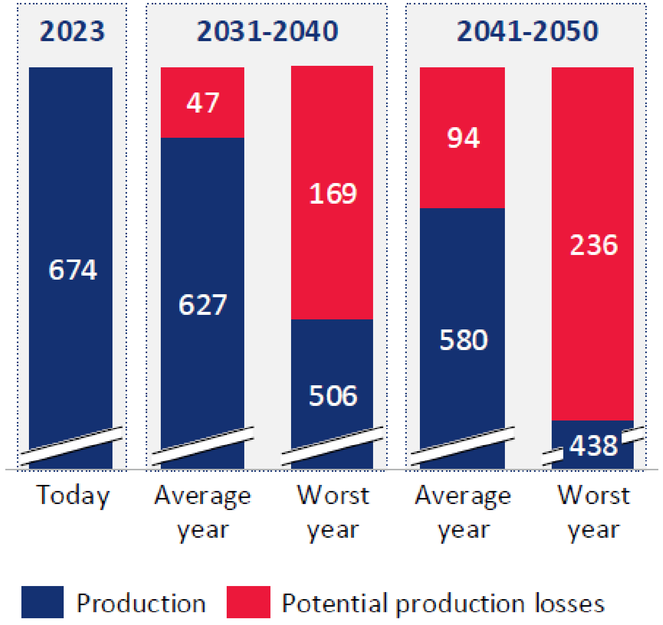
Avg. annual production loss (by 2030)

Up to 25%

Production loss in the worst years

…putting the security of Iloilo's rice sector at risk

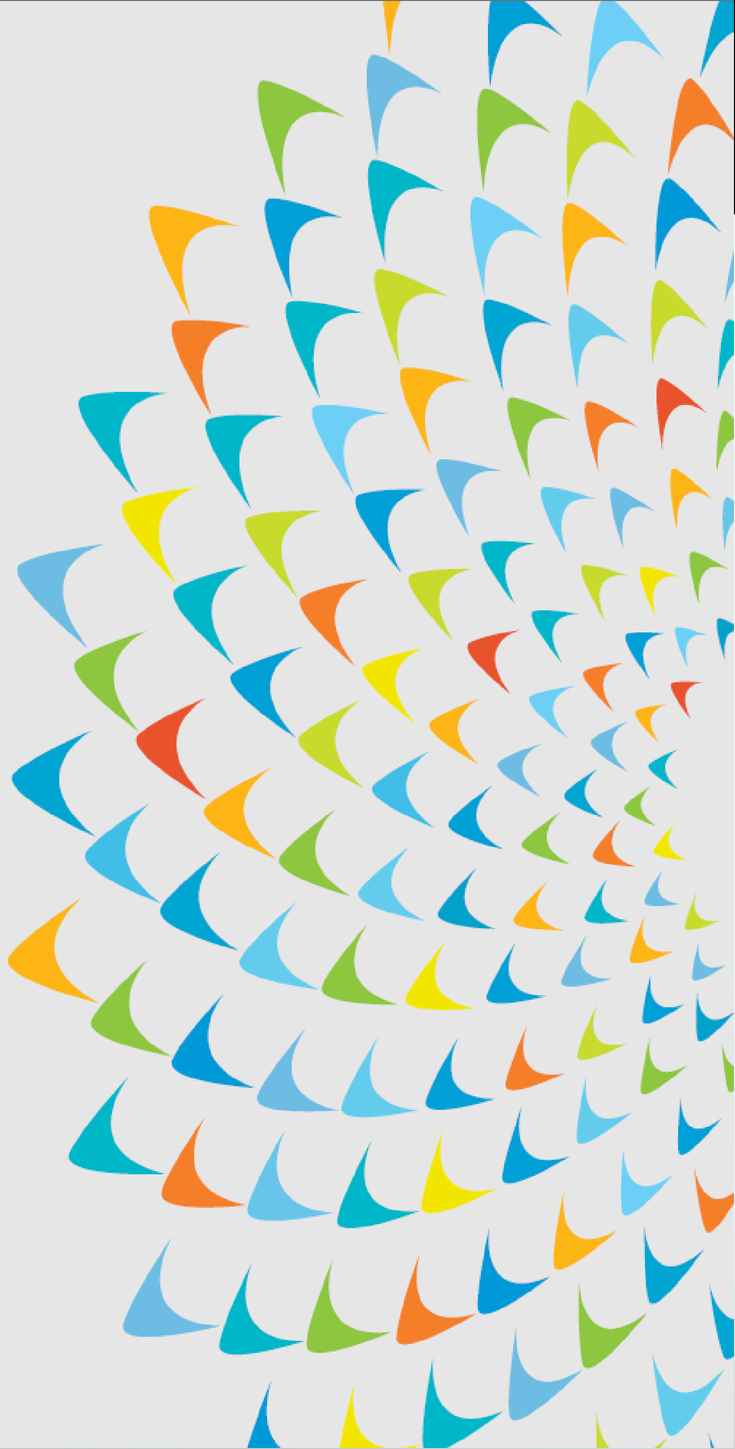
Average annual rice production in Iloilo (000s tons) in a do nothing scenario



Results of climate models developed for this intervention; Do nothing scenario estimates impact of climate change without adaptation investments

1. Defined as three consecutive months of below normal (21%-60% reduction from average) rainfall conditions or two consecutive months of way below normal (more than 60% reduction from average) rainfall conditions (PAGASA definition);
2. Maximum mm rainfall within any point in province boundary; 3. 2023 baseline reflects actual PSA-reported palay production for Iloilo (~1.07M MT). Milled rice uses PSA's current 63.0% milling recovery rate (effective Jan 2025).
Source: CMIP6 data; FAO; NESADEM; SPAM; Soil grid; Expert interviews; BCG analysis.

Thank you!



Introduction

1 Timor-Leste's Context

Timor-Leste is a Least Developed Country (LDC) and Small Island Developing State (SIDS), where many rural communities depend on natural resources and agriculture.

LDC
Least Developed Country

SIDS
Small Island Developing State

2 High Vulnerability to Climate Hazards

These communities are highly vulnerable to climate-related hazards, such as droughts, floods, landslides, and strong winds, which affect livelihoods, infrastructure, and access to basic services.

Droughts | Floods | Landslides | Strong winds

- Livelihoods
- Infrastructure
- Access to basic services

3 The Government's Response

To better understand these vulnerabilities, the Government of Timor-Leste initiated the **Integrated** Vulnerability Assessment (IVA) in 2018.

Government of Timor-Leste

IVA uses a participatory, community-based approach to:

- Assess exposure, sensitivity and adaptive capacity
- Identify local vulnerabilities and priorities
- Support climate adaptation planning and resilience building

To date, IVA has been conducted in **112 villages** across **14 municipalities**, providing important evidence to support government institutions and development partners in designing targeted and climate-resilient interventions.

Understanding vulnerabilities today for a more resilient Timor-Leste tomorrow.

IVA | Integrated Vulnerability Assessment

From evidence to action for a more climate-resilient Timor-Leste

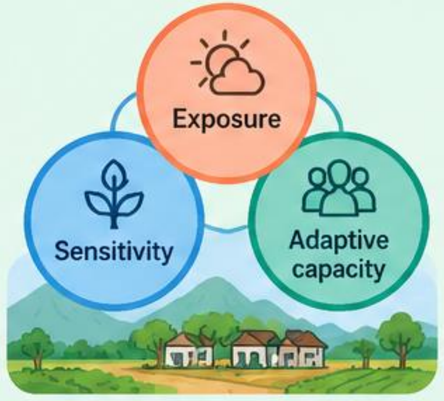
1 Who is vulnerable?

- Rural and remote communities
- Farmers and natural resource users
- Women, youth, children, elderly and vulnerable groups

2 What are they vulnerable to?

- Droughts
- Floods
- Landslides
- Strong winds

3 Why are they vulnerable?



- Limited infrastructure and market access
- Gaps in basic services (health, education, water, etc.)
- Fragile ecosystems and mountainous terrain

4 What adaptation actions are needed?

- Build resilient livelihoods and food security
- Improve infrastructure and basic services
- Strengthen disaster risk reduction
- Enhance community and institutional capacity

The result:
Stronger communities, informed planning and a more climate-resilient Timor-Leste.

Goal of IVA

To assess community-level vulnerability to climate change and disasters, identify the main causes and priority needs, and provide evidence for effective adaptation and resilience-building actions.

1 Assess

Community-level vulnerability to climate change and disasters.

2 Identify

The main causes and priority needs.

3 Provide Evidence

For effective adaptation and resilience-building actions.

Result

Stronger and more climate-resilient communities in Timor-Leste.

Integrated Vulnerability Assessment (IVA) Report

A participatory, asset-based and systems-oriented approach to understand community vulnerability and build climate resilience in Timor-Leste.

Using the Community Integrated Vulnerability Assessment (CIVA) Framework developed by the University of South Pacific (USP).

1. What is the Method?

Participatory

Involves communities, local authorities, women, youth and traditional leaders.

Asset-based

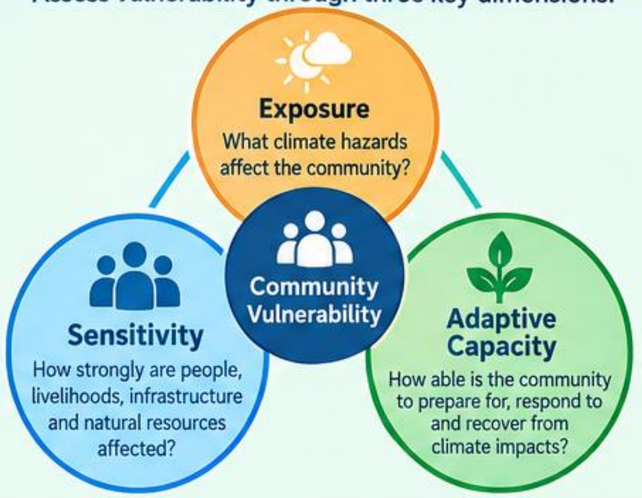
Focuses on people's assets and strengths (e.g. natural, human, financial, social).

Systems-oriented

Looks at the interconnections between different sectors and levels (local to national).

2. The CIVA Framework

Assess vulnerability through three key dimensions:



3. Key Components

The CIVA assesses:

Human Security Objectives (HSOs)

- Environment
- Food security
- Water security
- Health
- Income
- Energy security
- Security of place

Livelihood Assets

- Natural resources
- Infrastructure
- Financial capital
- Human skills
- Governance systems

4. How the Assessment is Done

1. Community awareness	2. Focus group discussions	3. Field verification	4. Analysis	5. Community validation
Climate change and disaster risk awareness activities	Gather local knowledge, perceptions and experiences	Confirm and validate findings in the field	Identify vulnerabilities, root causes and adaptation options	Discuss and refine results with the community

5. IVA Results

112 villages
57 administrative posts
14 municipalities

Covers diverse geographical contexts:

Lowland | Midland | Highland

6. Outcome

The IVA provides a robust evidence base to support government institutions, development partners and civil society in designing targeted and coordinated climate-resilient interventions.

Ultimately, the approach helps strengthen local and national planning and contributes to Timor-Leste's commitment to global frameworks (SDGs, UNFCCC and Sendai Framework).

Session 7