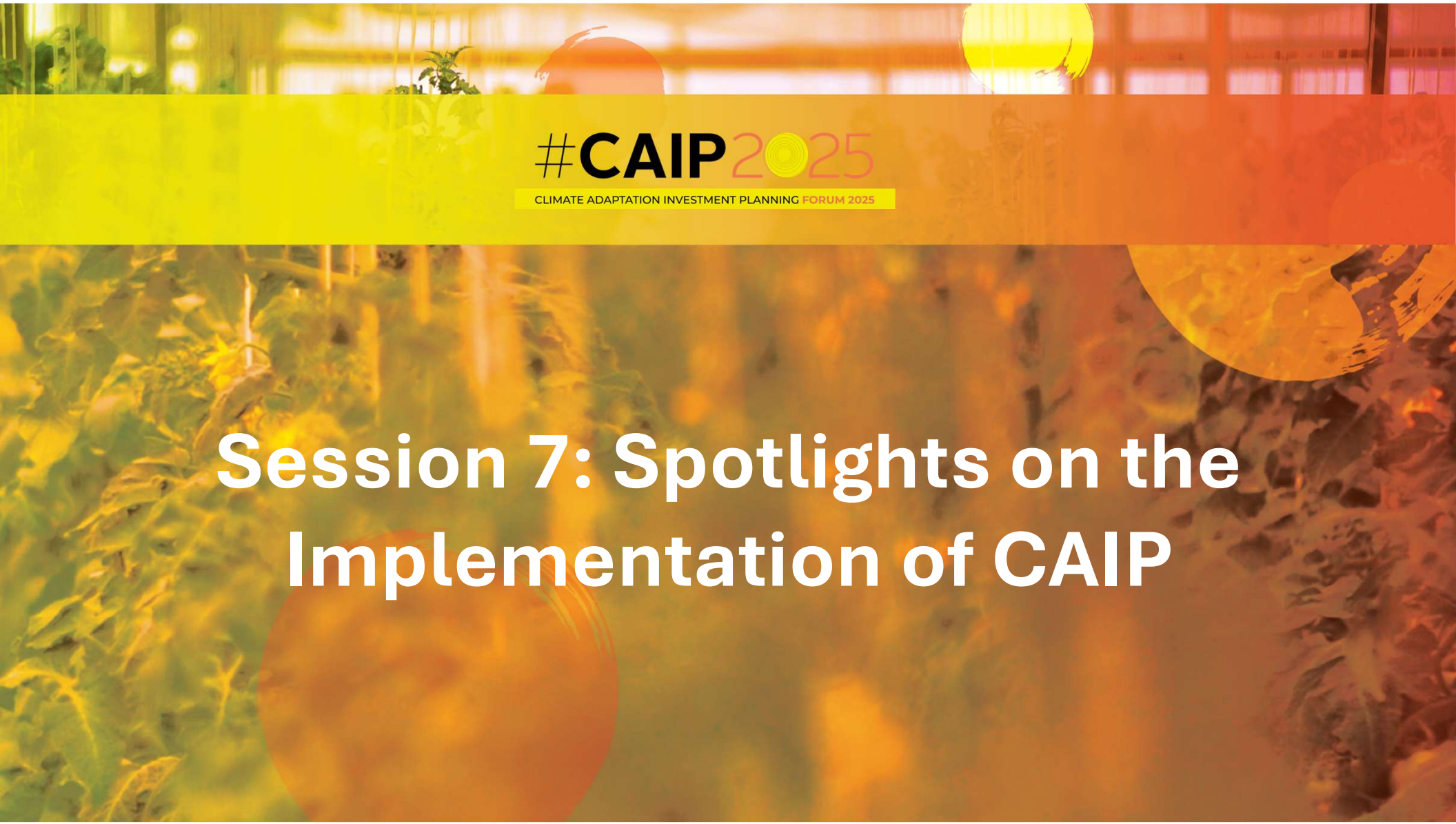

Session 7: Spotlights on the Implementation of CAIP

Session 7: Spotlights on the Implementation of CAIP - Introduction

Jinsun Lim

Climate Change Specialist,
ADB

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Spotlight 7.1: CAIP in the Sub-national context

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Frontline Stories:

Subnational Governments Leading Climate Adaptation Investments

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#CAIP2025

CLIMATE ADAPTATION INVESTMENT PLANNING

Climate Adaptation Investment Planning

A Program to Bridge the Gap between Climate Adaptation Planning and Financing in Asia and the Pacific

NEPAL

Nepal's Climate Adaptation Investment Plan (CAIP) is being developed to enable financing of climate-resilient investments aligned with priorities in the NAP (2021) and the NDC (2025). It focuses on strengthening drought, flood and heat prone agricultural systems in Madhesh Province – the food bowl of Nepal. It aims to bundle investments into strategic adaptation packages to attract public, private, and blended finance.

KEY FACTS

SECTOR
Agriculture

GEOGRAPHIC SCOPE
Madhesh province (Terai)

FOCAL MINISTRY
Ministry of Agriculture and Livestock Development (MoALD) alongside the provincial Ministry of Land Management, Agriculture and Cooperative (MoLMAC)

SCOPE OF CAIP

Climate resilient production and value chain for rice and horticulture
(Research → Production → Value Chain → cross-cutting)

TOTAL FUNDING NEED
[Insert final figure when available]

WHAT WE'VE LEARNED

1. **Align with national priorities:** Coordination with ministries and existing sector and provincial plans ensures national ownership and long-term sustainability.
2. **Go beyond costs:** Current plans identify adaptation costs but lack analysis of economic, fiscal and financial benefits.
3. **Learn from success:** In-depth review of successful national cases helps identify practical, context-specific solutions.
4. **Showcase real examples:** Real-life cases illustrate CAIP's potential and help integrate diverse finance instruments.

NATIONAL ADAPTATION PLAN PRIORITIES

1 Country, Sector & Planning Context
- Ministry-led process to align with priorities identified in NAP, NDC, and Five-Year & Ag Development Plans at national & provincial level
- Strategic analysis of domestic PFM and PIM processes and investments

OUTPUT
- Identified entry points and key stakeholders
- Identified value chains and system-level perspective

2 Climate Diagnostic
- Province-level multi-analysis of historic risks and trends
- Conducted targeted climate diagnostic for value chains

OUTPUT
- Identification of key performance indicators for value chains
- Analysis of risk of climate change to these KPI and identification key priorities

3 Prioritization & Sequencing
- Identification of adaptation priorities from NAP and NDC and gaps for province.
- Grouped actions into packages including cross-cutting activities
- Consultation at central and provincial levels

OUTPUT
Production and value chain identified 7 adaptation packages, capturing planning & research, production, post-harvest, as well as cross-cutting linkages to climate services and IWRM.

4 Economic & Financial Management
- Identified benefits of each package, including economic, fiscal and financial benefits
- Assessed potential economic and financial rate of return

OUTPUT
- All packages found to have positive net economic return
- Positive fiscal returns for many packages
- High financial returns for production & processing but lower for planning and research

5 Finance Matchmaking
- Matched each package to possible finance sources and types (public, private, blended)
- Identified specific opportunities for finance for each package (ADB and other)
- Considered enabling factors to unlock finance

OUTPUT
- Financing sources across the public-private finance spectrum identified for each package
- Suggestions for enabling factors to help unlock finance
- Analysis of early finance opportunities for pipeline development (ADB and other)

ADAPTATION INVESTMENT PLAN

CROSS-CUTTING ENABLING CONDITIONS
- Institutional coordination between Federal level and province
- Local stakeholder engagement processes
- Good practice examples of early pilots
- Resource capacity (availability of TA and capacity)

INVESTMENT PACKAGES

UPSTREAM

PLANING AND UPSTREAM
1. Climate resilient planning
2. Research to commercialization

IMPLEMENTATION ALONG VALUE CHAINS

PRODUCTION
- 3a. Climate smart rice systems
- 3b. Heat stress and agriculture labour productivity
- 3c. Climate smart horticulture

POST-PRODUCTION
- 4. Climate resilient transport & logistics
- 5. Climate resilient processing, storage

SUPPORTING

CROSS-CUTTING
- 6. Weather and climate services (including digital) (insurance)
- 7. Integrated Water Resources Management (IWRM)

Key Lessons for Local-Level Investment Planning

- **Evidence-Based Prioritization** – climate projections and vulnerability mapping.
- **Participatory Approach** – involve local communities, OPDs, women, and private sector actors.
- **Costing & Finance Mobilization** – identify not just costs, but feasible financing pathways.
- **Mainstreaming into PIM Cycles** – ensure DAP priorities are embedded into annual and medium-term public investment plans.
- **Institutional Arrangements** – establish district-level steering and implementation committees to oversee execution.

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Why a data-driven climate risk assessment at the city level matters

Assessment under ADB TA 10397

https://www.adb.org/projects/58325-001/main

Jinwoo Park & Jeon-Young Kang
Assistant Professor
Department of Geography &
Department of Climate-Social Science Convergence
Kyung Hee University, Seoul, South Korea

Overview

The TA Project 10397 ("**Supporting Climate-Smart Urban Development through City Climate Action Planning**") is applied for selected cities in Uzbekistan, Pakistan, and India to effectively address technical and financial gaps related to climate action and climate finance.

Opportunity

- Cities are increasingly recognizing the value of C-CAPs in driving climate resilience.

Current Challenges

- City climate risk assessments often too high-level, lacking robust climate-projections.
- Climate risk application is complex, hampering climate literacy.
- Adaptation actions often too generic, for urban planning or infrastructure design.

Path Ahead

- Data-based & evidence-driven climate resilience planning (latest climate science, GIS data, and satellite imagery)
- Balance top-down and bottom-up approaches
- Strengthened focus on implementation, investment, and financing

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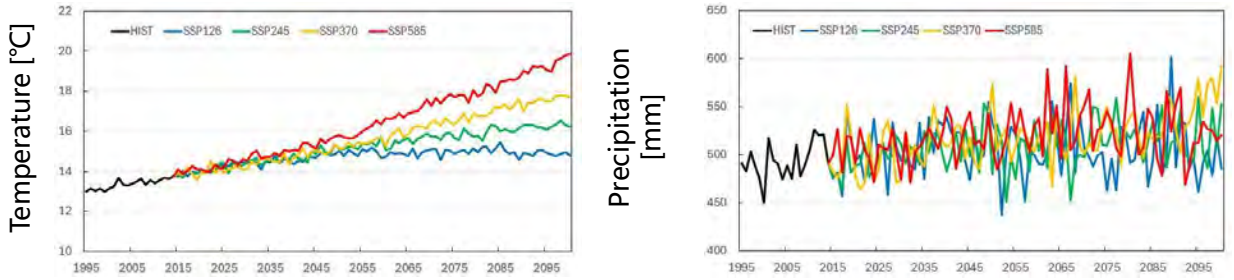
Targeted Value Additions

- Global climatic models (i.e., ERA5 and CMIP6) and GIS technologies are employed for the climate risk assessment.
- Notably, greater variation in climate variables presents that an extreme event may occur at particular locations.

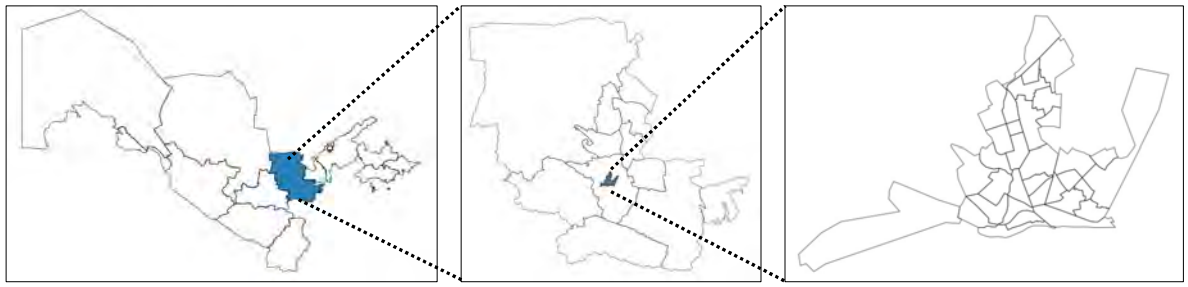
⇒ A city-level climate risk assessment is required.

Data-driven Approach



[Past and future changes in temperature and precipitation for four SSP scenarios]

Location-specific Risk Assessment



[Uzbekistan] [Jizzakh Region] [Jizzakh City]

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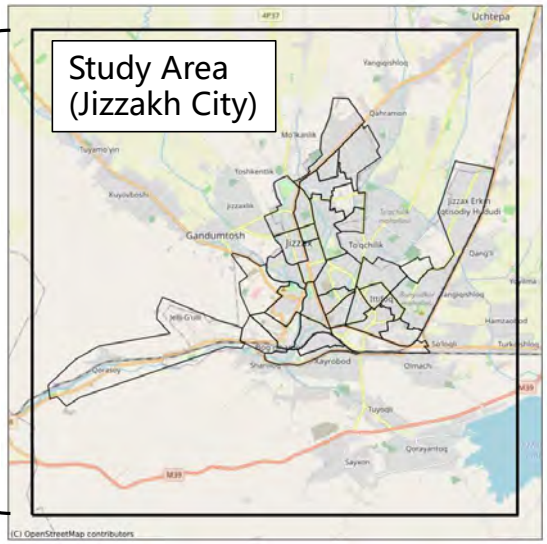
Solution: downscaling

- Our team uses mathematical approaches (e.g., bilinear interpolation) of downscaling to estimate climate variables in 1km x 1km grids (from 25km x 25 km grids).
- High-resolution climate variables enable the analysis of spatial variation in climate risk.

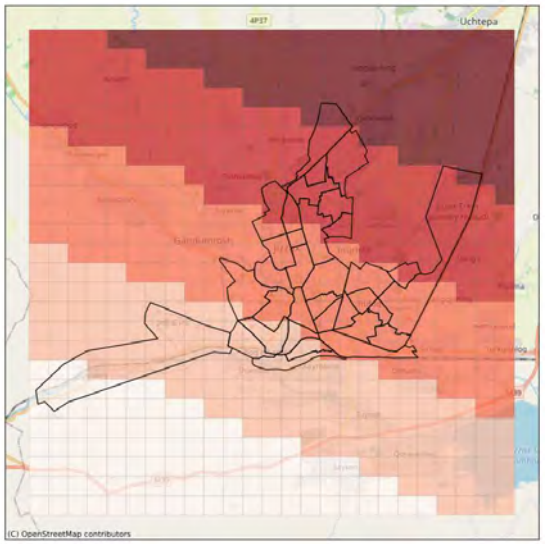
Original Grid Size (25km)



Downscaling

(i.e., using the spatial context to estimate the spatial variation of climate variables)

Number of Hot days [unit: days]
(i.e., Highest temp >= 35°C)
under SSP585 scenario



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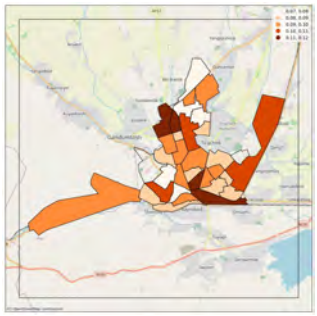
Merits: location-specific plans

- With census data
  - Help identify the currently most at-risk neighborhoods within a city.
  - Propose location-specific action plans per neighborhood.
- With the master plan
  - Propose new urban infrastructure required under climate change
  - Propose a location for urban expansion

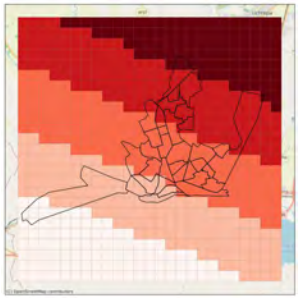
Comebine with census data



Low-income population [unit: %]

12
11
10
9
8
7

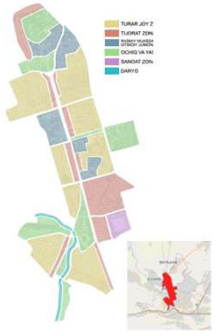
Climate Data



Number of hot days [unit: day]

115
108
103
98
93
87

Comebine with master plan



Land Use in Master Plan

- Residential
- Commercial
- Official Institutions
- Green Areas
- Industrial
- River

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Spotlight 7.2: CAIP in Small Island Developing States

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Spotlight 7.3: CAIP in Mountain Ecosystems

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Mountain Ecosystems and need for Climate Adaptation Investment Planning

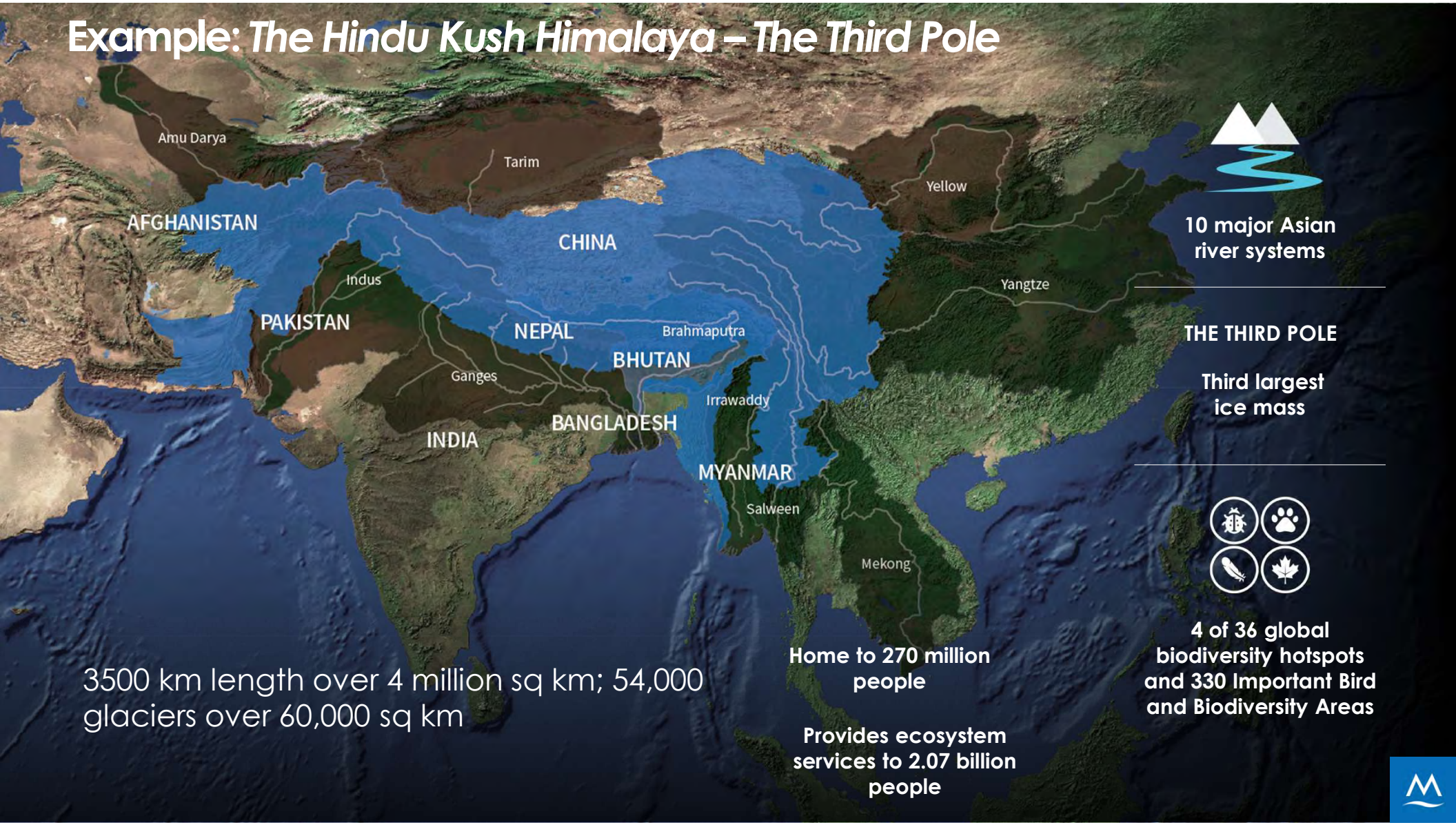
Abid Hussain, PhD
Economies Lead
ICIMOD
4 September 2025

Global mountains

Global mountains

- Globally, total area of mountains and hills is 31.74 million km^2 (22% of earth's surface) (IPCC 2019)
- In 2015, a total of 1.28 billion people resided in mountains (IPCC 2019)
- Half of all global biodiversity hotspots (17 out of 34) are in mountain regions (FAO 2015).
- Mountains as source of major river systems and natural stock for solid water (i.e., Hindu-Kush Himalaya knows as third pole of the world)
- 85% of global hydropower is generated by water directly coming from mountains (Mountain Partnership, n.d.).
- About 40% of the world's irrigation is supported by flows originating from large mountain systems (Mountain Partnership, n.d.).
- Mountain ecosystem services are lifeline or global agriculture, food security and livelihoods.
- Mountains shape regional weather patterns and influencing global climate

Example: *The Hindu Kush Himalaya – The Third Pole*



10 major Asian river systems

THE THIRD POLE

Third largest ice mass

4 of 36 global biodiversity hotspots and 330 Important Bird and Biodiversity Areas

3500 km length over 4 million sq km; 54,000 glaciers over 60,000 sq km

Home to 270 million people

Provides ecosystem services to 2.07 billion people

Macro challenges in Mountain Ecosystems – *example of Hindu-Kush Himalaya*

- Climate change
- Changes in demography
- Declining interest of youth in primary sectors
- Rapid urbanization
- Air pollution
- Biodiversity loss
- Feminization of primary sectors with marginalization

Major impacts of climate change in mountains – *example of Hindu-Kush Himalaya*

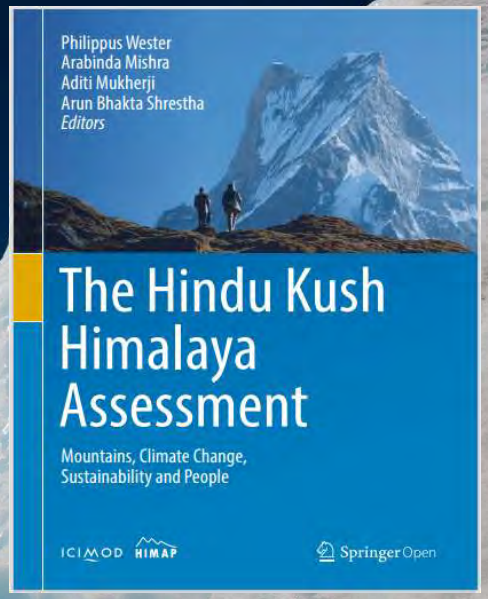
- A decline in productivity of agriculture, livestock and rangelands
- Overall, negative impacts on household income
- Cascading impacts on economic sectors of national economies

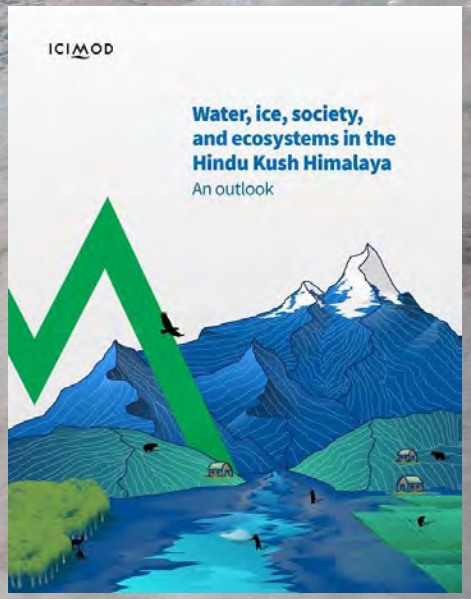
By 2100, if average global warming is limited to 1.5 °C, the HKH will warm by 1.80 ± 0.40 °C

Peak water by 2050 then significantly decreases

Every increment of warming matters.
By 2100 glaciers:

50% left at 2˚C warming (currently 1^{0}C)
25 to 45% at 3˚C warming
20 to 30% at 4˚C warming





Source: HIMAP 2019 & HI-WISE 2023

Drought in Balochistan, Pakistan

Highway damaged by flood (2022) in Swat, Pakistan

Pest attack on crops, Chure, Nepal

Dried spring in Kavre, Nepal

Dried spring in Lohling, Bhutan

Department of foreign employment, Kathmandu

Balangbalang village, Ramechhap, Nepal

More workload on women (Karnali, Nepal)

Land degradation(Mountain area in India)

Why Climate Adaptation Investment Planning is more important for Mountain Ecosystems?

- Mountain are more vulnerable to climate change
- Currently less attention is paid to mountains in policies and planning
- There is huge scope for improving resilience through value addition of mountain products
- There is scope for recognizing and including mountains' natural resources in national accounting systems
- Currently limited 'Means of Implementation' and enablers are available for the context of mountains
- Climate adaptation has nexus with all other macro challenges in mountains

Spotlight 7.3: CAIP in Mountain Ecosystems

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Spotlight 7.4: CAIP in Market Economy and Private Sector

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Unlocking Private Sector Potential for Climate Adaptation

04.09.2025

MS. SHWETA KUMAR, DIRECTOR,

Ministry of Environment, Forest and Climate Change, Government of India.

Challenges Blocking Private Investment

Policy horizons:

Adaptation measures generally requires longer horizons (10-15 years), while many schemes are design for 3–5 years. Adaptation should be a long term with longer horizon policy matter.

Lack of clear Revenue Models:

Adaptation projects (e.g., flood resilience, climate-resilient agriculture) in general do not have direct cash flows, thereby making private ROR uncertain.

Risk Mitigation Strategy:

Availability of dedicated, thematic risk sharing facility, insurance, and blended finance facility can play a pivotal role in de risking the private capital thereby leading to unlocking capital investment / adaptation financing.

Clear Narrative:

Unlike mitigation (with EE, Carbon Credit, Carbon Market, Solar, RE targets), Adaptation requires clear narrative with a well defined National Adaptation Plan / Framework to adopt Pan India to scale up and give confidence to lenders , investors, partners (all relevant players / stakeholders in the ecosystem).

Data Gaps:

Inadequate / non availability of climate risk and vulnerability data restricts private players from making informed investment / financing decisions.

Building a Supportive Ecosystem

To overcome these challenges, we need comprehensive policy solutions that create a favorable environment for adaptation finance:

Unified Policy

Mainstream climate change into financial policy by integrating adaptation/mitigation outcomes into regulatory frameworks such as RBI's climate risk guidelines and SEBI's BRSR framework, helping to align the broader financial ecosystem.

Climate Finance Taxonomy

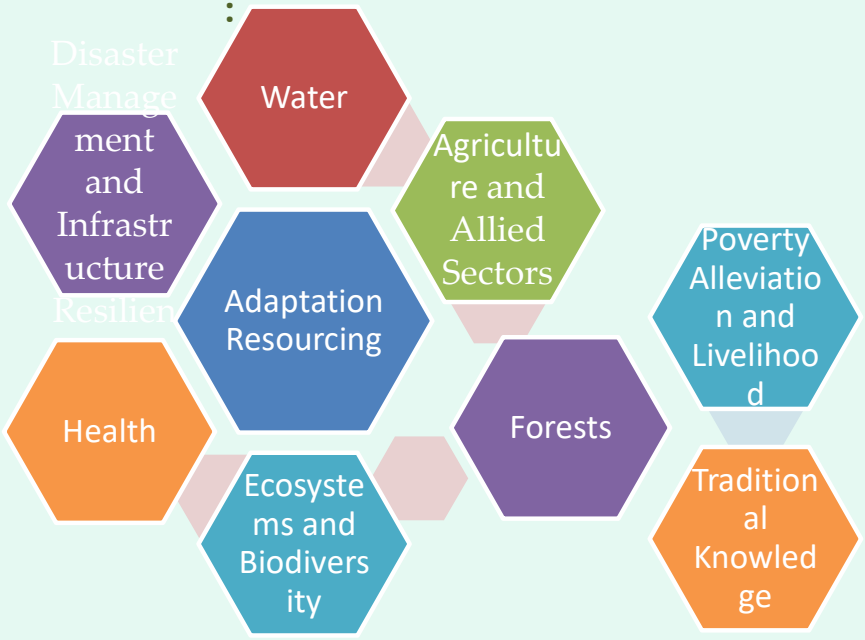
India's climate finance taxonomy aims to facilitate greater resource flow to climate-friendly technologies and activities, enabling the country to achieve the vision of being Net Zero by 2070 while also ensuring long-term access to reliable and affordable energy.

Sustainable Reporting

SEBI's Business Responsibility and Sustainability Report (BRSR) framework, currently applicable to the top 1,000 listed companies by market capitalization, provides an opportunity to integrate such disclosures into mainstream corporate reporting. Additionally, Draft Disclosure Framework on Climate-Related Financial Risks (February 2024) sets phased mandatory disclosures for banks and financial institutions starting FY 2025–26, covering governance, strategy, risk management, and emissions reporting. Designed to increase transparency and embed climate risk into financial decision-making.

National Adaptation Plan (NAP) – Overview

Thematic Working Groups :



Cross-Cutting Themes :

Gender Mainstreaming

Advance gender equality and achieve gender co-benefits. Gender considerations incorporated in NAP process. Ensure women's groups and vulnerable communities are represented in consultations.

Private Sector Engagement

The NAP offers a framework to engage the private sector in climate adaptation by fostering collaboration and incentivizing investment. This roadmap outlines sectoral opportunities and challenges in key areas such as agriculture, water, health, forestry, ecosystems, and infrastructure, and proposes actions across four pillars—institutional arrangements, finance, information systems, and capacity development—phased over short, medium, and long terms.

Capacity Building

Strengthen institutional and technical capacities through training, knowledge exchange, and support for local governments, communities, and implementing agencies to effectively plan, finance, and deliver adaptation actions.

NAP – Private Sector Financing:

Rationale: Why Private Sector is Critical

- Public funds are not enough to meet adaptation needs.
- Private sector brings:
  - Innovation & scaling of solutions
  - New financial instruments
- NAP positions private sector as a partner in financing, technology, and implementation alongside government and international finance.

Financing Strategies:

Key Instruments & Approaches:

Blended Finance – Concessional + Commercial Capital (enabled via SEBI AIF amendment 2024)

Debt Instruments – Green, resilience, blue bonds

Parametric Insurance – Weather–indexed products (e.g., SEWA-linked pilots)

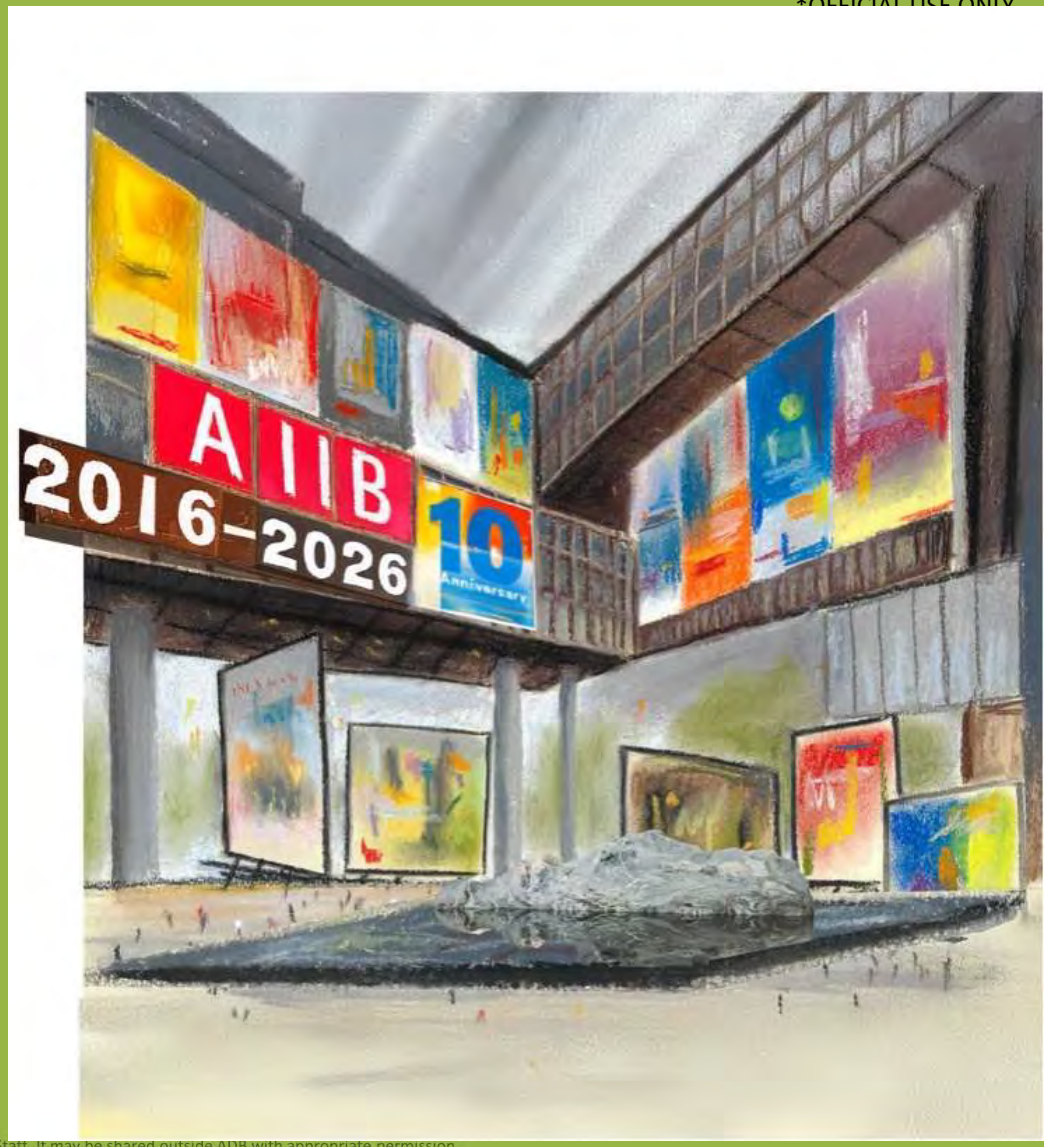
Risk Sharing Tools – Guarantees, catastrophe bonds

Project Prep Facilities – Early-stage TA & pipeline support

*OFFICIAL USE ONLY

Financing the Future: Innovative Instruments for Adaptation Investment

AIIB"s approach to adaptation finance



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AIIB Thematic Priorities Focusing on Infrastructure for Tomorrow

Green Infrastructure

- **Climate mitigation and/or climate adaptation** potential, based on eligibility criteria set out under the joint MDB principles and methodology for tracking climate mitigation and adaptation finance
- **Other environment benefits**, such as activities based on the International Development Finance Club's (IDFC) eligibility list (e.g. industrial pollution control, waste management, etc.)

Connectivity and Regional Cooperation

- **Domestic Connectivity** – projects that increase capacity or remove bottlenecks between major urban centers or key economic areas
- **Cross-Border Connectivity** – projects involving physical connections across borders and node infrastructure; projects enhancing regional integration through direct facilitation of cross-border flows of goods, services, people, capital and data.

Technology-enabled Infrastructure

- **Investments in technologies** for infrastructure
- **Application of technology** to infrastructure

Technology is expected to dramatically change the way infrastructure is designed, constructed and operated by delivering better value, productivity, efficiency, resilience, sustainability, inclusion, transparency or better governance along the entire project lifecycle. Technologies need to be new or recent for the country and sector and should clearly improve infrastructure quality.

Private Capital Mobilization

- **Direct Mobilization**: financing from a private entity is committed due to the active and direct involvement of AIIB.
- **Indirect Mobilization**: financing from a private entity is committed to a project for which AIIB is providing financing but did not play an active or direct role that leads to the commitment.

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Innovative instruments for adaptation

Risk sharing and resilience focus	Outcome-linked financing	Dedicated adaptation impact funds	Blended structures
• Instruments that **transfer or pool climate risks** (e.g., parametric insurance, resilience bonds, climate swaps, catastrophic bonds, etc.)	• Bonds or loans tied to **measurable resilience outcomes** (e.g., reduced crop loss, improved water security), similar to sustainability-linked instruments	• Equity/venture capital financing focused on **innovative technologies** (e.g., funding R&D for drought-resilient seeds, new cooling solutions, water infrastructure leak detection, etc.)"	• Using **public or philanthropic concessional capital** to de-risk adaptation projects and crowd in private investors (e.g., first-loss guarantees, revenue backstops)

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Assessment of adaptation related risks and opportunities within Financial Institutions (FIs)

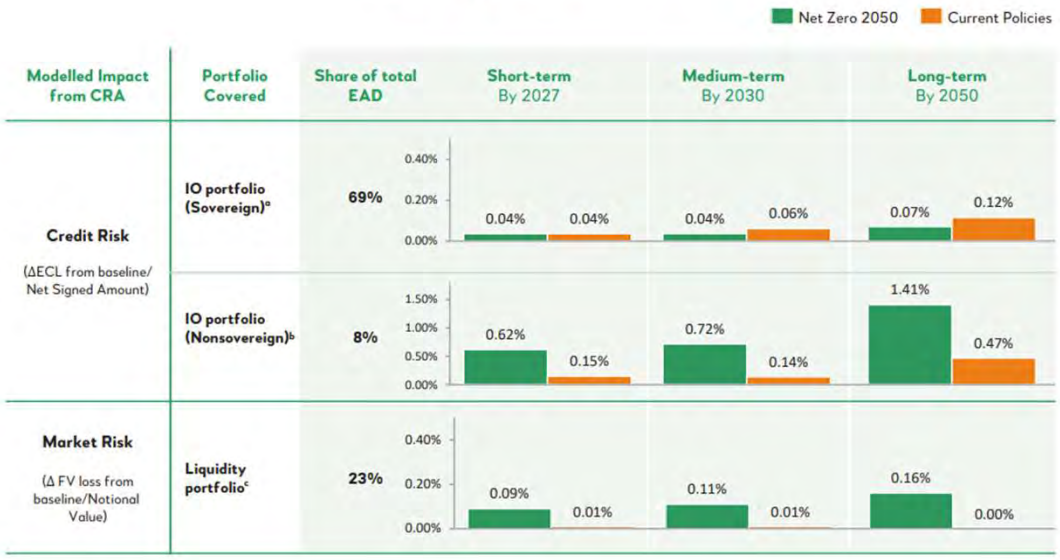
The following considerations are CRITICAL for adaptation and resilience integration into financial risk and returns

(i) Adopt resilience metrics and disclosure frameworks (leverage frameworks like TCFD, ISSB, and the Taskforce on Nature-related Financial Disclosures (TNFD) to standardize adaptation risk reporting.

(ii) Use resilience as a risk mitigant- recognize that investments in adaptation (e.g., flood defenses, resilient infrastructure, water-efficient systems) will lower long-term credit and insurance risk and account avoided losses into cost benefit analysis

(iii) Incentivize clients to integrate climate risk management systems into their E&S and risk management frameworks

Figure 10: Summary Outcome of the CRA on AIIB's IO and Treasury Liquidity Portfolios Presented by Risk Type and Time Horizons



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ReNew

Leading Decarbonization Partner

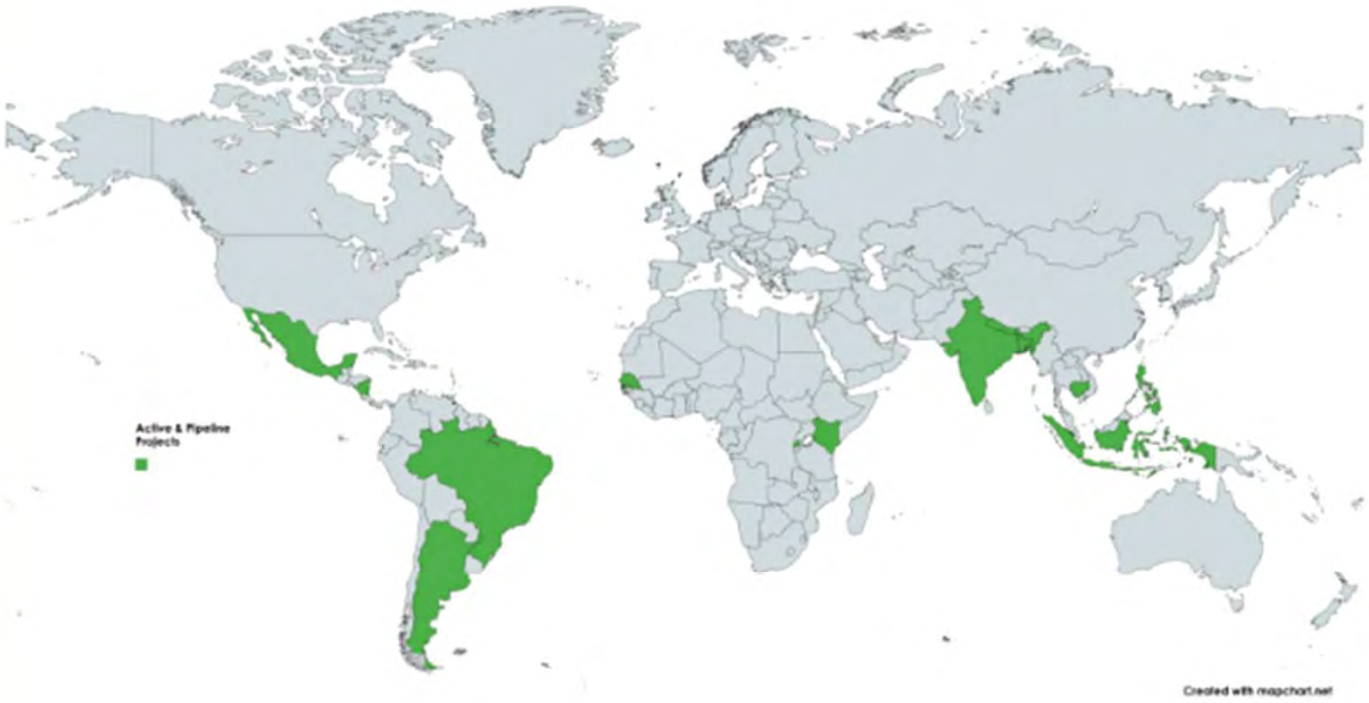
From Farm to Finance: Embedding Adaptation in Agribusiness

- Indradeep Das

GM, Head of Carbon Implementation - ReNew

Overall Portfolio – ReNew's presence around the world

India | Bangladesh | Nepal | Philippines | Cambodia | Indonesia | Kenya| Rwanda | Senegal | Nicaragua | Mexico | Brazil | Argentina



Project Type	Active Projects	Pipeline Projects
Renewable Energy	9*	-
Clean Cooking	5	5
NBS Avoidance	2	9
NBS Removals	6	4
Waste Handling/ Methane Recovery	-	3
Tech based removals (Biochar)	-	1

*Legacy RE projects across CDM, GS and Verra
The above list includes ReNew & partner projects

ReNew's experience highlights of agribusiness based adaptation models

Diversification through agroforestry

- Enhance soil health and water retention, when clubbed with intercropping
- Provide alternative income streams (timber, fruits, carbon credits).
- Increase resilience to droughts and floods
- Align with E&S safeguards – Biodiversity , labor rights, relocation avoidance etc

Farmer first models

- Partnering with Farmer Producer Organizations (FPOs) to scale adaptation practices.
- Transparent and distinct benefit sharing model with farmers to ensure long term trust
- Depending upon working model, 40-60% carbon credit projected revenue to be shared
- Co-designing solutions with farmers and NGOs working farmers to ensure local relevance and adoption

Navigating carbon finance

- Determining eligibility, applicability, additionality pre plantation
- Most AFOLU meths designed for large holders
- Changing harvesting habit to protect permanence
- Ever evolving standard landscape

- This model helped in developing restoration of degraded land to high integrity eco system
- Digital Data driven decision making -> Ensures transparency and integrity

Scaling Climate Resilient agroforestry systems – Focus on community capacity building

Collaboration with local communities

- Continuous engagement led small holder farmer identification, local community from planning stage itself **(FPIC)**
- Regular capacity building by local NGOs, KVKs on nursery management, tree crop combinations, harvesting periods, carbon project eligibility principles
- Cultural alignment, guiding regionally adapted native species ensuring long term sustainability of plantations
- Collaboration with **Panchayats, Local farmer centric NGOs and FPOs** enabled:
  - Aggregation of farmers for carbon projects
  - Collective bargaining for inputs and market access
- These institutions also help in **monitoring and grievance redressal**.

Enabling conditions for agroforestry led adaptation investments

- Policy/Institutional support in establishing clear land rights for small holder farmers.
  - Formalize tenancy and protect tenant farmers.
  - **Aims to digitize and update land records** for conclusive titling.
  - Helps reduce disputes and improve access to institutional credit
  - **Empower women with joint titles** and access to land records
- Impact of HH clear titles
  - Accessed 47.45% more institutional credit.
  - Received 6x more benefits from schemes like PM-KISAN and micro-irrigation
  - Were more resilient to shocks like crop failure and income loss
- Establishment of clean agri product market linkage and value chain

*Projects that **engaged local communities from the planning stage** saw higher adoption of agroforestry practices.*

In OD and AP, communities co-designed ReNew's project's planting models using native species, improving survival rates and cultural acceptance

*Further, Local knowledge guided the selection of **regionally adapted species** (e.g., tamarind in AP, moringa in Maharashtra).*

Wishlist

- **India-specific carbon credit methodologies** for smallholder agroforestry.
- **Blended finance models** combining public subsidies, private investment, and carbon revenue.
- Inclusion of agroforestry in **A6.2/6.4/JCM**

Potential Collaboration – Scope of Work

ReNew

ReNew

- **Project Finance**
  - Financing / Co-financing of all project activities
  - Revenue sharing with farmers and other revenue stakeholders
- **Project Development**
  - Identify technical partners and stakeholders
  - Identify local implementation agency
  - Capacity building of implementation agencies
  - Overseeing project quality control
- **Carbon Development***
  - Prepare the relevant project design documents
  - Validation of the project activity with the joint committee
  - Continuous monitoring and verification of usage of the installed devices
  - Exploring partnership with digital MRV providers in Japan**
- **Host Country Advocacy**
  - Engage with joint committee, partner local country government entities for project registration, validation and authorization.

* Carbon development aspects can either be done in house or through a third party entity
** ReNew is in touch with a few dMRV providers in Europe and India, but are open to suggestions for partnering with other such entities too

ADB

- **Option 1: Co-investment / Debt fund large scale projects(> $1M)**
  - Co-financing of all / select projects
  - Pre-agreed repayment terms/ Offtake agreement from Renew's share of credits
- **Option 2: Fund/Co-fund pilot scale projects (< $1 M)**
  - Pre-agreed repayment terms
  - Offtake agreement from Renew's share of credits
- **Option 3 : Fund feasibility assessment studies**
  - Provide grant through TA contracts on innovative. POC carbon projects, in nature based removals or energy transition space
  - Partnership Agreement with renew on data / scale up
- **Option 4 : Fund climate resilience mitigation/adaptation capacity building**
  - Provide grant through TA contracts for holistic capacity buildings, community engagement, community co-benefits
  - Project endorsement as partners

Private Sector Operations Department

From Farm to Finance: Embedding Adaptation in Agribusiness

Through the lens of the MDB

Brett Sutton

Senior Agribusiness Climate-Smart Agriculture Advisor

September 2025

ADB's approach

- Initial Reaction
  - Expansion of land under agroforestry with (very) smallholder farmers is a is of clear adaptation value
- Due diligence
  - Expertise was strongest in farmer extension and working with rural communities
  - Project implementation partners are also very strong in these aspects
  - During DD it was clear that all parties were very committed to improving outcomes for farmers first and foremost

*These are **highly credible carbon credit** projects where **'highly credible'** led the way, and **'carbon' paid the bills***

- Carbon markets are much more established than adaptation or adaptation adjacent markets
- We want to work with companies leveraging carbon revenues to drive adaptation

- And use ADB Technical Assistance to further adaptation value and create a scalable model

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Taking a step back from ReNew: A portfolio view

- With most clients, the signals are not so clear or as strong as with ReNew
  - Many clients are less sophisticated
  - Even sophisticated can have barriers to investing in climate adaptation
- Example 1: Araz Supermarket, Azerbaijan
  - Modern food retail client expanding into direct sourcing fruit and vegetables from Azeri farmers
  - Lankaran region
    - No market, fallow land on vulnerable mountain slopes
    - Araz fills a gap – farmers want to plant out fallow land
  - ADB advises on building traceability and farmer support networks to a client who is new to these operations
  - ADB provided TA to support farmers to plant out in climate resilient diverse agroforestry systems

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Taking a step back from ReNew: A portfolio view

- Example 2: Louis Dreyfus Company, India
  - LDC is one of the largest agriculture merchants in the world
  - ADB TA utilized to train 2,000 farmers in climate resilient cotton farming
  - LDC utilized the curriculum to extend training to an additional 5,000 farmers and certify all 7,000 in Regenagri
  - Features include:
    - On-farm vermicompost (pictured)
    - Multilayered biopesticide-only approach for pink bollworm
    - Women's Self Help Group producing Trichoderma eggs
    - Applied not only to cotton, but other crops in rotations
  - LDC also re-excavated silted up nullahs, improving monsoon recharge of shallow aquifers

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