



#CAIP2025

CLIMATE ADAPTATION INVESTMENT PLANNING FORUM 2025

# Session 5: Prioritizing adaptation investments



## 5.a. Panel Discussion: Prioritizing Adaptation Investments to Secure Financing

**MODERATOR**



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**KEYNOTE**



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#CAIPForum2025  
3-4 September 2025  
Manila, Philippines

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# Prioritizing Adaptation Investments to Secure Financing



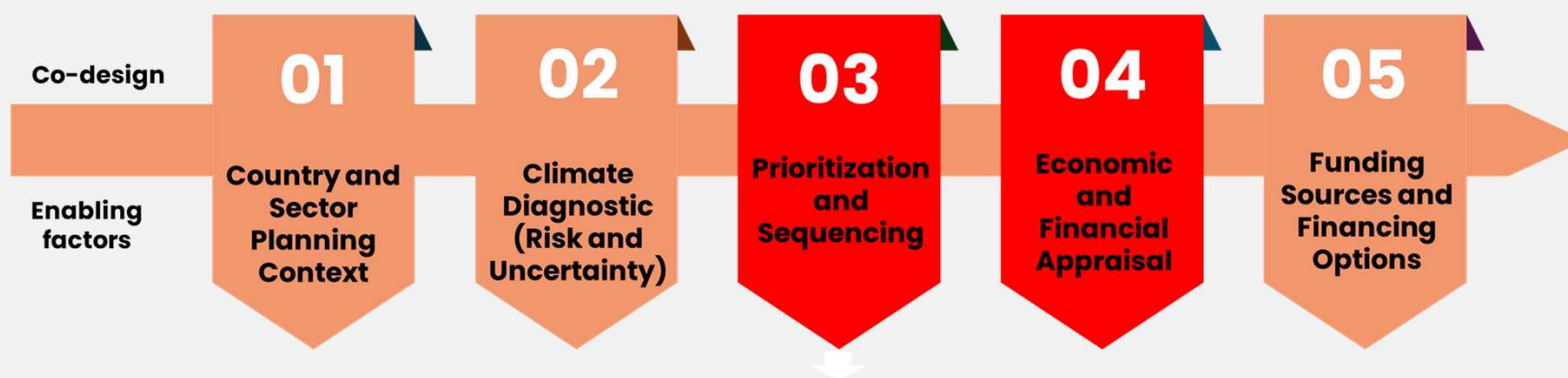
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Paul Watkiss

# Lessons from the CAIP Process

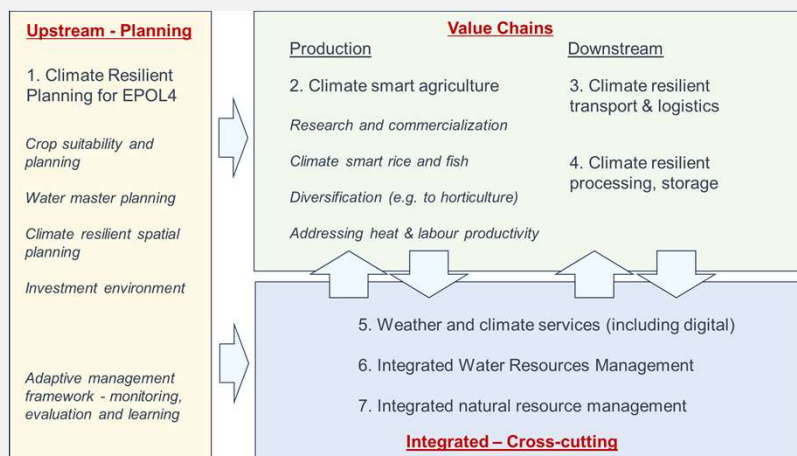
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- The first round of CAIPs are now finishing
- Armenia, Bhutan, Cambodia, Indonesia, Mongolia and Nepal – primarily focused on water and agriculture sectors
- Useful to look at lessons and insights on 3) prioritisation and 4) appraisal



# Programmatic adaptation and packages

- CAIP is part of the broader NAP (and NDC) process
  - These focus on publicly identified priorities and are typically sectoral
- CAIP 'groups' adaptation into programmatic and systems approach

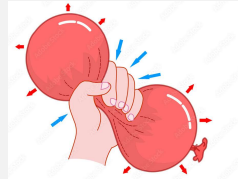


- CAIP extends to consider more holistic and integrated approach, e.g. moving to agri-value chains or using IWRM framing
- Insight: In turn this can be used to extend to actors and actions beyond public priorities, especially private sector

# Prioritization

- NAPs identify long set of adaptation priorities with many actions – but as move to investment planning have to prioritise

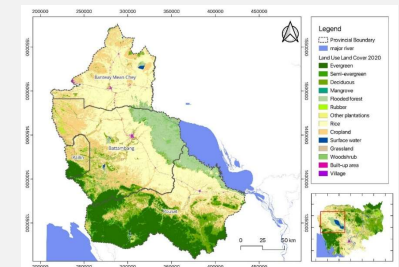
Prioritisation is always difficult !



Political economy : useful to align to Government identified priorities in national and sector development plans (help to meet their KPIs)

Often an opportunity to integrate (mainstream) within strategic economic development priorities

Opportunity to link to green taxonomy & actions



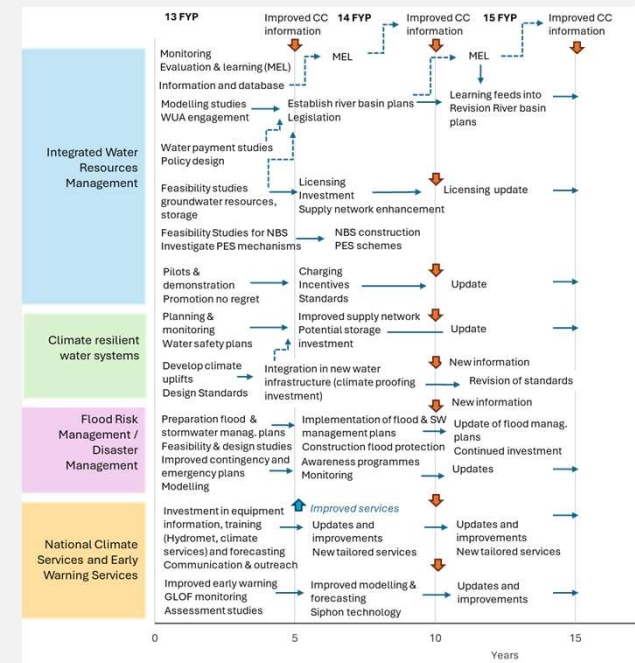
# Prioritisation - Urgency

- Not everything has to be done today..... prioritise based on what is most urgent
  - No and low-regret adaptation (quick wins)
  - Minimise regrets (decisions with lifetime and lock-in)
  - Start the adaptive management process

Can sequence actions

Identify which in the next 5-year planning period – versus those later ... without losing actions

More challenging: moving to full adaptive pathways



# CAIP extends NAP and puts greater focus on benefits

- What are the benefits that adaptation delivers, what type benefits, who benefits
  - Economic (societal) benefits
  - Fiscal benefits
  - Financial benefits

Helps signpost the potential sources of finance early in the process

Align to public process – positive narrative for public adaptation (revenue/expenditure)

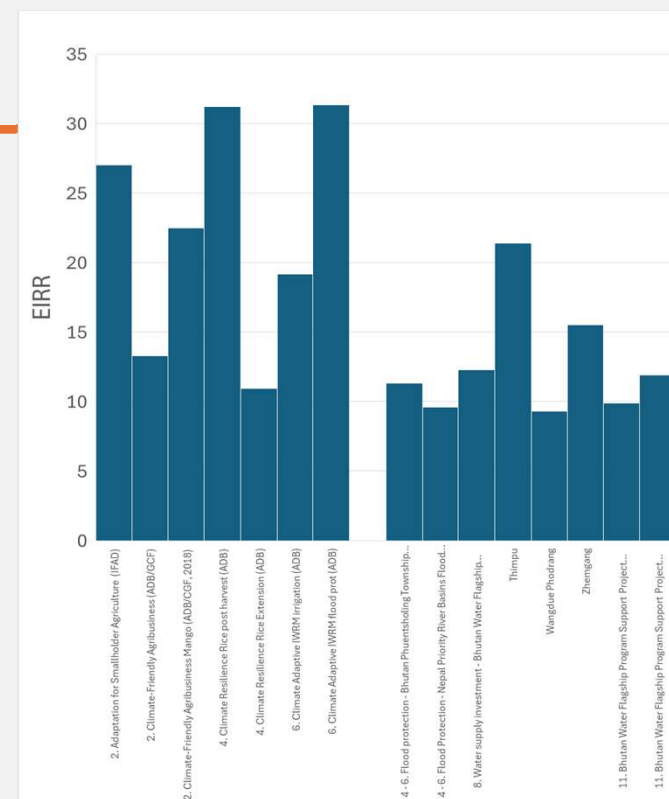
Identifies actions with bankable opportunities for private finance and private sector

Subpackage	Economic benefits	Fiscal benefits	Financial benefits or revenues
IWRM planning and water user associations	<p>Management of water resources to maximise economic and social welfare - benefits of allocative efficiency (allocation of water to maximize the highest value use) - benefits to water users from availability / consistency of supply</p> <p>Maintenance/improvement of ecosystem service benefits</p> <p>Improved governance (WUA) and reduced economic loss and disruption</p> <p>Improved investment landscape (investor confidence)</p>	<p>Potential for taxes, charges, and increased revenues (e.g. hydropower exports)</p> <p>Improved management and improved planning of fiscal expenditure</p> <p>Reduced costs from environmental degradation</p> <p>Lower cost of dispute management</p> <p>Fiscal cost savings disaster response</p>	<p>Following implementation, potential for revenues from hydropower and agriculture (water users) – though note that there may be downsides for some actors compared to current status quo (allocations and pricing)</p>
Water efficient technology	<p>Benefits of allocative efficiency</p> <p>Reduced costs for water-dependant industries</p> <p>Job Creation (new technologies)</p> <p>Improved ecosystem services (reduced abstraction).</p>	<p>Reduced public expenditure on water supply</p> <p>Potential increased tax revenues (more profitable water sector, new technology markets (tax revenue)</p>	<p>Lower water costs (cost savings) (from adoption)</p> <p>Potential for private sector (goods &amp; services)</p>

# Economic and financial appraisal

- Critical to make economic case for adaptation using public investment management criteria – EIRR/BCR
- CAIP uses light touch analysis – find economic returns (EIRR) are high – even for policy-based activities (*ex ante*)
- But also look at financial returns and revenue potential – noting these often lower, some actions low or no revenues

Insight: build up packages which combine revenue and non-revenue generating actions



As identify priority actions, can undertake more detailed economic and financial appraisal, e.g., Armenia

Water irrigation system and pond component	Low climate impact	Mid climate impact	High climate impact	Extreme scenario
Project NPV	3,056,844	4,165,631	7,491,995	10,818,358
Project IRR	24.3%	28.9%	41.1%	51.8%
Project benefits	5,543,939	6,652,727	9,979,090	13,305,454
Project costs	2,487,095	2,487,095	2,487,095	2,487,095
Benefit to cost ratio	2.23x	2.67x	4.01x	5.35x

# Financing CAIPs require a mix of financing solutions

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- Financing options can and will span public, private and blended finance solutions
  - Depending on economic and financial rates of return, and country preferences
  - Indicatively, 75-90% may require public finance - but scope to reduce, to 65-80% and bring in more private, through enabling environment and institutional reforms
- Other factors that influence the financing approach include:
  - Assets versus ongoing costs?
  - Primarily focused on adaptation versus climate-proofing development?
  - Risk, size etc.
- Insight: many financing solutions require financing sources and modalities that can support both capital investment and policy/institutional change

## 5.a. Panel Discussion: Prioritizing Adaptation Investments to Secure Financing



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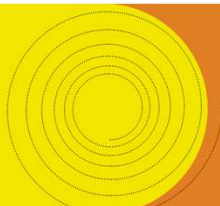


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## **5.b. Deep dives: Prioritizing Adaptation Investments to Secure Financing**

### **Parallel Sessions**

**Deep dive 5.1:** Adaptation in public investment management

**Deep dive 5.2:** Project preparatory facility for adaptation

**Deep dive 5.3:** Economic and financial analysis of adaptation investments

# Deep dive 5.1: Adaptation in public investment management

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# Deep dive 5.2: Project preparatory facility for adaptation

## MODERATORS



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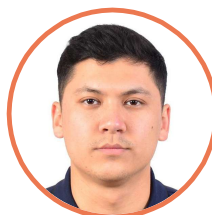
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## Deep dive 5.3: Economic and financial analysis of adaptation investments

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**Abderrahim Assab**  
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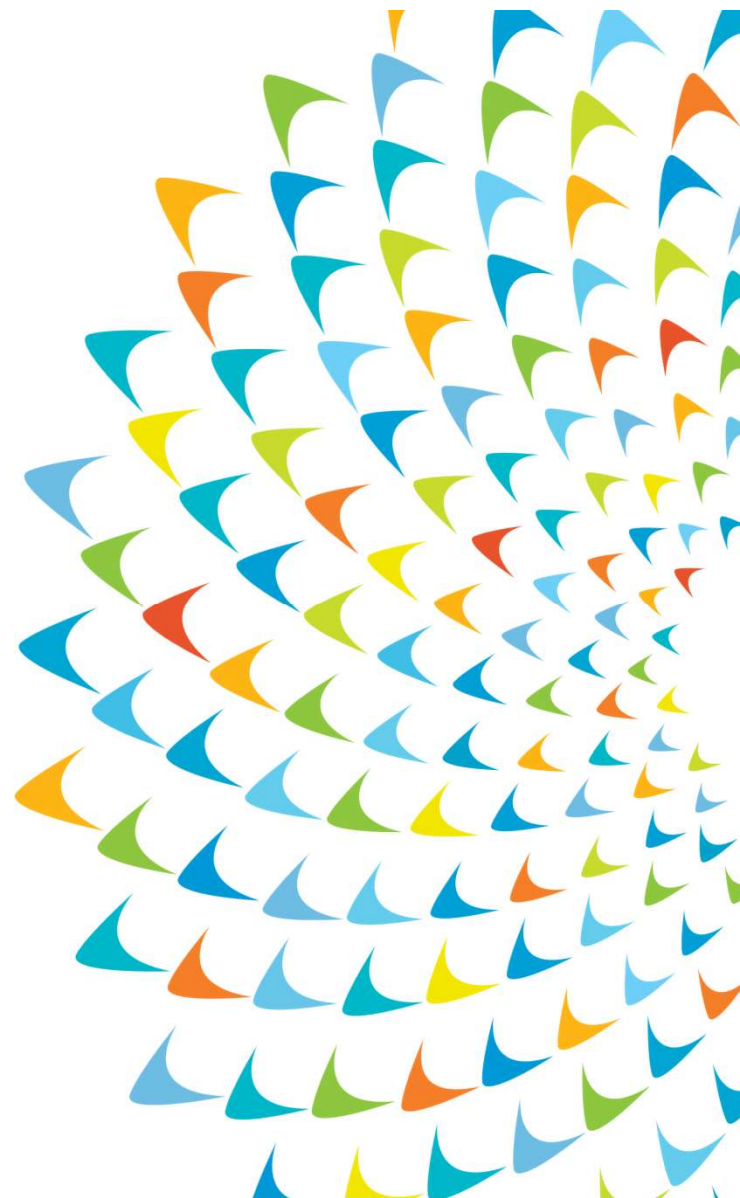


# Economic Analysis– Some Preliminary Insights to the Adaptation and Resilience

**Dina Azhgaliyeva, Senior Economist (Climate Change)**

Economic Analysis & Operational Support (EREA) Division/  
Economic Research & Development Impact (ERDI) Department- ADB

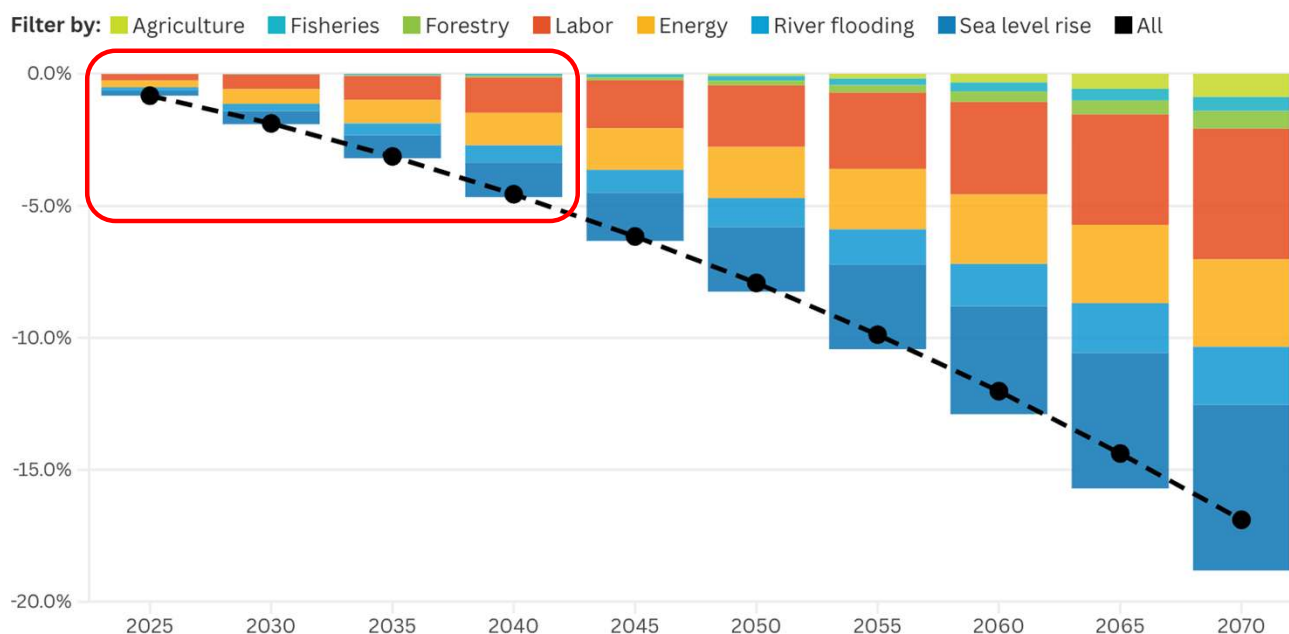
**3 September 2025**



## Climate change is already having tangible effects...

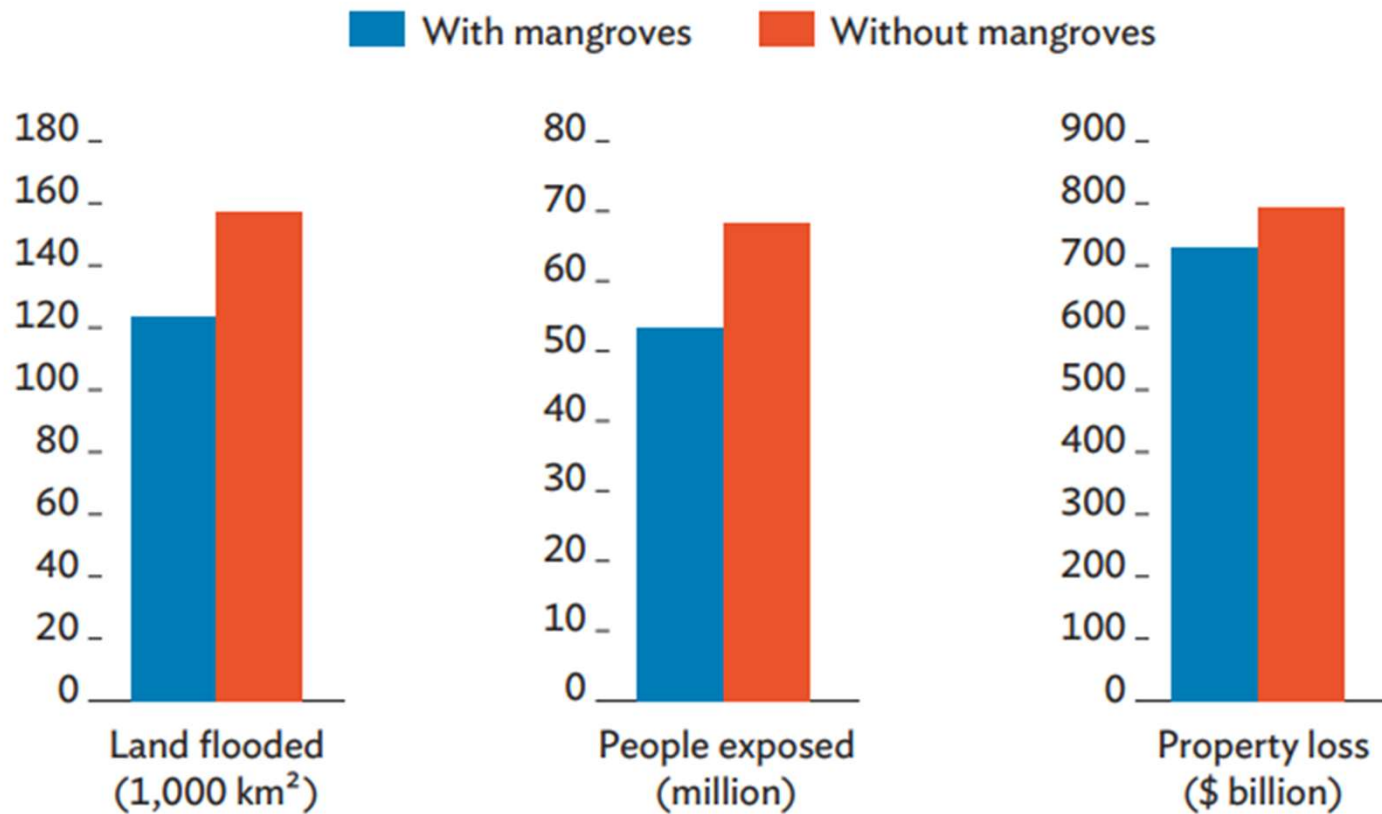
- Rising temperatures, heat waves, shifting precipitation patterns, more drought and floods, extreme weather, and sea-level rise are already imposing economic costs on the region
- While sea-level rise is a dominant driver of long-run losses, short run losses are driven by lower labor productivity and higher energy demand

Developing Asia-Pacific (change in GDP, %)



Source: Campagnolo, L., G. Mansi, F. Bosello, and D. A. Raitzer. 2024. Quantifying the Economic Costs of Climate Change Inaction for the Asia-Pacific Region. Background paper for the Asia-Pacific Climate Report 2024: Catalyzing Finance and Policy Solutions. Asian Development Bank.

# Global Annual Benefits Quantified from Coastal Flood Protection via Mangroves

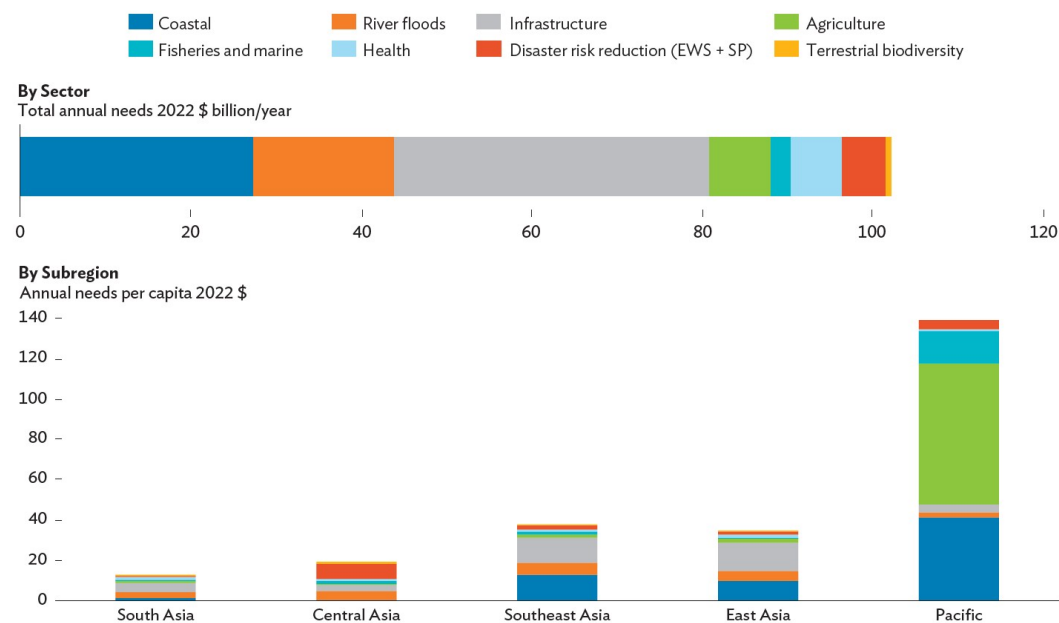


Source: ADB (2024)

# Huge gap between current financial flows for adaptation and what is needed

- Model-estimated investment needs are \$102bn annually, and are largest in infrastructure, coastal and river flood protection, and agriculture
- Stated investment needs (as submitted in NDCs, NAPs) even higher, at \$431bn
- Current adaptation commitments of \$34bn annually are far below what is needed
- Private adaptation accounts for less than 1% of adaptation finance flows in Asia-Pacific; there are opportunities for innovations to attract more private involvement

Modeled Annual Adaptation Needs for Asia and the Pacific, 2023–2030

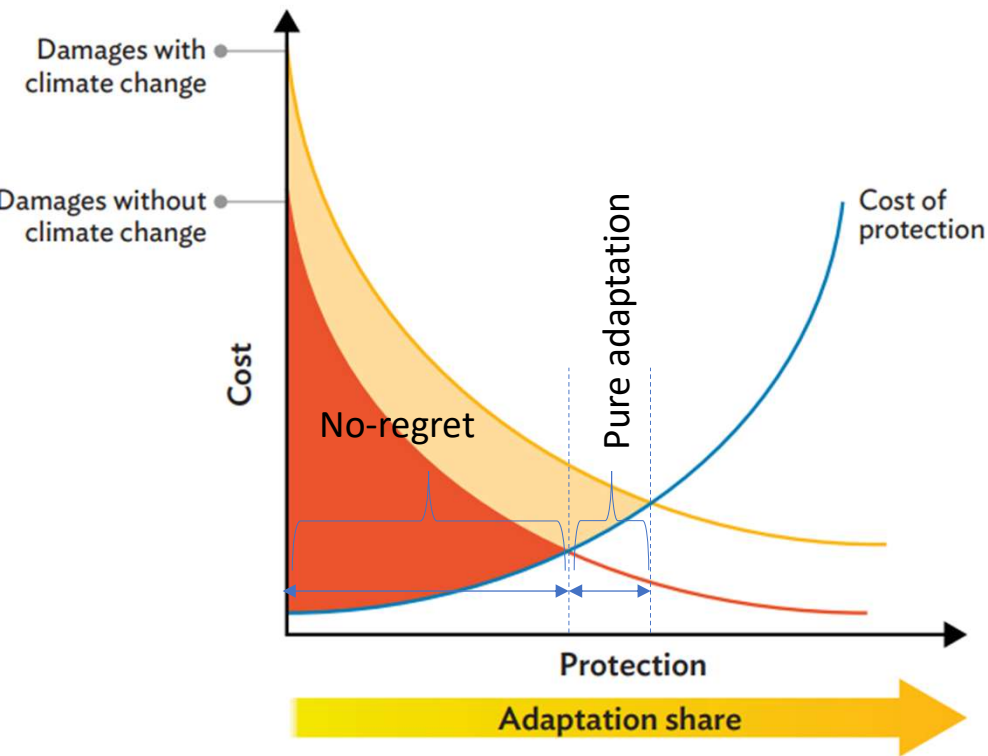


EWS = early warning system, SP = social protection.  
 Notes: Central Asia comprises Armenia, Azerbaijan, Georgia, Kazakhstan, the Kyrgyz Republic, Tajikistan, Turkmenistan, and Uzbekistan. East Asia includes the People's Republic of China and Mongolia. The Pacific comprises the Cook Islands, the Federated States of Micronesia, Fiji, Kiribati, the Marshall Islands, Nauru, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu. South Asia comprises Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka. Southeast Asia comprises Cambodia, Indonesia, the Lao People's Democratic Republic, Malaysia, Myanmar, the Philippines, Thailand, Timor-Leste, and Viet Nam.  
 Source: Authors' calculations from data generated by United Nations Environment Programme. 2023. *Adaptation Gap Report 2023: Underfinanced. Underprepared. Inadequate Investment and Planning on Climate Adaptation Leaves World Exposed.*

# Economic analysis ensures that the country's resources are being used efficiently

- (i) a project is in line with the development context of a borrowing country and ADB's country partnership strategy (CPS);
- (ii) there is strong rationale for the public sector and ADB to finance the project; and
- (iii) the selected project represents the most efficient or least-cost option among all the feasible alternatives for achieving the intended project benefits and, when benefit can be valued, it will generate a **positive economic net present value (ENPV>0) at 9% discount rate or EIRR>9% at ENPV=0**
  - 6% discount rate for selected poverty-reducing projects and projects that primarily generate environmental benefits
  - The discount rate is a proxy for the social opportunity cost (SOC) of capital in ADB member countries.

# Economic Framework for Adaptation Investments



**No-regret:** intersection of the damage cost without climate change and protection cost curves  
**Pure adaptation:** when that intersection is exceeded.

Most developing countries have not reached the no-regret intersection for many protection measures, there are many no-regret opportunities that represent both adaptation needs and development needs that exist even without climate change.

Source: ADB (2024)

Economic impact of climate change:  
Change in project's NPV

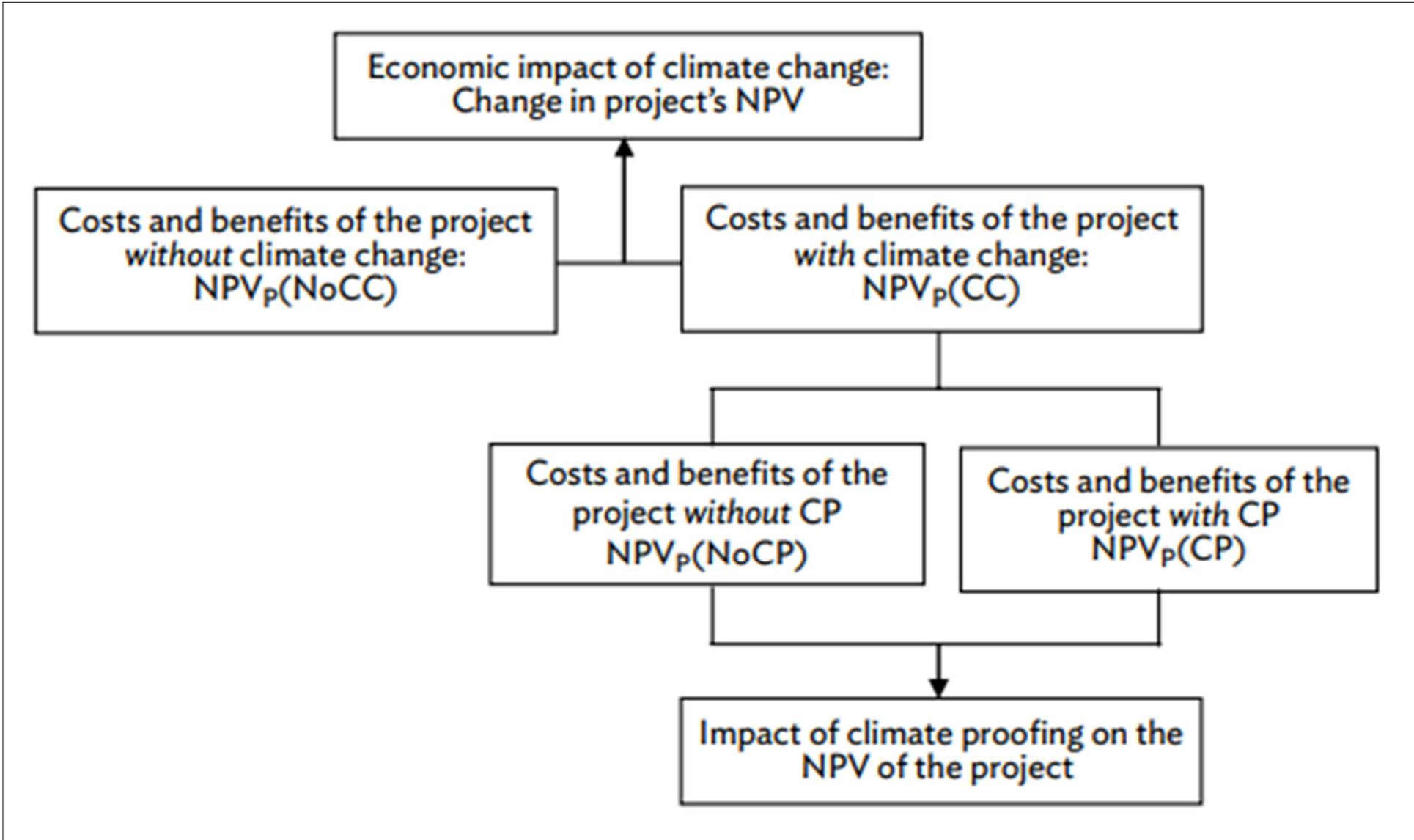
Costs and benefits of the project  
*without* climate change:  
 $NPV_p(\text{NoCC})$

Costs and benefits of the project  
*with* climate change:  
 $NPV_p(\text{CC})$

Costs and benefits of the  
project *without* CP  
 $NPV_p(\text{NoCP})$

Costs and benefits of the  
project *with* CP  
 $NPV_p(\text{CP})$

Impact of climate proofing on the  
NPV of the project



# There is a strong case for many types of climate proofing:

- **'no-regrets'** net positive economic benefits regardless of the nature and extent of climate change, do not involve hard trade-offs (reducing leakage from water utility infrastructure).
- **'low-regret'** relatively low cost and provide relatively large benefits (the avoided expected costs from not climate proofing) under future climate change (additional water storage facilities)
- **'win-win'** not only reduces climate risks to the project, but also has other social, environmental, or economic benefits (land use and planning)

Most developing countries have many no-regret opportunities that represent both adaptation needs and development needs that exist even without climate change.

More examples: [ClimateXChange](#)

Example Transport Project: climate- and disaster-resilient transport connectivity enhanced

**“without project”** (baseline scenario-no adaptation case)

- disruption to transport users (rerouting traffic because of flood events increases congestion and GHG emissions).
- Repair work from frequent disasters (including GHG emissions cost)

**“with project”** (adaptation) avoidance of:

- higher cost with reactive restoration
- construction of temporary road formation in the event of failure,
- increased maintenance cost with temporary road formation,
- Restriction on truck movement with road failure and use of pickups for transportation (this will result in increased vehicle operating cost and emissions)
- reduced speeds with temporary road use
- loss of connectivity during temporary road formation

**EIRR > 6% (rural road)**

# In practice, the economic analysis of adaptation is challenging

Climate risks (see Climate Change Assessment (CCA)):

- Uncertainty on frequency and severity
- Change over time
- Location specific
- Impact of climate risks

Example 1: Rainfall is projected to increase by 3–7 percent in the near term, 3–6 percent in the medium term, and 5–13 percent in the long term (by 2100) under RCP 2.6, 4.5 and 6.0 (WB 2021).  
Example 2: Probabilities for a severe weather event that would lead to road failure 3 to 5% in 2025. With climate change, this probability is expected to increase by 1 to 2%. Road infrastructure designed for a 20–30-year life span is likely to face greater climatic challenges under IPCC's SSP2-4.5– SSP5-8.5 scenarios, which project a 1.2–1.8°C temperature increase by 2050 and up to 38.6% more extreme rainfall events by late century.

## Risk Stress Test Tool (RiST)

- To improve understanding of possible impacts, enhance preparation and project design, as well as inform decision-makers.
- The analysis estimates climate and disaster impacts on the cost and benefit flows of a project's net present value (NPV). The methodology accounts for:
  - changes in average climate conditions,
  - impacts from natural hazard
  - changes in the frequency of natural hazard.
- Can modify the project to include risk management measures where necessary, and report to stakeholders on how risks were considered

# RiST Tool process (Excel based tool)

## Input 1: Optimistic/Pessimistic Baseline

1) Project costs and benefits *without* climate considerations under optimistic and pessimistic scenarios

## Input 2: Low/High Climate Impacts

2a) Changes in *average climate conditions*  
2b) Impacts from *natural disasters*, with current frequency and intensity  
2c) Changes in *the frequency of natural disasters*

## Output/Results

- NPV and BCRs that reflect combinations of the four scenarios (optimistic/pessimistic baseline and low/high climate and disaster risk)
- Sensitivity analysis, role of discount rate, gradient charts
- Understanding of risks and possible failure scenarios

# Data needs to use [Risk Stress Test Tool \(RiST\)](#)

## 1. **Economic impacts of changes in average climate conditions**

- Expected change in user costs and operations cost, in %
- Expected change in price/value of supply, in %
- Expected change in investment costs, in %

## 2. **Economic impacts of natural disasters (for each: extreme, moderate, weak)**

- Return period (to calculate probability of occurrence), in years
- Impact on quantity produced, in % of yearly output with project
- Impact on quantity produced, in % of yearly output without project
- Repair/Reconstruction cost (CAPEX), in absolute amount/monetary unit
- Additional out-of-system impacts, in absolute amount/monetary unit

## 3. **Economic impacts from changes in frequency of disasters (for each: extreme, moderate, weak)**

- same as #2

# Meghalaya Integrated Transport Project (India)

- To improve transport connectivity and efficiency and modernize transport sector management.
- [ThinkHazard!](#): Flood and Landslide
- Change in precipitation: Rainfall is projected to increase by 3–7% in the near term, 3–6% in the medium term, and 5–13% in the long term (by 2100) under RCP 2.6, 4.5 and 6.0.
- **Climate impact**: increase in repair and reconstruction costs, loss of services provided by the roads (through traffic disruptions and road closures), and out-of-system impacts, such as business shutdowns, disruption of utility services, and so on.
- **Adaptation impact**: Since the project aims to build roads that are to a certain extent resilient to floods, we assumed that the assets would not be damaged by weak-intensity events, and the “without project” costs of floods would be higher than the “with project” costs.

Source: based on World Bank (2021)

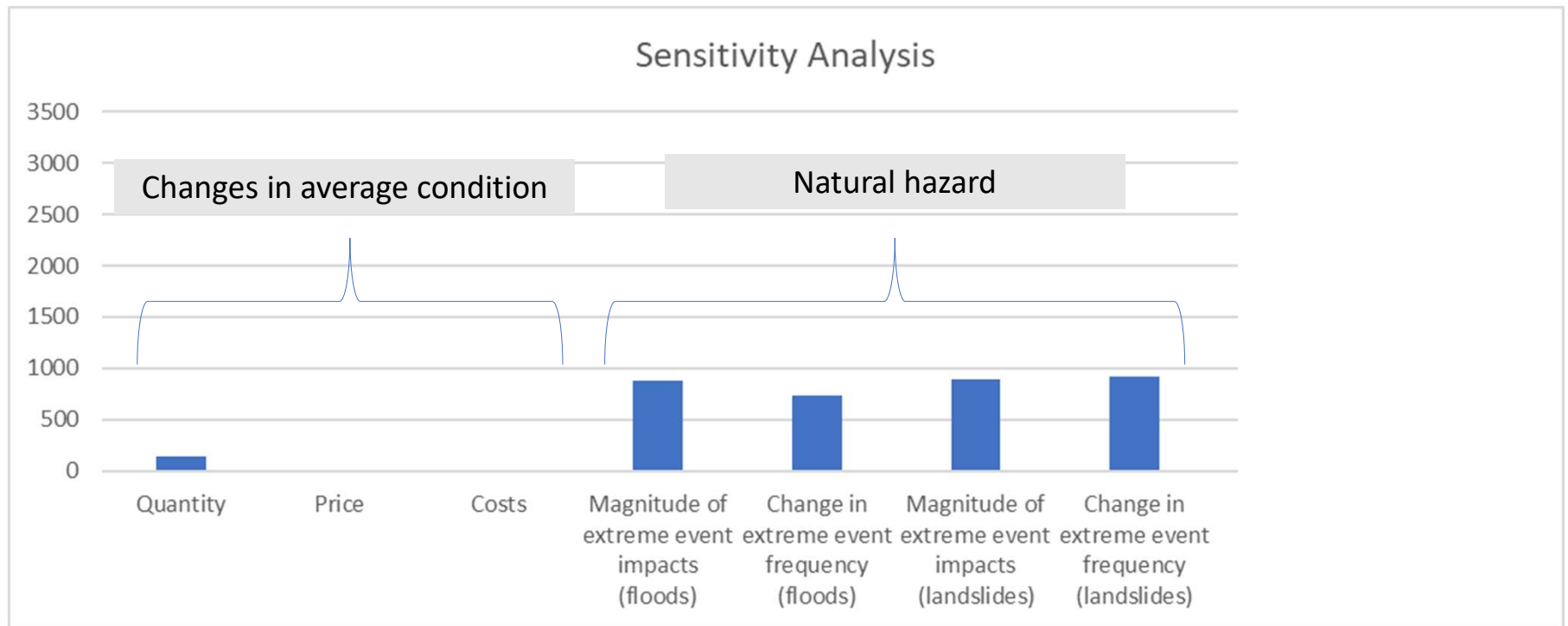
Example: Meghalaya Integrated Transport Project (India)  
 Results of a hypothetical climate and disaster risk stress test on economic analysis: even at high climate impacts and pessimistic NPV>0 at 9% discount rate

Adjusted NPVs and EIRR Under Extreme Scenarios		Level of climate impact		
		No/low impact (0%)	50% Impact	High impact (100%)
		NPV (\$mIn)	NPV (\$mIn)	NPV (\$mIn)
Baseline scenario	Optimistic (0% pessimistic)	5,340	4,279	2,448
	50% pessimistic	5,172	4,110	2,279
	Pessimistic (100%)	5,003	3,941	2,110

Source: based on World Bank (2021)

Discount rate 9%

# Sensitivity Analysis: Change in NPV (\$ mln) due to climate change impact



Source: based on World Bank (2021)

Discount rate 9%, Pessimistic 100%, high climate impact (100%)

# Concluding insights

- Check for no-regret, low-regret, win-win projects
- Use Climate Change Assessment (CCA) in Economic Analysis
- Apply social cost of carbon on GHG emissions in Economic Analysis
- Tools like [RiST](#) could be useful but requires data inputs

# References

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- ADB (2017) [Guidelines for the Economic Analysis of Projects](#)
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