APEC 2025 KOREA

From Projections to Actions: Integrating Climate Risk into Resilience Decision-Making

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Part 1:

A Brief Overview of the

ASIAN DEVELOPMENT BANK

ADB’s Purpose Statement

ADB is a leading multilateral development bank supporting inclusive, resilient, and sustainable growth across Asia and the Pacific. Working with its members and partners to solve complex challenges together, ADB harnesses innovative financial tools and strategic partnerships to transform lives, build quality infrastructure, and safeguard our planet.

Photo: ADB@flickr.com

Founded in 1966


Photo: ADB@flickr.com

- 69 members; 50 in the region
- 41 borrowing members in 2024

ADB's Core Business

Photos: ADB@flickr.com

- Finance
- Knowledge
- Partnerships

Strategy 2030 Midterm Review: A Snapshot

Solving challenges together, connecting the region, and empowering people for dynamic economies and a healthy planet

Climate action indicators and targets: More than $100 billion in cumulative climate finance (2019-2030) and for climate finance to reach 50% of the total committed financing volume, by 2030

Regional cooperation and public goods indicator and target: 30% of operations contributing to RCI, including those supporting public goods by 2030

Private sector development indicators and targets: $13 billion of ADB's own account financing and all direct mobilization, including a minimum of $4.5 billion in direct private capital mobilization, and 40% of sovereign operations contributing of PSD, by 2030

Digital transformation indicator and target: Operations supporting digital transformation expected to grow year over year across sovereign and nonsovereign operations

Resilience and empowerment indicators and targets: 60% gender mainstreaming across sovereign and nonsovereign operations and 75% of operations supporting poverty reduction and inclusiveness, by 2030

HOW DO WE GET THERE?	
Guiding principles for operations: Focused approach • Integrated solutions • Innovative technology	**ADB Transformation Program (New Operating Model):** Finance • People • Systems and Processes

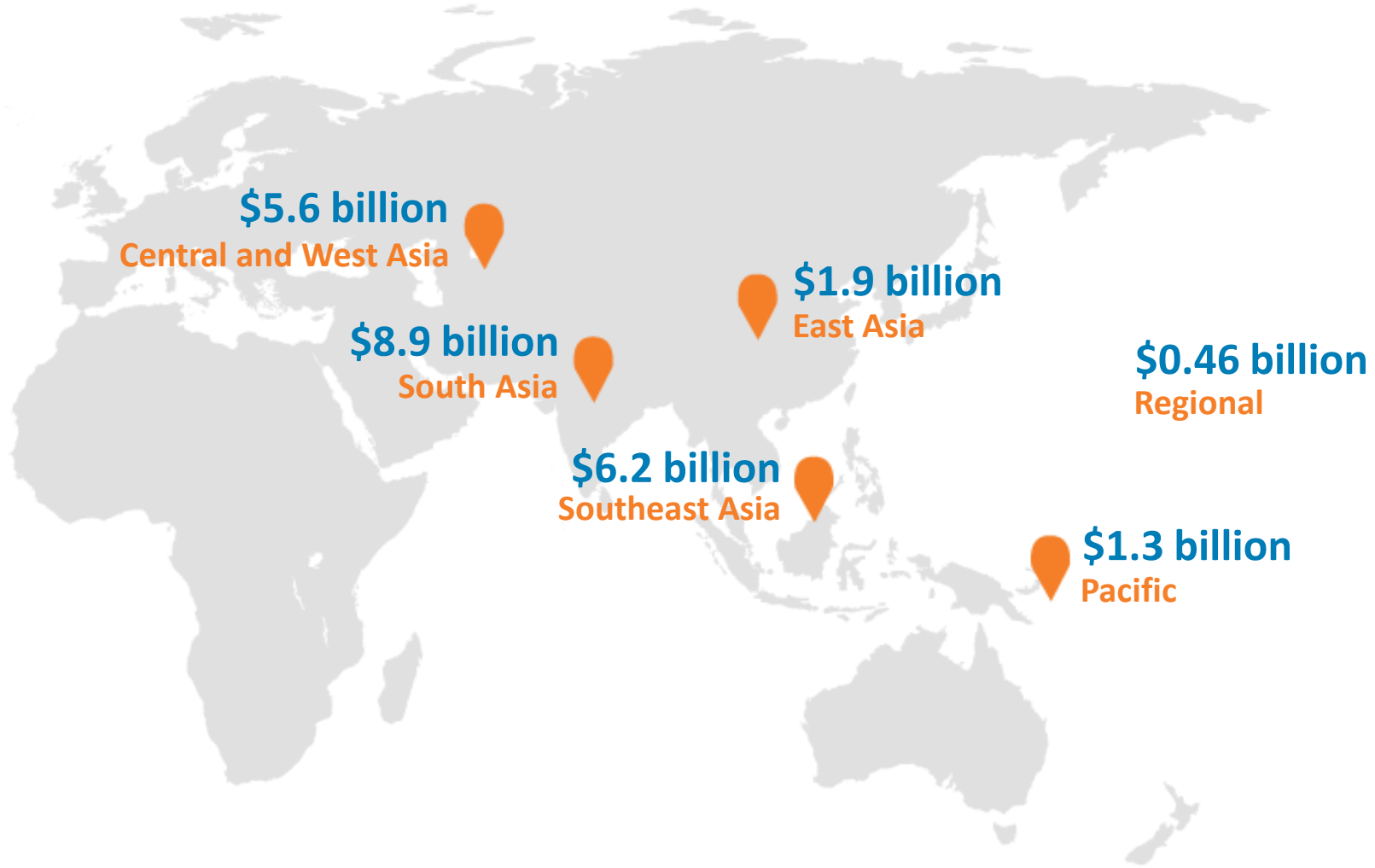
ADB's 2024 Operations

- $24 billion in loans, grants, and investments
- $298 million for technical assistance
- $14.9 billion from cofinancing partners including Trust Funds

$24.3B *(ADB Commitments)*

$14.9B *(Cofinancing)*

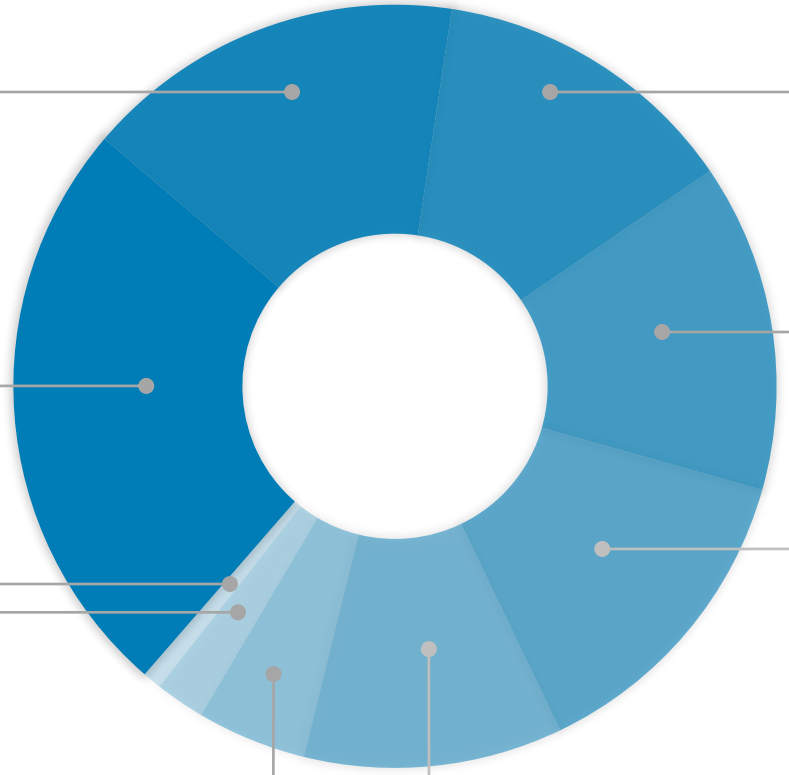
Assistance by Region



TOTAL 2024 COMMITMENTS

$24.3 BILLION

Assistance by Sector



$3.8 billion
Energy

$5.9 billion
Finance

$0.1 billion
Industry and Trade

$0.5 billion
Education

$1.1 billion
Health

$3.2 billion
Public Sector Management

$3.5 billion
Transport

$3.3 billion
Water and Other Urban infrastructure and Services

$2.6 billion
Agriculture, Natural Resources and Rural Development

Others:
- *Information and Communication Technology :$0.07 billion*
- *Multisector: $0.02 billion*

TOTAL 2024 COMMITMENTS

$24.3 BILLION

Note: Numbers may not sum precisely because of rounding.

Part 2:

A Brief Overview of

CLIMATE FINANCE

Asia and the Pacific is highly vulnerable to climate change


Photo: ADB@flickr.com

- Most disaster-hit region from weather, climate and water-related hazards, with the Pacific islands facing existential crises.[a]
- From 1991–2024, climate-related disasters in the region resulted in 551,174 deaths, 5.3 billion affected people, and about $1.6 trillion in loss and damage.[b]
- Climate change threatens to reverse hard-won economic and social gains. Under a high-end emissions scenario, economic losses could reach 17% of GDP by 2070 and 41% by 2100.[c]

Sources:
[a] WMO, 2024. State of the Climate in Asia 2023. Geneva.
[b] EMDAT. International Disaster Database. Center for Research on the Epidemiology of Disasters. (accessed 19 May 2025).
[c] ADB. 2024. *Asia-Pacific Climate Report 2024: Catalyzing Finance and Policy Solutions*. Manila

Key challenges: rising sea levels, increased storm intensity, and urbanization

More than 4% of the world's population
live in coastal areas that are less than **5 meter** above sea level.[a]

The majority of such population lives in **Asia and the Pacific**, with **44.1 million people** living in areas with elevation **below 1 meter**, and **112.3 million people** in areas where the elevation is **below 3 meter**.[b]


Photo: ADB@flickr.com

Without adaptation, annual damage of coastal flooding is projected to **increase by 9–11 times** by mid-century for small island developing states.[f]

Without adaptation, climate change could amplify direct economic damages from coastal flooding in small island developing states (SIDS) **by over 14 times under high-emission scenarios, with atoll nations facing some of the highest losses.**[e]

According to recent **IPCC projections,** sea level rise may reach **1 meter by the end of the century**.[c]

According to OECD figures, **by 2070**, **15** out of the **20 cities** ranked in terms of largest population exposed to coastal flooding **will be in Asia.**[d]

Sources:

[a]WorldBank. 2021. P_Data_Extract_From_World_Development_Indicators.xlsx. Retrieved on 04 March 2025
[b]ADB-DEVelopment Asia. 2024. *Rising Seas: Building Resilience Against Coastal Flooding in Asia and the Pacific.*
[c]IPCC. AR6. Chapter 9: Ocean, Cryosphere and Sea Level Change. Page 1308
[d]OECD. 2008. *Ranking Port Cities with High Exposure and Vulnerability to Climate Extremes: Exposure Estimates.* Ranking Port Cities with High Exposure and Vulnerability to Climate Extremes | OECD Page 26
[e] M.I. Vousdoukas. 2023. Small Island Developing States under threat by rising seas even in a 1.5 °C warming world. *Nature Sustainability.*
[f]European Commission. 5 December 2023. Even at 1.5°C warming, small island developing states risk flooding from sea level rise

Heat in Asia and the Pacific

OVERALL WARMING TRENDS

Asia is warming faster than the global average. The warming trend has nearly doubled since the 1961–1990 period.

Temperatures have already risen by **1°C–1.5°C** in last century, most rapidly for India and Pakistan.

Heat is impacting food systems, melting glaciers with catastrophic effects, and women will bear the brunt of heat stress.

Heatwaves are expected to become more frequent, longer-lasting and intense; projected to be most impacted are South & Southeast Asia.

EXTREME HEAT EVENTS:

2024 - the hottest year on record (so far).

Record-breaking extreme heat events in 2023-2024, with hottest April ever in Myanmar, Lao PDR & Viet Nam, and extreme highs in India (51°C air temperature) & Philippines (53°C heat index).

Source: Rising Above the Heat: Strengthening Women's Resilience to Heat Stress (adb.org)

Glacial melt is increasing multi-hazard risk in ADB DMCs and will cause problems with water stress.

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Climate Change
Rising temperature

Air Pollution
Black carbon

Multiple Hazards
Higher risk of other hazards intensify impacts

Impacts will change as water levels change

Increased Disaster Risk

- **Change in hazard patterns and compounding hazards:** Glacier lake outburst floods, floods, landslides
- **Infrastructure systems**: Damage to infrastructure assets affecting performance of transport, urban, energy, irrigation, water supply systems
- **Food system**: Loss in agricultural productivity and agricultural land
- **Energy system**: Extreme events will increase the risk of damage to hydropower

2050 peak water

Before 2050:
Rising water levels

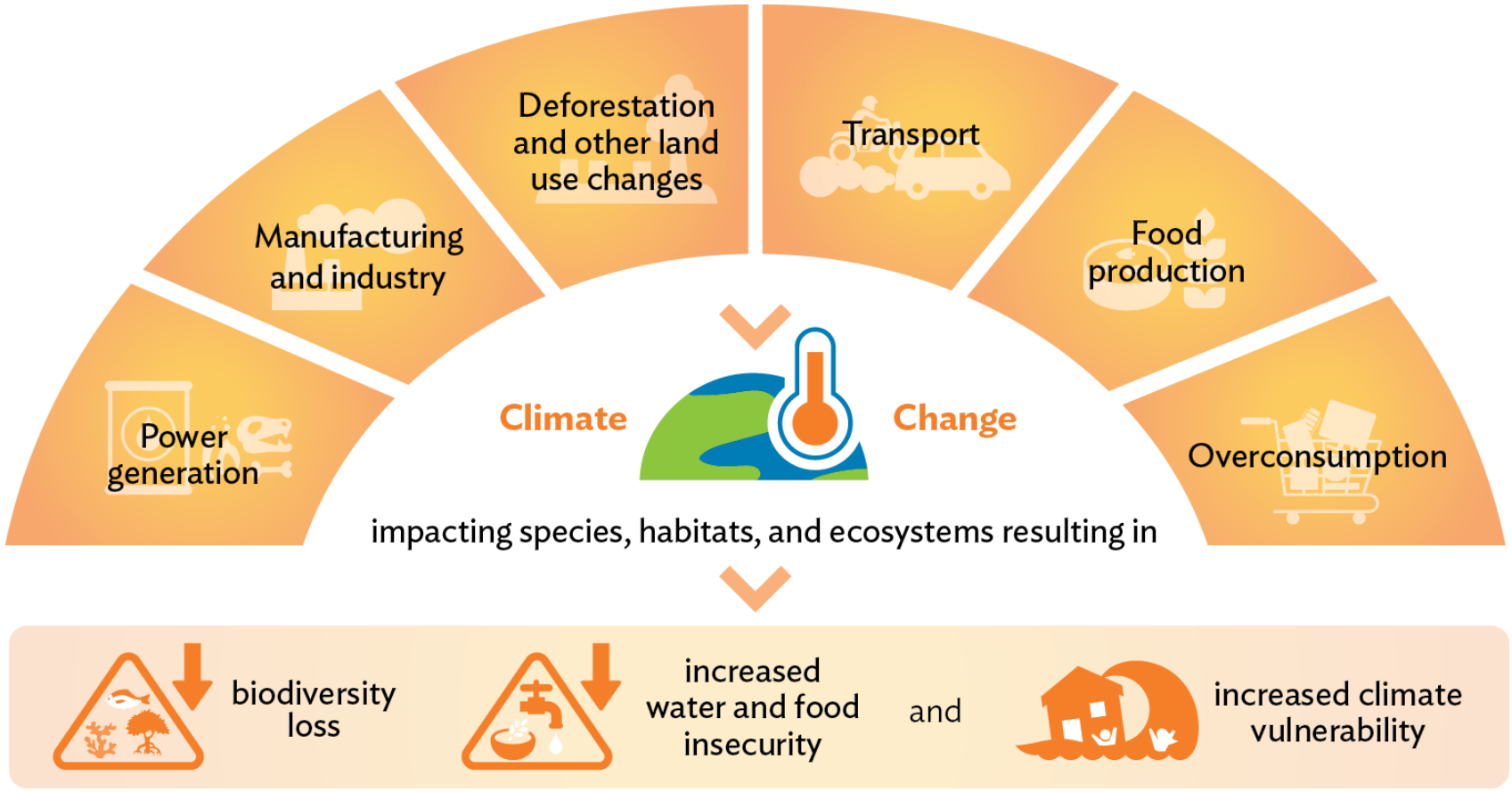
After 2050:
Falling water levels

75% Glacier Loss in Hindu Kush Himalayas by 2100

Food & Water Security

- Increase in drought, flash floods, groundwater depletion
- **Infrastructure system**: Pressure on water supply and irrigation systems
- **Food systems:** Food productivity adversely affected due to droughts, constraints on subsistence rural livelihoods leading to rural out-migration
- **Energy system:** Climate sensitivity will make hydropower generation more vulnerable leading to loss in hydropower generation (especially run of river)

Double Crisis of Climate Change and Biodiversity Loss



The rapidly changing climate and unprecedented biodiversity loss have increased the urgency of conserving, restoring, and sustainably managing wetland ecosystems.

Source: https://www.adb.org/publications/regional-flyway-initiative-climate-investments

Commitment to low-carbon transition of systems

- **Asia and the Pacific** currently contributes to over half of annual global greenhouse gas (GHG) emissions.[a]

- To achieve the Paris Agreement targets, global GHG emissions should be cut by around 43% by 2030 and 60% by 2035 from 2019 levels, aiming for net-zero CO_2 emissions by 2050.[b]

Sources:
[a]ADB. 2024. Asia-Pacific Climate Report 2024: Catalyzing Finance and Policy Solutions. Manila
[c]United Nations. Global Stocktake reports highlight urgent need for accelerated action to reach climate goals.

The Paris Agreement and the New Collective Quantified Goal

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When countries signed the Paris Agreement in 2015, they decided to set a **new collective quantified goal on climate finance (NCQG)** to **replace the existing goal of $100 billion per year**. **At COP29 in Azerbaijan (November 2024), the NCQG was set at USD 300 billion annually by 2035.**

COP29 Baku Azerbaijan

Target of $300 billion per year by 2035 for developing country Parties for climate action will:

(a) Come from a wide variety of sources, public and private, bilateral and multilateral, including alternative sources;

(b) In the context of meaningful and ambitious mitigation and adaptation action, and transparency in implementation;

(c) Recognizing the voluntary intention of Parties to count all climate-related outflows from and climate-related finance mobilized by **multilateral development banks (MDBs)** towards achievement of the goal.

To secure efforts of all actors to work together to scale up finance to developing countries, from public and private sources, to the amount of **$1.3 trillion per year by 2035**.

"Baku to Belém roadmap to $1.3 trillion" *aims to scale up climate finance and produce a report for COP30; derived from a plan by a group of Latin American, African, least-developed and island nations,* ***with the goal of setting out a realistic pathway to the $1.3 trillion annually.***

ADB's response on climate shift in Asia and the Pacific

- ✓ Responding to the climate crisis, ADB commits for its climate finance to reach 50% of the total annual committed financing volume by 2030. This will ensure a cumulative achievement of more than $100 billion in climate finance from 2019 to 2030.
- ✓ ADB has fully aligned its sovereign and nonsovereign operations with the goals of the Paris Agreement (since 1 July 2023).
- ✓ ADB surpassed its target to ensure that **75%** of its operations (on a 3-year rolling average) will support climate change mitigation and/or adaptation by 2030 by reaching **79%** during the period of 2021-2023 ahead of the schedule.

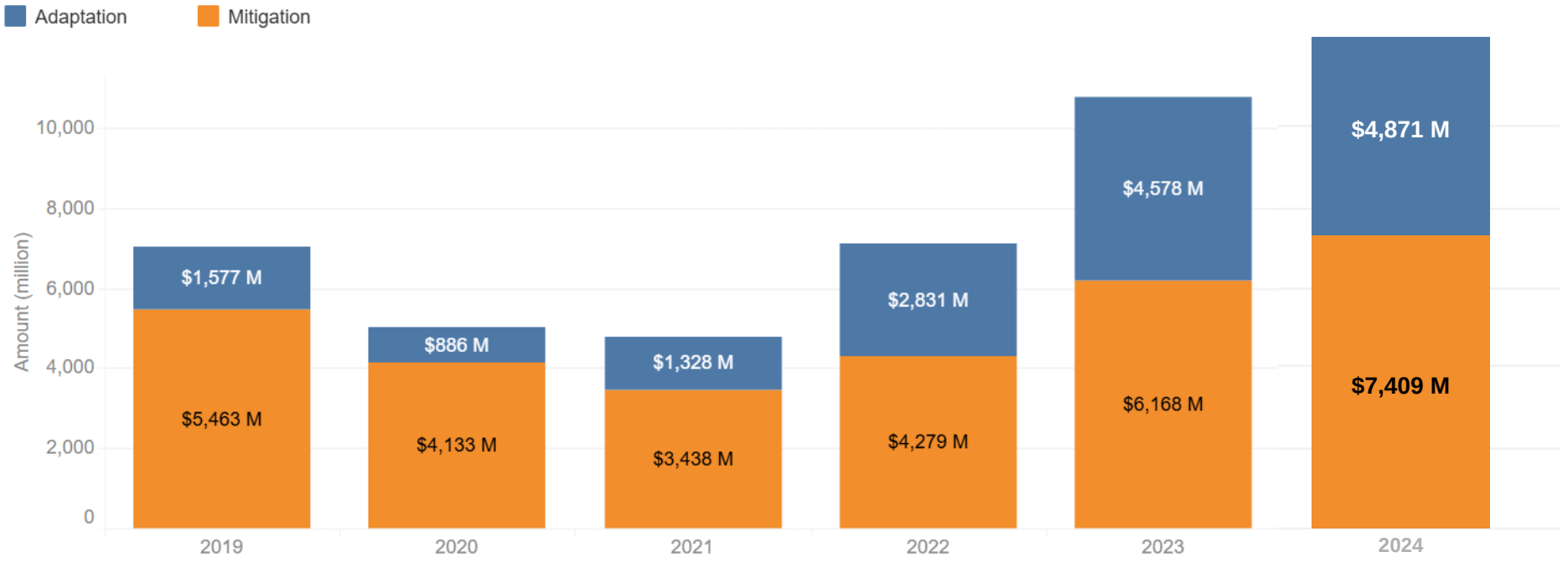
For more: ADB's Work on Climate Change and Disaster Risk Management
ADB's Corporate Results Framework 2025-2030

Climate change financing at ADB

In 2024, ADB committed **$12,280 million** in climate finance.

- $7,409 million (60.3%) is expected to contribute to climate change mitigation,
- $4,871 million (39.7%) to climate change adaptation.

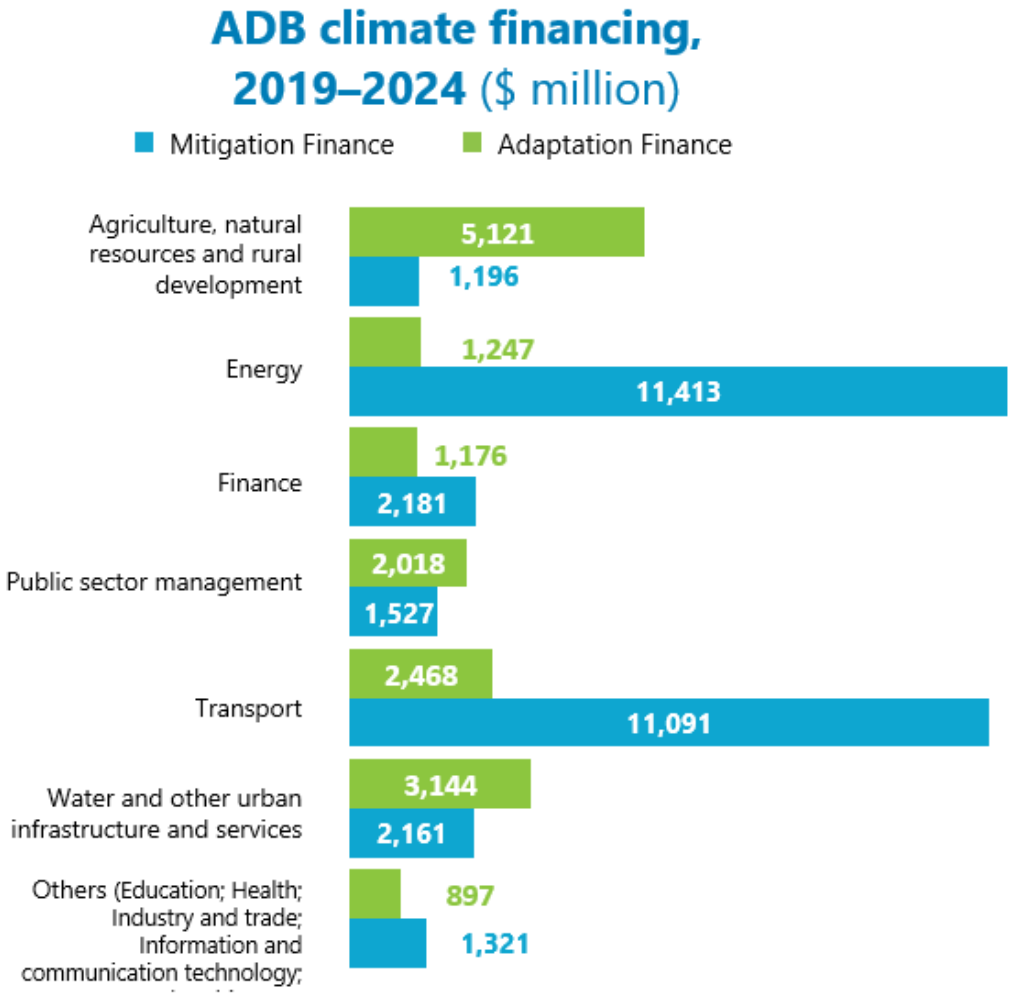
ADB provided **$11,176 million** from its own resources and mobilized **$1,104 million** from external resources.

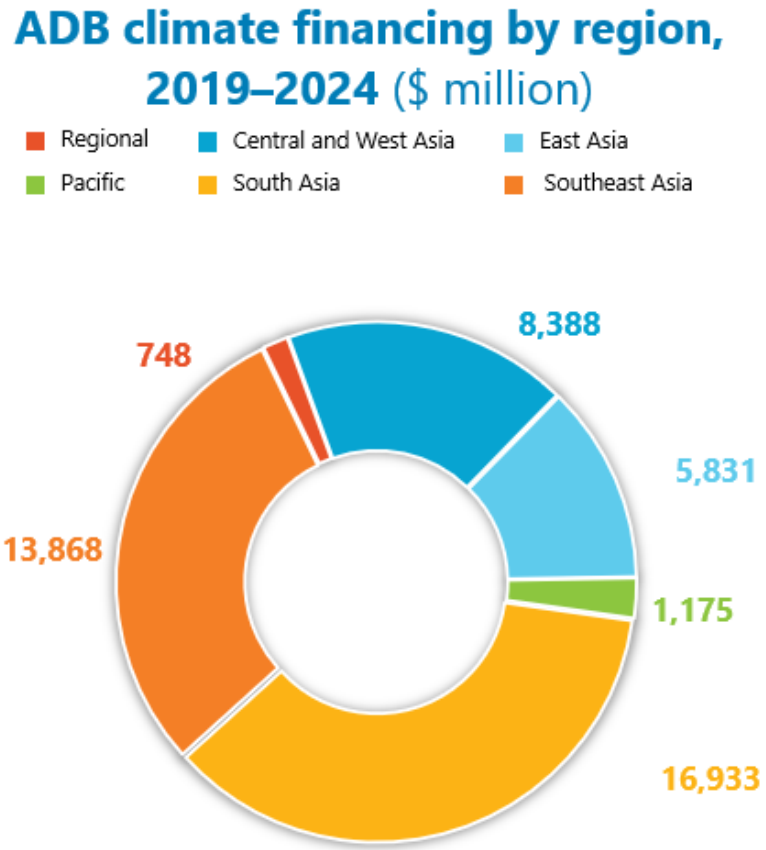


Capital Adequacy Framework (CAF) reform unlocks further ADB funding.

Source: Asian Development Bank.

Climate change financing at ADB





Source: Asian Development Bank.
Notes: 1. The graph represents climate finance for investments, TAs, and direct charges.
2. The amounts in the chart include climate finance from ADB resources, and external resources that are administered by ADB.

Support for ADB DMCs' climate action

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1 Support DMCs with climate diagnostic and policy engagement

2 Help DMCs develop ambitious climate strategies, policies, and climate-responsive investments

3 Integrate climate policy into budgets and national plans

4 Develop climate-responsive project pipelines

5 Enhance climate-responsive project design and implementation

Monitoring and Learning

UPSTREAM
Enhance climate strategies and policy frameworks

MIDSTREAM
Embed climate action in national institutions and systems

(fiscal frameworks, investment plans, enabling environment for private sector involvement etc.)

DOWNSTREAM
Prepare and implement high-quality climate investment projects and programs

ADB's ongoing Transformation Initiatives

Key Pillars of **MDBs Evolution Agenda**

- Mission and Vision
- Operational Approaches
- Financial Model and Capacity
- New Capital Adequacy Framework

A Unifying **Strategy 2030**

- Climate Change Action Plan 2023-2030
- New Operating Model (rolled out in 2023)
- Asian Development Fund 14 (2025-2028)
- Corporate Results Framework (2025-2030)

Environmental & Social Framework: E&S Standard 9 Climate Change (Effective in 2026)

Strategy 2030: Operational Priority 3

Tackling climate change, building climate and disaster resilience, and enhancing environmental sustainability

low greenhouse gas emissions development, approach to building climate and disaster resilience, environmental sustainability, water–food–energy security nexus

2025 S30 Mid-Term Review

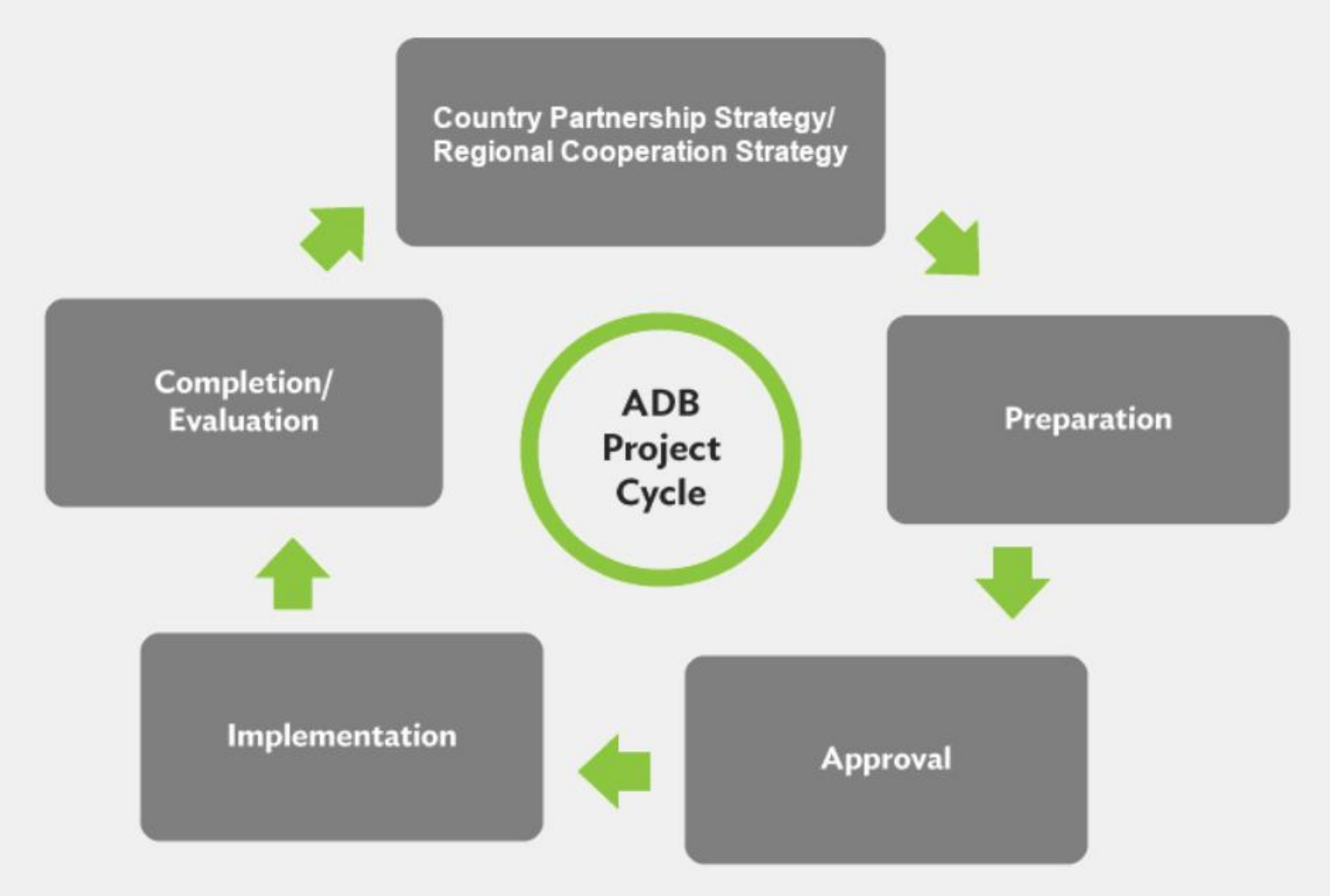
Strategic Focus Areas

i. Climate Action
ii. Private Sector Development
iii. Regional Cooperation and Public Goods
iv. Digital Transformation
v. Resilience and Empowerment

Part 3:

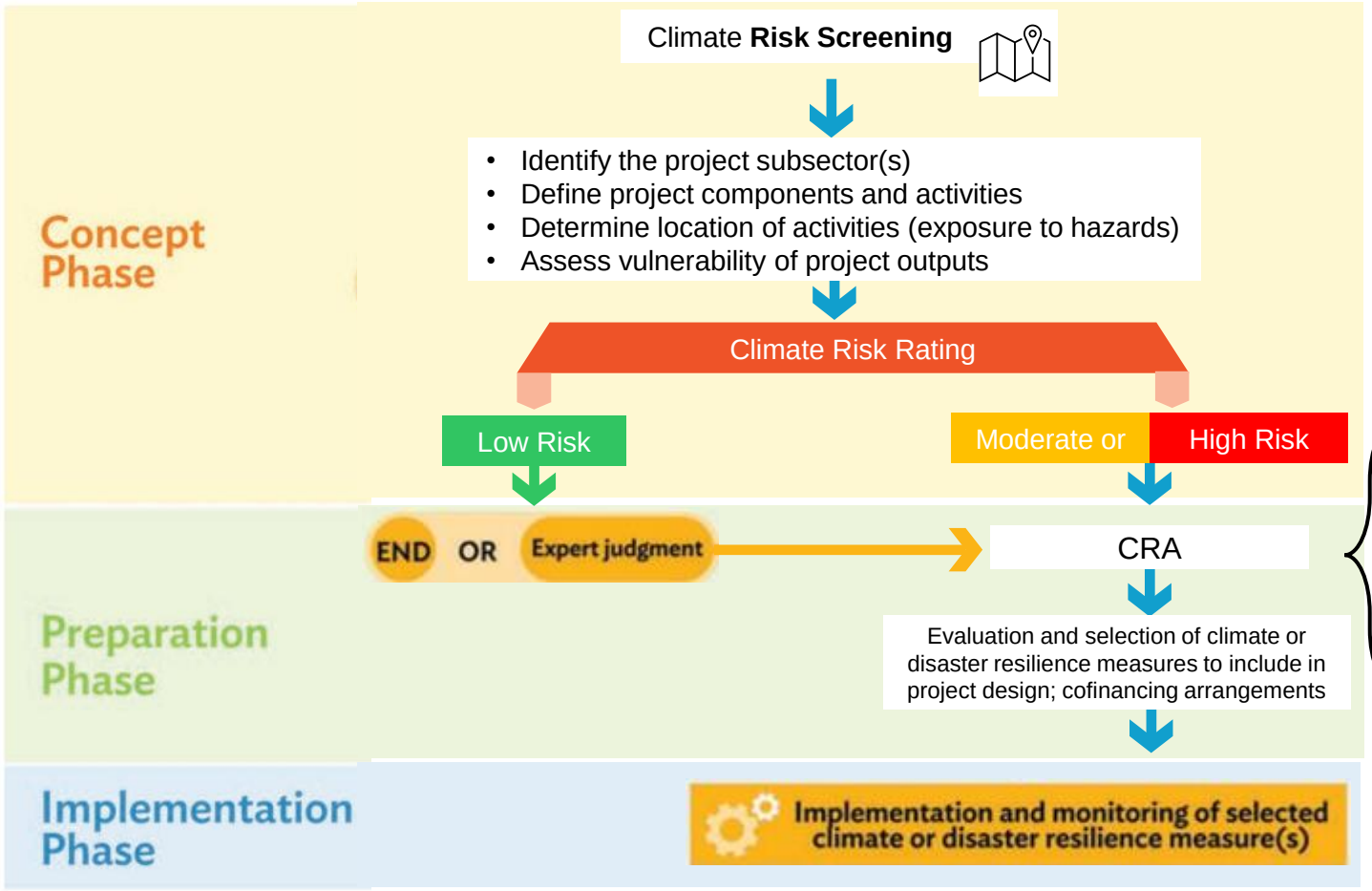
CLIMATE RISK ASSESSMENT FRAMEWORK

The project cycle



Source: Asian Development Bank.

Climate Risk Management Framework



CRA: Climate Risk and Adaptation Assessment

- Project or Transaction Context
- Hazard Assessment
- Exposure and Vulnerability Assessment
- Climate Risk Assessment
- Identification of Adaptation Options and Resilience Measures
- Adaptive Management Plan

Disaster Risk

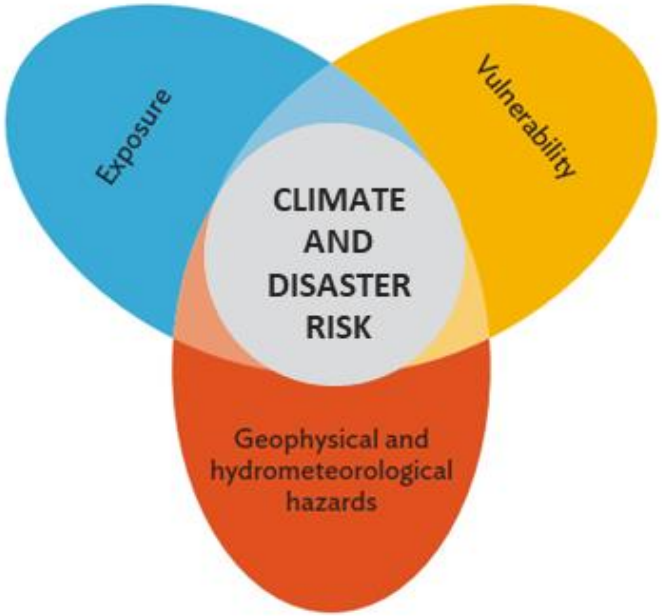
Risk

Disaster risk refers to the potential loss of life, injury, or destroyed or damaged assets which could occur to a system, society or a community in a specific period of time, determined probabilistically as a function of hazard, exposure and vulnerability –UNDRR, 2020

In the context of MDBs

Risk

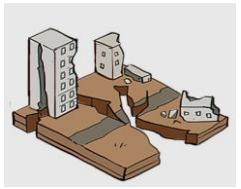
Potential for geophysical and climate-related hazards (both current and future) to adversely affect the achievement of a project's objectives (outputs), evaluating the impact of hazard occurrence to the location, design, implementation, and long-term sustainability of a project.

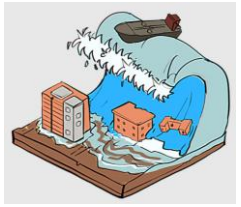


Climate Risk Screening: Hazards

Hazard

Process, phenomenon or human activity that may cause loss of life, injury or other health impacts, property damage, social and economic disruption or environmental degradation –UN, 2016





Geophysical Hazards

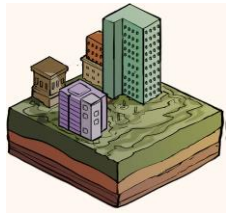
- Earthquake
- Liquefaction
- Tsunami
- Volcanic Activity
- Seismic-induced Landslide

Requirements:

- ✓ Available across Asia-Pacific
- ✓ Peer-reviewed
- ✓ Developed by reliable sources
- ✓ Based on data and physical simulations
- ✓ Open data

Climate-related Hazards

- River Flood
- Coastal Flood
- Rainfall-induced Landslide
- Tropical Cyclones
- Drought
- Heat Waves
- Wildfires
- Mean Surface Temperature
- Water Scarcity



Climate Risk Assessment: Exposure

Exposure

Situation of people, infrastructure, housing, production capacities and other tangible human assets located in hazard-prone areas –UN, 2016.

For screening purposes

Exposure

Degree of possible physical contact between a community, livelihood, or that element and a potentially damaging natural hazard event.

Climate Risk Assessment: Vulnerability

Vulnerability

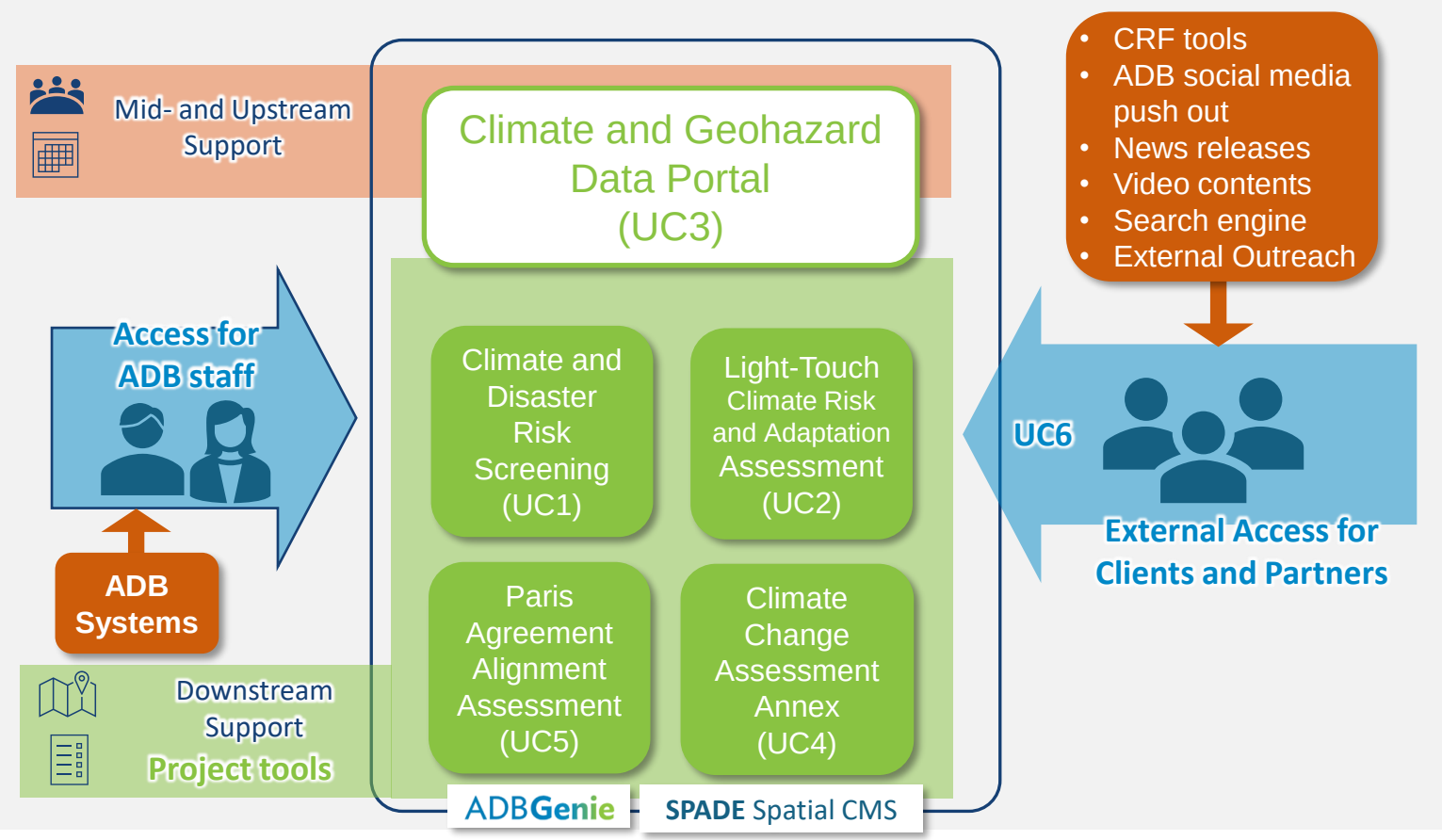
Physical, social, economic, and environmental conditions of a community, livelihood, or a particular asset and its propensity or predisposition to be adversely affected by a natural hazard event –UNDRR, 2020.

For screening purposes

Vulnerability

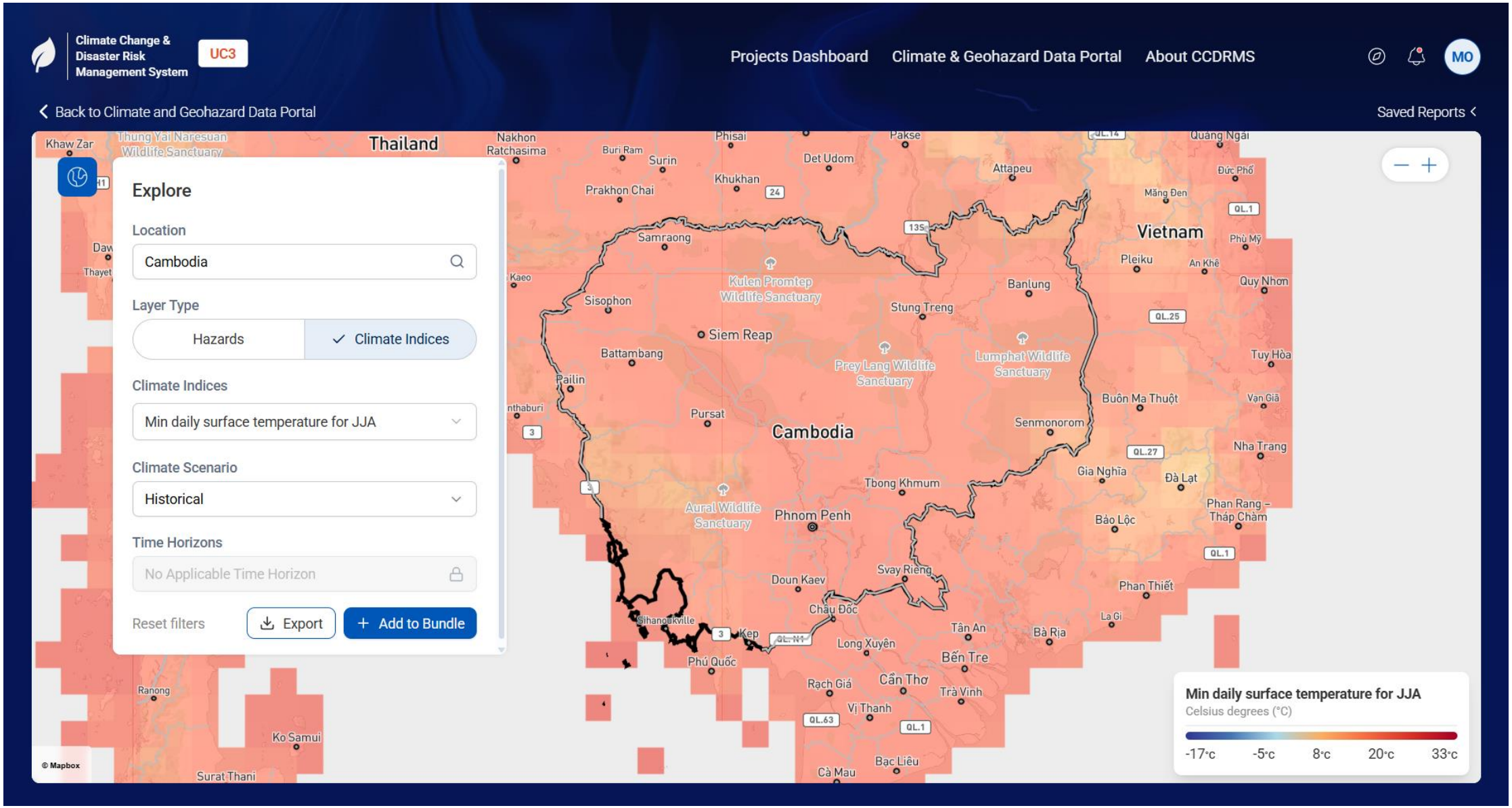
Degree to which project outputs (subsector) will be affected or less resilient to the occurrence of specific hazards.

Climate Risk Management: Supporting tools



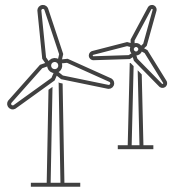
- Functional requirements of the tool:
  - ***Visualization:*** both spatial and numerical data (table, charts)
  - ***Data acquisition, storage and management:*** capture, pre-process, store and retrieve data
  - *Data analysis and* ***computation:*** pre-computed results for reports and downloadable data for experts
  - ***Report generation:*** clear, useful, and editable reports, including insights from ADB's and external databases by leveraging AI-language models.

Climate and Geohazard Data Portal



Climate Modeling Uncertainty

Radiative Forcing Uncertainty
(Scenario Uncertainty)



Future societal
choices are unknown

Climate Response Uncertainty
(Model Uncertainty)

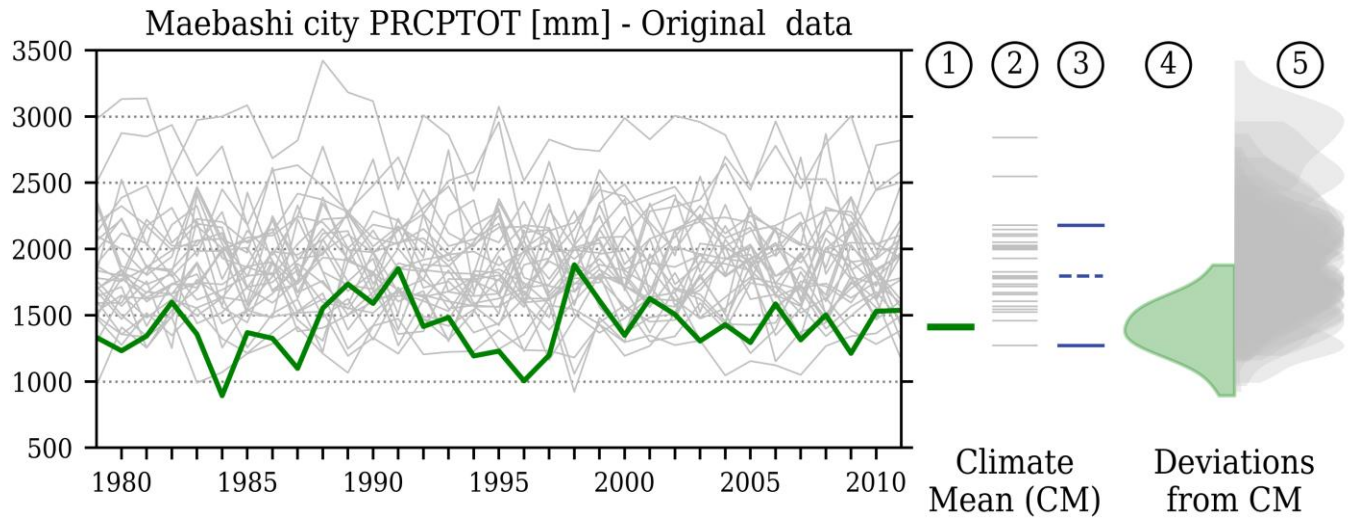
Limited knowledge
(epistemic uncertainty)

Internal Climate Variations

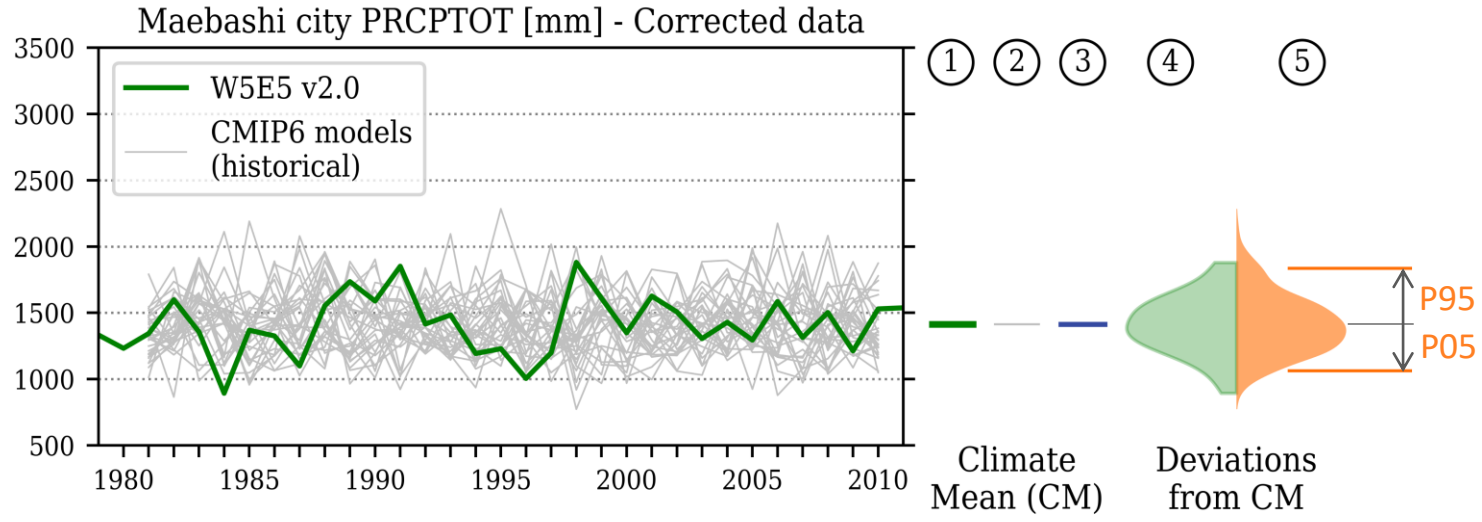
Natural variability of
the atmospheric state
(stochastic uncertainty)

Breaking Down Climate Modeling Uncertainty

(a)



(b)



Data:

- Simulations: CMIP6 ESMs, historical and SSP future scenarios SSP1-2.6, SSP2-4.5, and SSP3-7.0 .
- Observations: W5E5v2.0 reanalysis (Lange et al., 2021).

① Observed Climate Mean (1981-2010 average)

② Climate Model Climate Mean (1981-2010 average)

③ Range of agreement of 90% of the Climate Models' CMs (M)

--- Median of the Climate Models' CMs

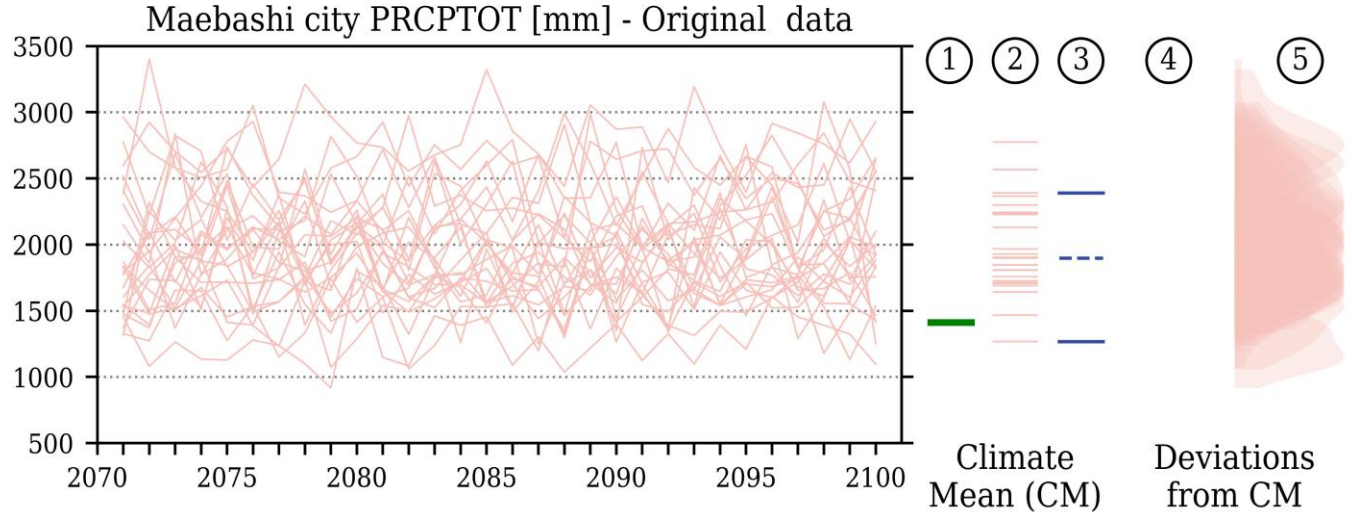
④ Frequency Distribution of deviations from the observation's CM (30 values)

⑤ Frequency Distribution of deviations from the modeled CM (for each climate model, 30 values)

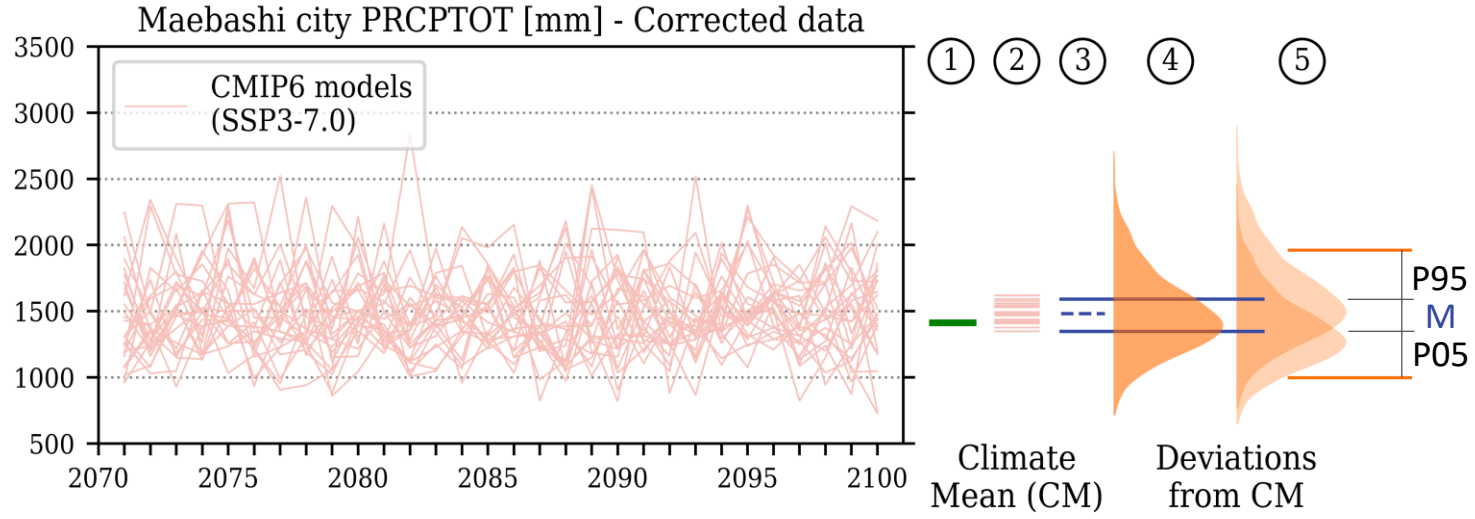
Frequency Distribution of deviations from the corresponding modeled CM (30 values × Number of models)

Breaking Down Climate Modeling Uncertainty

(a)



(b)



Total uncertainty **(U)** is the sum of the range of agreement of 90% of climate models **(M)** and the 90% confidence interval of internal variability **(I = P95-P05)**

U = M + I

① Observed Climate Mean (1981-2010 average)

② Climate Model Climate Mean (1981-2010 average)

③ Range of agreement of 90% of the Climate Models' CMs (**M**)

--- Median of the Climate Models' CMs

④ Frequency Distribution of deviations from the corresponding modeled CM (30 values × Number of models) centered at the median of CMs.

⑤ Frequency Distribution of deviations from the modeled CM (for each climate model, 30 values) centered at P95 and P05.

Breaking Down Climate Modeling Uncertainty

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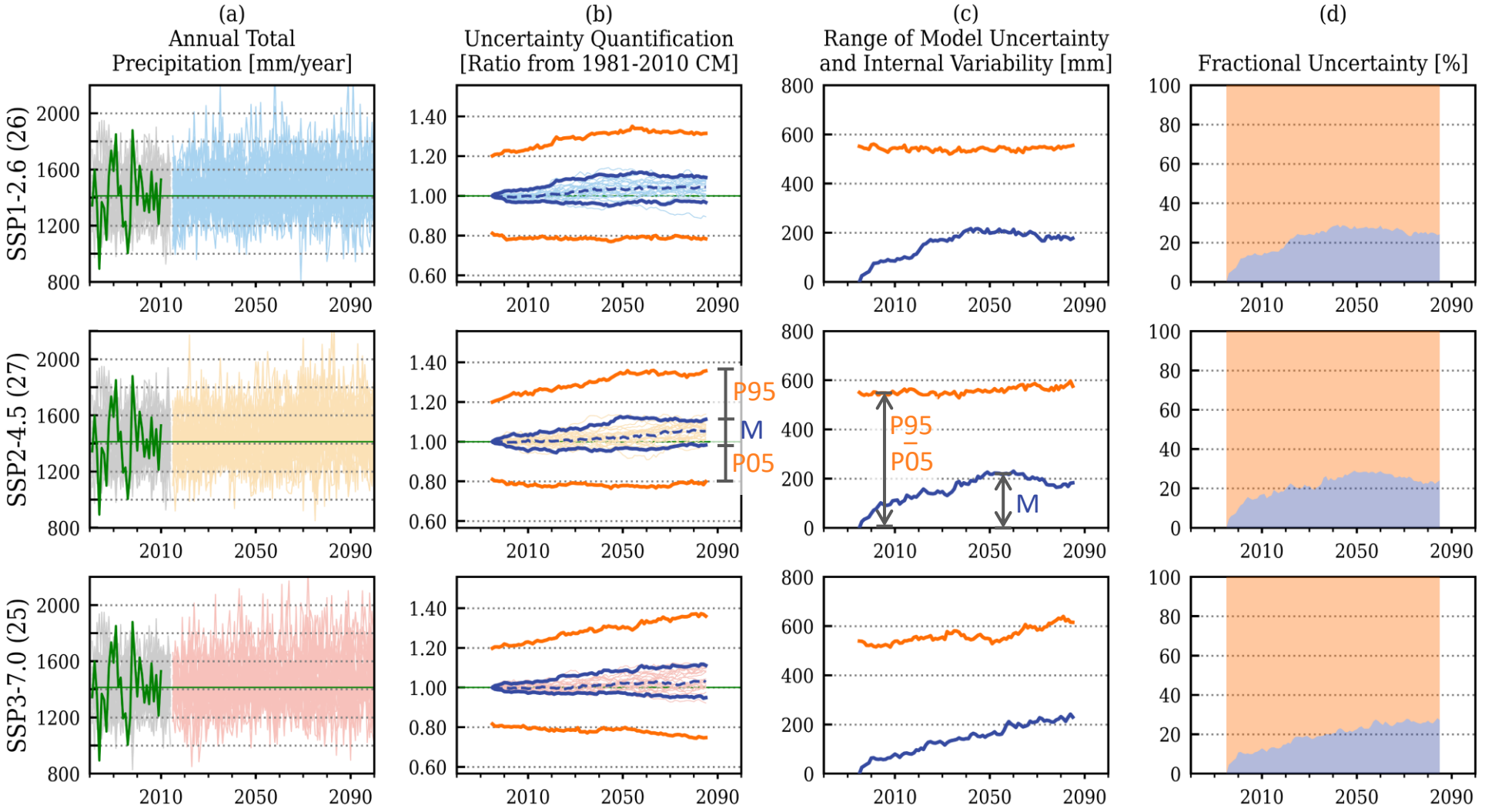
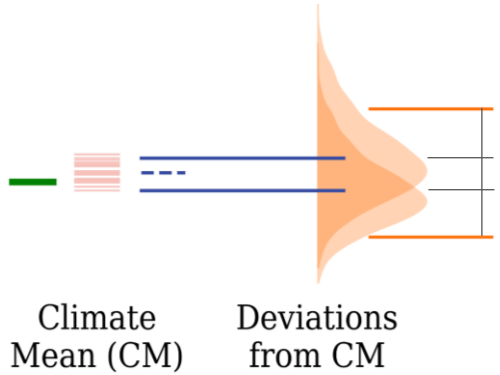
Annual Total Precipitation (PRCPTOT) for Japan's Maebashi City:





U = **M** + (I = P95-P05)

Breaking Down Climate Modeling Uncertainty

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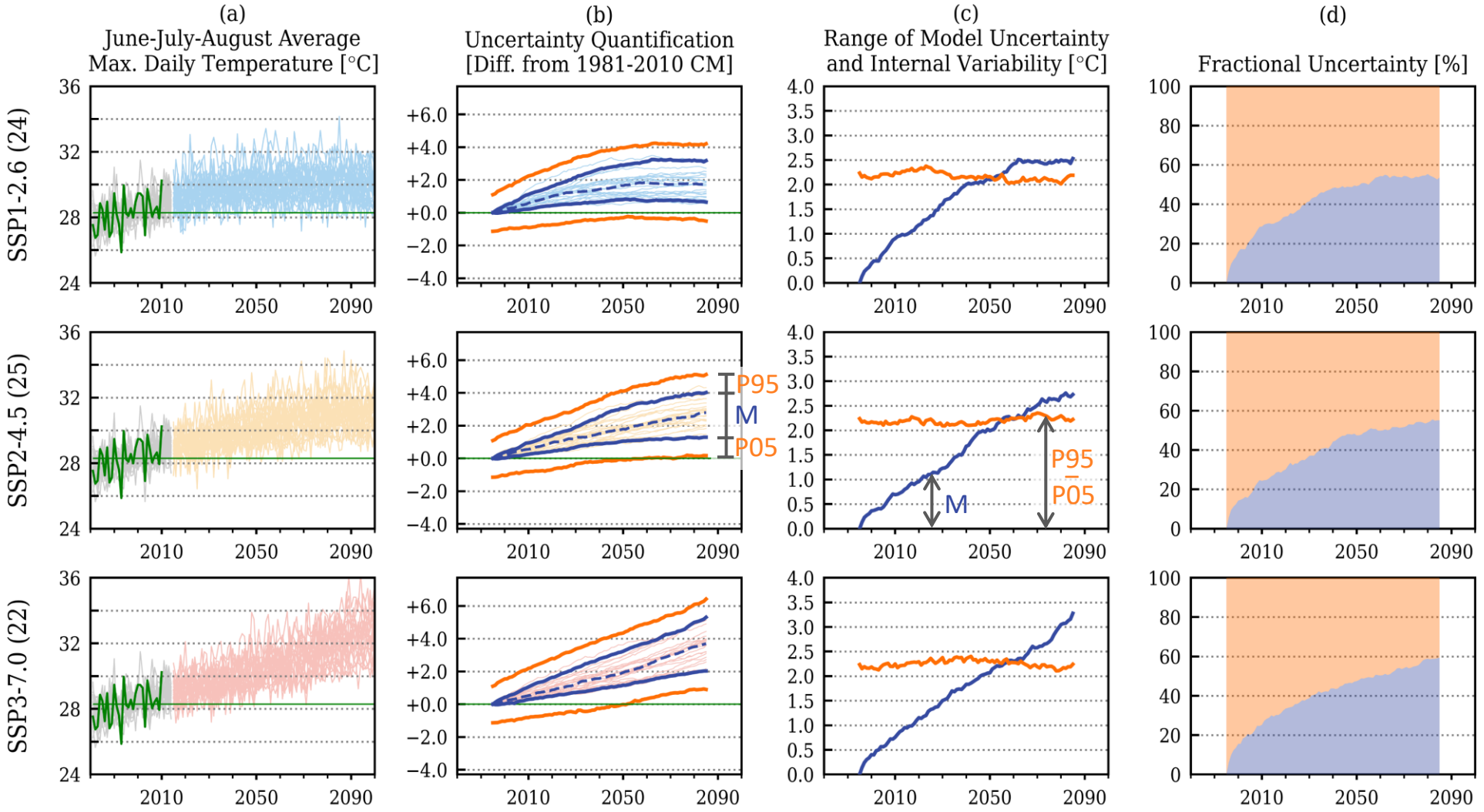
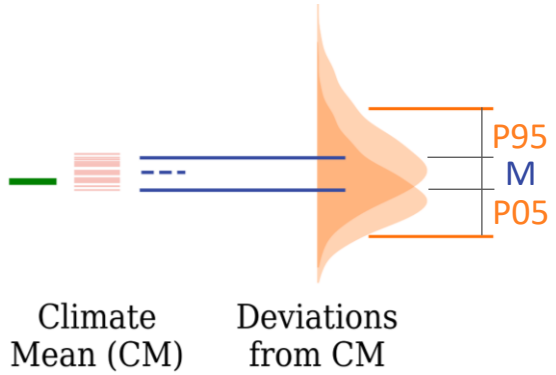
June-July-August Average Max. Daily Temperature (TXJJA) for Japan's Maebashi City:





U = M + P95 – P05

Key Takeaways

- Beyond providing affordable financing, ADB aims to contribute solving complex development challenges in the region by expertise, partnerships, and products.
- ADB realized the need to focus on 5 priority development issues which are critical for the region. These are: climate action; private sector development; digital transformation, resilience and empowerment, and regional cooperation and public goods.
- ADB is committed to increase volumes of climate financing, as well as private se