ADB

Technical Assistance Report

Project Number: 50121-001
Knowledge and Support Technical Assistance (KSTA)
November 2017

Supporting Adaptation Decision Making for Climate-Resilient Investments (Cofinanced by the Climate Change Fund)

Asian Development Bank

ABBREVIATIONS

ADB	–	Asian Development Bank
CRVA	–	climate risk and vulnerability assessment
DMC	–	developing member –country
TA	–	technical assistance
TASF	–	Technical Assistance Special Fund

NOTE

In this report, "$" refers to United States dollars.

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KNOWLEDGE AND SUPPORT TECHNICAL ASSISTANCE AT A GLANCE

1. Basic Data

Project Number: 50121-001

Project Name	Supporting Adaptation Decision Making for Climate Resilient Investments	**Department /Division**	SDCC/SDCD
Nature of Activity	Capacity Development	**Executing Agency**	Asian Development Bank
Modality	Regional		
Country	REG		

2. Sector

	Sector	Subsector(s)	ADB Financing ($ million)
✓	Water and other urban infrastructure and services	Urban flood protection	0.40
		Urban water supply	0.30
	Agriculture, natural resources and rural development	Irrigation	0.25
		Rural flood protection	0.25
	Energy	Electricity transmission and distribution	0.20
		Large hydropower generation	0.20
	Transport	Road transport (non-urban)	0.20
		Urban public transport	0.20
		Total	**2.00**

3. Strategic Agenda

Strategic Agenda	Subcomponents
Inclusive economic growth (IEG)	Pillar 2: Access to economic opportunities, including jobs, made more inclusive
Environmentally sustainable growth (ESG)	Disaster risk management
	Global and regional transboundary environmental concerns
Regional integration (RCI)	Pillar 4: Other regional public goods

Climate Change Information

Adaptation ($ million)	2.00
Climate Change impact on the Project	Low

4. Drivers of Change

Drivers of Change	Components
Governance and capacity development (GCD)	Client relations, network, and partnership development to partnership driver of change
Knowledge solutions (KNS)	Application and use of new knowledge solutions in key operational areas
	Knowledge sharing activities
Partnerships (PAR)	International finance institutions (IFI)
	Official cofinancing

Gender Equity and Mainstreaming

Some gender elements (SGE)	✓

5. Poverty and SDG Targeting

Geographic Targeting	Yes
Household Targeting	No
SDG Targeting	Yes
SDG Goals	SDG13

Location Impact

Regional	High

6. Risk Categorization

Low

7. Safeguard Categorization

Safeguard Policy Statement does not apply

8. Financing

Modality and Sources	Amount ($ million)
ADB	**2.00**
Knowledge and Support technical assistance: Climate Change Fund	0.50
Knowledge and Support technical assistance: Technical Assistance Special Fund	1.50
Cofinancing	**0.00**
None	0.00
Counterpart	**0.00**
None	0.00
Total	**2.00**

Source: Asian Development Bank

I. INTRODUCTION

1. The knowledge and support technical assistance (TA) will support the efforts of the Asian Development Bank (ADB) to scale up its investment in climate change adaptation in Asia and the Pacific through (i) the development of country-specific climate projections based on the latest climate model experiments for developing member countries (DMCs); (ii) the provision of technical support to integrate climate resilience features into investment project design; and (iii) the development of good practice guidance on climate-resilient project design, and the technical capacity of ADB operational teams and DMC project partners for using climate projections in resilient infrastructure design.[1]

2. The TA is included in the approved 2017 annual work program of the Climate Change and Disaster Risk Management Thematic Group[2].

II. ISSUES

3. ADB's Midterm Review of Strategy 2020 identifies climate change, including increases in the frequency and intensity of climate-related natural hazards, as a critical emerging development challenge for Asia and the Pacific.[3] The midterm review establishes scaled-up support for climate change adaptation as a strategic priority. In 2015, ADB committed to double its annual climate financing to $6 billion from its own resources by 2020, including an ambitious $2 billion for climate change adaptation. To achieve this target, ADB must scale up its climate change adaptation activities significantly, consistent with the strategic priorities identified in the midterm review. Externally, with the Paris Agreement on climate change entering into force, DMCs' demand for ADB assistance in delivering nationally determined contributions (including those related to climate change resilience) will increase in the future.

4. ADB's Climate Change Operational Framework, 2017–2030, which was approved on 4 July 2017, defines the broad strategic direction for strengthening ADB's actions on climate change through 2030. Specific recommendations for scaling up ADB's climate change adaptation activities include (i) considering opportunities for investment in climate resilience at the country partnership strategy stage, and (ii) initiating climate risk and vulnerability assessments (CRVAs) at the concept stage for all projects to ensure that climate change adaptation measures are fully integrated in project designs.

5. While ADB has made progress since 2007 in establishing internal processes, providing technical and financial resources, and developing capacities for integrating climate change adaptation into operations, there is significant scope for improvement. Some of the most critical gaps relate to data, expertise, and guidance on good practice. Credible climate information is

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[1] The definitions of climate change adaptation and resilience used in this TA are adopted from those used by the Intergovernmental Panel on Climate Change. According to the Panel, climate change adaptation refers to "the process of adjustment to actual or expected climate and its effects. In human systems, adaptation seeks to moderate or avoid harm or exploit beneficial opportunities. In some natural systems, human intervention may facilitate adjustment to expected climate and its effects." Resilience is defined as "the capacity of social, economic, and environmental systems to cope with a hazardous event or trend or disturbance, responding or reorganizing in ways that maintain their essential function, identity, and structure, while also maintaining the capacity for adaptation, learning, and transformation." According to this definition, resilience can be understood as the desired outcome of climate change adaptation. Intergovernmental Panel on Climate Change. 2014. *Annex II: Glossary*. http://ipcc.ch/pdf/assessment-report/ar5/wg2/WGIIAR5-AnnexII_FINAL.pdf.

[2] The TA first appeared in the business opportunities section of the ADB website on 18 September 2017.

[3] ADB. 2015. *Midterm Review of Strategy 2020: Meeting the Challenges of a Transforming Asia and Pacific*. Manila.

needed to design and develop resilient investment programs and projects, and many climate-sensitive projects invest significant resources in climate data acquisition and analysis. However, this ad hoc approach is not cost effective, and makes it both challenging to compare project risk levels across sectors and countries and difficult to prioritize climate change adaptation investments. Many of these problems could be avoided if each DMC could access a common source of climate data. Although various agencies have attempted to provide access to climate projections data, these data are either out of date or at scales that are not applicable for the analyses required to inform ADB's operations in its DMCs.[4]

6. There is also high unmet demand for technical experts to provide tailored, project-level support and practical guidance on critical climate risks and appropriate adaptation interventions. The demand for project-level support is expected to grow as ADB escalates its efforts to meet climate adaptation financing targets. ADB currently engages specialists to conduct CRVAs, typically at the project preparation stage. However, inputs from experienced sectoral experts are required from project conception through implementation to ensure that, among other things, (i) climate hazards and project vulnerabilities are characterized properly, (ii) CRVAs are designed and implemented to provide specific information and recommendations to identify appropriate adaptation options for risk management, (iii) CRVA recommendations are effectively integrated into final project designs, and (iv) monitoring and evaluation frameworks are established and implemented.

7. Finally, due both to the non-stationary behavior of important climatic variables (in particular, extremes of rainfall, temperature, and wind speed), and to new sources of uncertainty, many existing and long-standing engineering practices can no longer be applied uncritically under a changing climate. Further, model-generated projections cannot simply be substituted for observed historical data. Although the engineering community has not yet achieved full consensus regarding how best to modify design practice to accommodate climate change impacts, several promising approaches have emerged. It is necessary to review these emerging approaches critically, and to test and develop sector good practice guidance on climate-resilient project design. The current lack of expert guidance throughout the project cycle is partly responsible for the limited operational uptake of climate-resilient engineering design within ADB. This must change if ADB's ambitious targets of scaling up climate change adaptation investments are to be achieved.

III. THE TECHNICAL ASSISTANCE

A. Impact and Outcome

8. The TA is aligned with the following impacts: (i) adaptation and climate resilience in development planning and project design and implementation mainstreamed, and (ii) regional public goods, including effective regional responses to climate change supported.[5] The TA will have the following outcome: decision making for climate resilient investments in selected DMCs enhanced.[6]

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[4] For example, the United Nations Development Programme developed a set of country climate profiles based on climate model outputs associated with the Intergovernmental Panel on Climate Change Fourth Assessment Report. United Nations Development Programme. Climate Change Country Profiles. http://www.geog.ox.ac.uk/research/climate/projects/undp-cp/. The World Bank also developed a set of these country profiles. World Bank. Climate Country Adaptation Profiles. http://sdwebx.worldbank.org/climateportal/index.cfm?page=climate_country_adaptation.

[5] As defined by the TA.

[6] The design and monitoring framework is in Appendix 1.

B. Outputs, Methods, and Activities

9. **Output 1: Country-specific climate projections to support planning developed**. Country-specific climate projections datasets will be developed for ADB's DMCs. These projections data will be derived from the most up-to-date climate model experiments, including the Climate Model Inter-Comparison Project Phase 5[7] and simulations from the relevant coordinated regional climate downscaling experiment domains.[8] Climate projections will cover a range of spatial and temporal scales for a selection of key climate variables, and will be available in accessible and user-friendly data formats.[9] Climate projections will be developed to represent as wide a range of uncertainties as possible, including those associated with greenhouse gas emissions, climate sensitivity, and feedback mechanisms within the climate system, climate model specifications as well as downscaling approaches and other sources as appropriate to enable risk-based and robust adaptation approaches. Analytical methods and computational codes, once developed for this TA, can be utilized to perform similar analyses to update the projections as outputs from new climate model simulations become available in the future. A detailed technical note describing, among other things, the data sources and analytical methods used to develop this output will be produced.

10. **Output 2: Technical support for ADB operations to integrate climate resilience features provided**. A framework agreement contracting approach will be used to identify and empanel a roster of climate adaptation experts with relevant sector expertise who will be available to provide both continuous and intermittent (strategic) support to project teams upon request over the investment project cycle. The experts will (i) support the project teams in the preliminary scoping and assessment of, among other things, climate risks, project vulnerabilities, and the design of fit-for-purpose CRVAs, as required; (ii) work with design teams to ensure that required climate resilience interventions are effectively integrated in the project's final design; and (iii) help design ongoing risk monitoring and adaptive interventions, including the consideration of the social aspects of adaptation. The roster of recruited experts shall collectively bring in expertise in the following five target sectors: agriculture and food security, energy, transport, urban development, and water resources. Technical advice can encompass target analyses, the review of draft technical documents, mission support, and application of good practice guidance.

11. **Output 3: Good practice guidance on climate-resilient infrastructure design and associated training modules developed and delivered**. The roster of experts will develop a set of sector-specific good practice guidance (output 2) to help project teams incorporate climate projections information into project design. These guidelines will be based both on insights gained by experts in supporting climate-resilient project development, and on state-of-the-art reviews of emerging engineering design and decision-making protocols that reflect the impacts of climate change. Sector guidance will be provided for agriculture and food security, energy, transport, urban development, and water. Training modules targeting DMC officials and ADB operational staff involved in the design of resilient infrastructure projects will be developed to facilitate the wider dissemination of, and capacity building around, the good practice guidance and enhanced

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[7] National Aeronautics and Space Administration. NASA Earth Exchange Global Daily Downscaled Projections. http://opennex.planetos.com/gddp.

[8] For example, climate projections data can be derived from the recently completed simulations for the South East Asia domain. Southeast Asia Regional Downscaling-Coordinated Regional Climate Downscaling Experiment. http://www.ukm.my/seaclid-cordex/.

[9] The temporal and spatial scales of the climate projections, and key variables to be covered by the projections will be selected in consultation with operations teams and with regard to data availability. Climate projections will be disseminated online and/or through other media (e.g., mass storage devices) to facilitate access.

availability of climate projections data (output 1). Training modules will be developed for both in-person delivery at training sessions and distance learning to enable on-demand technical capacity building. The format of the in-person training sessions will be determined in consultation with the operational teams and could take a "training of trainers" approach.

C. Cost and Financing

12. The TA is estimated to cost $2.0 million, of which $1.5 million will be financed on a grant basis by ADB Technical Assistance Special Fund, with $0.54 million from TASF 6 and $0.96 million from TASF-other sources, and $0.5 million will be financed on a grant basis by the Climate Change Fund.[10]

D. Implementation Arrangements

13. ADB will administer the TA. The Climate Change and Disaster Risk Management Division will be the implementing agency, and will coordinate with ADB's regional departments, Private Sector Operations Department, and relevant resident missions. The division will work closely with the sector and thematic groups to obtain inputs for TA activity planning and feedback on draft TA outputs.

Implementation Arrangements

Aspects	Arrangements		
Indicative implementation period	October 2017–December 2019		
Executing agency	ADB		
Implementing agency	Climate Change Division and Disaster Risk Management Division, SDCC		
Consultants	To be selected and engaged by ADB		
	ICS (international and national consultants)	14 person-months (international) 24 person-months (national)	$0.19 million $0.12 million
	FA (international consultants)	65 person-months	$1.30 million
Disbursement	The TA resources will be disbursed following ADB's *Technical Assistance Disbursement Handbook* (2010, as amended from time to time).		

ADB = Asian Development Bank, FA = framework agreement, ICS = individual consultants selection, SDCC = Sustainable Development and Climate Change Department, TA = technical assistance.
Source: ADB.

14. **Consulting services.** The TA will require a total of 79 person-months of international and 24 person-months of national consultant services. Procurement (including consulting services) to be financed by TASF 6, TASF-other sources, and the Climate Change Fund will follow ADB's Procurement Policy (2017, as amended from time to time) and Procurement Regulations for ADB Borrowers (2017, as amended from time to time). Following individual consultant selection, the ADB will engage a national consultant (24 person-months) to coordinate the TA implementation and knowledge management, and three international consultants (14 person-months) covering the areas of climate science, climate data analysis, and e-learning. Adaptation experts specializing in the five TA target sectors (international, 65 person-months) will be empaneled under a framework agreement.[11] After identifying the assignments, ADB will hire individual

[10] Established by ADB. The CCF allocation for $500,000 was approved on 25 September 2017 by the Climate Change Steering Committee.

[11] To ensure a high level of responsiveness to regional departments' needs for technical support, which are highly context-specific and hard to determine upfront, the framework agreement modality has been considered as the most appropriate way to engage the consultants.

consultants by issuing framework agreement assignment contracts under the established framework agreement.[12]

IV. THE PRESIDENT'S DECISION

15. The President, acting under the authority delegated by the Board, has approved the provision of technical assistance not exceeding the equivalent of $2,000,000 on a grant basis for Supporting Adaptation Decision Making for Climate-Resilient Investments, and hereby reports this action to the Board.

[12] Terms of Reference for Consultants (accessible from the list of linked documents in Appendix 3).

DESIGN AND MONITORING FRAMEWORK

Impacts the TA is Aligned with

Adaptation and climate resilience in development planning in project design and implementation mainstreamed (defined by the TA)

Regional public goods, including effective regional responses to climate change supported (defined by the TA)

Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting	Risks
Outcome Decision making for climate-resilient investments in selected DMCs enhanced	By 2020, at least 50% of climate-sensitive projects[a] include climate-resilient design features resulting directly from knowledge products and services delivered by the TA (baseline: none)	ADB project documents including RRPs, and CRVA reports	Governments do not prioritize climate-resilient investments. Not all risks identified by the CRVA are possible or economically rational to manage.
Outputs 1. Country-specific climate projections[b] to support planning developed	By 2018: 1a. Country-specific climate projections based on the most up-to-date climate model simulations for ADB's 40 DMCs made available (2017 baseline: none) 1b. A detailed technical note describing data sources and analytical methods developed (2017 baseline: none).	1a. TA consultant report and the SDCC's internal website 1b. Technical note developed before TA completion	Technical and financial requirements for fully implementing adaptation measures may exceed the resources available for some investment programs and/or projects.
2. Technical support for ADB operations[c] to integrate climate resilience features provided	2a. By 2018, a roster of at least 10 adaptation experts (with two experts for each of the five target sectors: agriculture and food security, energy, transport, urban	2a. TA progress report	Lack of professional consensus regarding the use of climate information in certain contexts

	development, and water resources) empaneled under the framework agreement contract (2017 baseline: none)		
	2b. By 2019, at least 20 projects request and receive direct technical support and advice on climate-resilient project design from the roster of experts (2017 baseline: none)	2b. TA progress report and consultant reports	
3. Good practice guidance on climate-resilient infrastructure design and associated training modules developed and delivered	3a. By 2019, five sector-specific good practice guidance documents for climate-resilient infrastructure design approved by the SDCD and made available on the SDCC's intranet website (2017 baseline: none)	3a. Good practice guidance documents produced before TA completion	
	3b. By 2019, five sector-specific training modules on climate-resilient infrastructure design approved by the SDCD and made available on the SDCC's intranet website (2017 baseline: none)	3b. Training modules produced before TA completion	
	3c. By 2019, at least 10 ADB operational staff from each regional department and 10 DMC partners (organizations) from each region gain skills on the use of climate information for climate-resilient investment decision making at in-person workshops, with at least 30% women participants (2017 baseline: none)	3c. Training workshop feedback report and TA consultant report	

Key Activities with Milestones

1 Country-specific climate projections to support planning developed

1.1 Conduct consultations with prospective users regarding the scope (spatial and temporal resolutions, time horizons, and climate variables to be covered) and formats of climate projections data to be made available under the TA (Q1 2018).

1.2 Source and quality control outputs from the latest global and regional climate model simulations (Q2 2018).

1.3 Analyze climate model outputs and derive climate projections for the time horizons and climate variables identified in 1.1 (Q3 2018).

1.4 Submit a draft detailed technical note on data sources, analytical methodology, potential uses, and caveats associated with the climate projections data (Q4 2018).

2 Technical support for ADB operations to integrate climate resilience features provided

2.1 Recruit a roster of at least 10 adaptation experts with two for each of the following five target sectors: agriculture and food security, energy, transport, urban development, and water resources (by Q2 2018).

2.2 Provide tailored technical advice and support for climate-resilient project design at the request of the project teams (ongoing from Q2 2018 while TA resources permit).

3 Good practice guidance on climate-resilient infrastructure design and associated training modules developed and delivered

3.1 Conduct consultations with prospective users on the key climate-resilient design challenges and parameters (by Q2 2018).

3.2 Review emerging good practices on climate-resilient design and decision-making protocols (by Q3 2018).

3.3 Develop a set of good practice guidance documents on climate-resilient infrastructure design and test them with at least one project for each sector guidance document (by Q2 2019).

3.4 Finalize the good practice guidance document incorporating insights and experience gained from supporting the project development (Q3 2019).

3.5 Conduct consultations with prospective users on the target audience, scope, level of technical details, and organizational structure of the training (Q1 2019).

3.6 Taking into account the results from the consultations (3.5), develop training modules based on sector-specific good practice guidance documents and output 1 (Q3 2019).

3.7 Deliver training workshops (Q3 2019).

3.8 Refine and convert the training modules into online e-learning modules (Q4 2019).

Inputs

ADB: $1,500,000

Climate Change Fund: $500,000

Assumptions for Partner Financing

Not Applicable

ADB = Asian Development Bank, CRVA = climate risk and vulnerability assessment, DMC = developing member country, Q = quarter, RRP = report and recommendation of the President, SDCC = Sustainable Development and Climate Change Department, SDCD = Climate Change and Disaster Risk Management Division, TA = technical assistance.

[a] Projects that undergo risk screening and are deemed medium or high risk, and for which the concept paper was approved in Q4 2019–Q1 2020.

[b] Country-specific climate projections are important inputs to decision making. Specifically, they provide support for properly identifying climate risks, and determining required technical design changes to development projects to address the risks. Climate projections will be developed for the 40 borrowing ADB DMCs.

[c] The roster of experts will provide additional sector-specific technical support to project teams in incorporating climate-resilient design in investments or projects. This support will result in the incorporation of proposed adaptation options provided by the CRVA.

COST ESTIMATES AND FINANCING PLAN
($'000)

Item	Amount
A. **Asian Development Bank**[a]	
1. Consultants	
a. Remuneration and per diem	
i. International consultants	1,000.0
ii. National consultants	120.0
b. Out-of-pocket expenditures	
i. International and local travel	180.0
2. Printed external publications[c]	20.0
3. Training, seminars, workshops, forums, and conferences[d]	
a. Facilitators[e]	50.0
b. Travel cost of ADB staff acting as resource persons	10.0
c. Participants	50.0
4. Contingencies	70.0
Subtotal (A)	1,500.0
B. **Climate Change Fund**[b]	
1. Consultants	
a. Remuneration and per diem	
i. International consultants	250.0
b. Out-of-pocket expenditures	
i. International and local travel	60.0
2. Studies, surveys and publication	15.0
3. Training, seminars, workshops, forums, and conferences[d]	
a. Facilitators[e]	30.0
b. Venue rental and related facilities	65.0
c. Participants	50.0
4. Contingencies	30.0
Subtotal (B)	500.0
Total	**2,000.00**

ADB = Asian Development Bank.

Note: The Technical Assistance is Estimated to cost $2.0million, of which contributions from the ADB and CCF are presented in the table above.

[a] Financed by ADB's Technical Assistance Special Fund (TASF 6 and TASF-other sources).

[b] Established by ADB.

[c] This will include the design and printing of the good practice guidance document(s). Printing will be kept to a minimum, and based on demand.

[d] This includes five in-person workshops on good practice for climate-resilient infrastructure design and the enhanced availability of climate projections data with ADB staff and key project partners in developing member countries. These workshops will each target around 50 participants, and be held at ADB's headquarters in Manila.

[e] This includes honoraria and travel-related costs.

Source: ADB estimates.

LIST OF LINKED DOCUMENTS

http://www.adb.org/Documents/LinkedDocs/?id=50121-001-TAReport

1. Terms of Reference for Consultants