ADB

Technical Assistance Report

Project Number: 38372-044
Transaction Technical Assistance (TRTA)
October 2021

India: Enhancing Climate Resilience in Uttarakhand Urban Development

Asian Development Bank

CURRENCY EQUIVALENTS
(as of 21 October 2021)

Currency unit	–	Indian rupee/s (₹)
₹1.00	=	$0.013
$1.00	=	₹74.82

ABBREVIATIONS

ADB	–	Asian Development Bank
CAST	–	climate adaptation support tool
COVID-19	–	coronavirus disease
TA	–	technical assistance

NOTE

In this report, “$” refers to United States dollars.

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I. THE PROJECT

1. The technical assistance (TA) will support the Government of Uttarakhand in implementing the Uttarakhand Integrated and Resilient Urban Development Project, which has the following impacts: (i) universal and equitable access to safe and affordable drinking water; and (ii) access to adequate and equitable sanitation and hygiene for all, ending open defecation. The project's outcome will be that the reliability and efficiency of water supply and sanitation services in Dehradun and Nainital have been enhanced. The four outputs are: (i) resilient water supply system and service in Dehradun improved; (ii) integrated and resilient sanitation systems and drainage enhanced in Dehradun and Nainital; (iii) computerized maintenance and management systems for water and sanitation developed and implemented in Dehradun and Nainital; and (iv) institutional capacity and knowledge strengthened. The project is estimated to cost $156.25 million, of which $125 million will be financed from the ordinary capital resources of the Asian Development Bank (ADB). The ensuing loan and this transactional TA are listed in the country operations business plan, 2021–2023 for India.[1]

II. THE TECHNICAL ASSISTANCE

A. Justification

2. The state of Uttarakhand in northern India is part of the central Himalayas, and most of its upper areas comprise high mountain ranges and glaciers, while its lower reaches are covered by dense forests. The topography ranges from plains and foothills to snow-clad peaks, featuring almost all major climatic zones. Uttarakhand is extremely vulnerable to climate-related and natural hazards such as glacier outburst floods, avalanches, snow burst, heavy monsoon-led floods, landslides, and earthquakes The numerous glaciers in the state provide perennial water to the downstream rivers, including Ganga and Yamuna, which provide water to large parts of the country, and to Bangladesh. Despite these abundant water sources, water shortage has become a serious concern because of insufficient water retention and detention capacity. Besides development activities without sufficient sanitation infrastructure and services, the increasing pollution of both surface water and groundwater leads to more stress on water availability, while threatening the ecosystem, people’s health and their livelihoods, and Uttarakhand’s sustainable and prosperous growth.

3. The proposed project focuses on meeting the immediate and urgent need for water supply and sanitation infrastructure and services in two highly important and fast-growing cities of Uttarakhand: Dehradun and Nainital. Along with industrial development and growing tourism, major urban centers are prospering and employment opportunities have increased. On the other hand, more frequent and intensified climate-related and natural hazards in Uttarakhand have endangered agricultural activities in upland areas, leaving villagers with no choice but to abandon their farms or homes and look for other means of livelihood in towns and cities. Popular urban centers, however, neglected to undertake robust urban planning to accommodate these large numbers of migrants, and also found it difficult to mobilize sufficient resources quickly enough to provide basic, resilient, and inclusive infrastructure and public services for all. The migrants ended up occupying peri-urban areas where basic infrastructure and services are lacking. They also encroached on riverbanks, obstructed the natural draining function of rivers, and polluted rivers and groundwater by discharging untreated wastewater. Uncontrolled urban settlements along the rivers not only contributed to floods but also became victims of floods. The deteriorating conditions have made the sprawling urban areas more vulnerable to any kinds of shock, both climate and

[1] ADB. 2020. *Country Operations Business Plan: India, 2021–2023*. Manila.

human induced and including the coronavirus disease (COVID-19). This poses a disproportionate burden on the poor, estimated at about 15% of the population.

4. During the project's preparation, Uttarakhand not only had to deal with all the human and economic losses from COVID-19 but in February 2021 also experienced one of the most devastating climate change-induced avalanches in the state's history, which dropped 27 million cubic meters of rocks and glacier ice on the Chamoli district. The disaster left more than 200 people dead or missing and destroyed two major hydropower plants and a bridge that connected 13 hill villages. Scientists have warned that the frequency and intensity of glacier burst, and other types of climate-induced events, would increase and lead to significant damage in the vulnerable Himalaya areas, where energy and road development projects exacerbate the landslide risk. They strongly recommended to consider the greater magnitude of climate-induced risks before building further infrastructure. Facing these continuous challenges, the Government of Uttarakhand recognized the urgent need to tackle the complex issues of climate change, water scarcity, water pollution, and associated vulnerabilities. To help it find solutions that would improve climate resilience and ensure the sustainable and prosperous growth of Uttarakhand, the state government requested ADB's support.

B. Outputs and Activities

5. Responding to the request, the TA will support the state government in strategic climate resilience planning and development actions that focus on the urban local bodies (ULBs) of Dehradun and Nainital and their catchment areas. A participatory approach to climate resilience planning is essential given the nature and complexity of climate change risks and vulnerabilities, which expose all sectors and their infrastructure and services. Climate resilience planning can be only meaningful when it is supported by science-based knowledge and evidence-based information to better understand the magnitude of potential risks in the unknown future of climate change. The advancement of smart technology can make climate resilience planning easier by translating the range of sophisticated scientific data and information into workable formats that users with simple training can understand and operate.

6. **Output 1: Comprehensive situation assessment and analyses in Dehradun and Nainital watersheds carried out.** Detailed situation assessments and analyses are a prerequisite for good planning. The TA team will assess (i) socioeconomic and infrastructure systems in light of climate change risks and vulnerability; (ii) natural resources system, including water resources and water quality; and (iii) institutional and governance system. All systems are embedded in their environment. The natural resources system is bound by climate and (geo)physical conditions. The socioeconomic system is formed by the demographic, social, and economic conditions of the surrounding economies. The institutional and governance system is formed and bound by constitutional, legal, and political systems. These systems are closely interlinked and relevant to the vulnerabilities in Uttarakhand. The assessments will be complemented with integrated modeling work that can analyze and interpret results under various aspects, such as surface water and groundwater discharge, snow melting, landslides, emissions dispersion. This can provide further science-based information and knowledge to translate complex systems and associated problems into convincing evidence.

7. **Output 2: Interactive, map-based climate adaptation support tool developed and operational.** The climate adaptation support tool (CAST) is a touch-table-based platform that will store the results of comprehensive situation assessments and analyses (output 1) and have built-in (i) climate resilience measures with short explanations and engineering features, including ecosystem-based adaptation measures; (ii) the likely costs associated with adaptation measures;

and (iii) quantifiable information on the likely improvement of resilience parameters, such as water retention, detention, and storage capacity. By using CAST, planning participants can select and compare various adaptation options, i.e., propose specific interventions, situate them in their defined project areas, and immediately see an estimated resilience capacity improvement as well as the associated costs. CAST will provide quantitative, evidence-based performance information on the (cost) effectiveness of adaptation measures regarding climate resilience and co-benefits. The smart technology-based platform can be updated at any time with new data and information and thus enables adaptive resilience planning.

8. **Output 3: Strategy framework for integrated, climate-resilient development and water resource management formulated.** The activities under outputs 1 and 2 will inform the formulation of a strategy framework that guides integrated, climate-resilient development and catchment-level water resource management in Uttarakhand. It will define the strategic direction and methods to respond to the unique climate change risks and vulnerabilities of the Himalayan region while balancing the demands for growth.

9. **Output 4: Knowledge and capacity for climate resilience planning enhanced.** Through a participatory approach, the TA team will design and conduct a series of capacity-building activities, including training and workshops on climate-resilient planning and development, climate-resilient management of water resources at watershed level, and infrastructure development in Uttarakhand.

Table 1: Summary of Major Outputs and Activities

Major Outputs	Delivery Dates	Key Activities with Milestones
1. Comprehensive situation assessment and analyses in Dehradun and Nainital Watersheds carried out	Q2 2022	1.1 Data and information collection, and report on socioeconomic and infrastructure assessments, taking into consideration climate change risks and vulnerability
	Q2 2022	1.2 Research and baseline report on water resources system and water quality assessment
	Q3 2022	1.3 Integrated modeling and scenario development
2. Interactive, map-based CAST developed and operational	Q4 2022	2.1 Development of interactive, map-based CAST
	Q1 2023	2.2 Testing and execution of participatory integrated climate resilience planning using CAST
	Q1 2023	2.3 Selection of priority adaptation measures for investment
	Q2 2023	2.4 Concept design and pre-feasibility reports.
3. Strategy framework for integrated, climate-resilient development and water resource management formulated	Q3 2023	3.1 Strategy framework draft
	Q4 2023	3.2 Stakeholder discussions and finalization of the strategy framework

4. Knowledge and capacity for climate resilience planning enhanced	Q1 2022–Q4 2023	4.1 Training and workshops throughout the implementation of the technical assistance

CAST = climate adaptation support tool, Q = quarter.
Source: Asian Development Bank estimates.

C. Cost and Financing

10. The TA is estimated to cost $1,100,000, of which (i) $250,000 will be financed on a grant basis by ADB's Technical Assistance Special Fund-other sources, and (ii) $750,000 will be financed on a grant basis by the Climate Change Fund. The key expenditure items are listed in Appendix 1.

11. The state government will provide counterpart support in the form of counterpart staff, office and housing accommodation, office supplies, secretarial assistance, provision of data and information, and other in-kind contributions. The governments of India and Uttarakhand were informed that approval of the TA does not commit ADB to finance any ensuing project.

D. Implementation Arrangements

12. ADB will administer the TA. The Urban Development and Water Division of ADB's South Asia Department will select, supervise, and evaluate the consultants. The state government, acting through its Urban Development Department, will be the executing agency, and Uttarakhand Urban Sector Development Agency will be the implementing agency for the TA, which will be implemented over 2 years.

13. The implementation arrangements are summarized in Table 2.

Table 2: Implementation Arrangements

Aspects	Arrangements		
Indicative implementation period	December 2021–December 2023		
Executing agency	The Government of Uttarakhand acting through its Urban Development Department		
Implementing agencies	Uttarakhand Urban Sector Development Agency		
Consultants	To be selected and engaged by ADB		
	Firm: quality- and cost-based selection (90:10)	Climate resilience modeling, planning, and designing consultants	$940,000
Advance contracting	The Government of Uttarakhand requested advance contracting of consultants.		
Disbursement	Disbursement of technical assistance resources will follow ADB's *Technical Assistance Disbursement Handbook* (2020, as amended from time to time). For eligible expenses under the CCF, financing and disbursement will be prorated at 90% CCF and 10% TASF-other sources. For other expenses, financing is 100% from TASF-other sources.[a]		

ADB = Asian Development Bank, CCF = Climate Change Fund, TASF = Technical Assistance Special Fund.
[a] Eligible expenses under the CCF are (i) consultants, including remuneration and per diem; and (ii) out-of-pocket expenditures, including travel.
Source: Asian Development Bank estimates.

14. **Consulting services.** The TA will require about 70 person-months of consulting services (20 person-months of international and 50 person-months of national services) over 24 months.

ADB will engage the consultants following the ADB Procurement Policy (2017, as amended from time to time) and its associated project administration instructions and/or staff instructions.[2]

15. **Social media and websites.** CAST, a smart mapping tool for climate-resilient urban planning based on geographic information system mapping (para. 7), will be developed and hosted on the Uttarakhand State Data Center server. The state government has committed to maintain CAST, update its data and other information, and ensure that the executing agency, the implementing agency, and project ULBs keep using it even after the TA's completion.

[2] Terms of Reference for Consultants (accessible from the list of linked documents in Appendix 2).

COST ESTIMATES AND FINANCING PLAN
($'000)

Item	Amount
A. Asian Development Bank[a]	
1. Consultants	
a. Remuneration and per diem	
i. International consultants	80.0
ii. National consultants	35.0
b. Out-of-pocket expenditures	
i. International and local travel	20.0
ii. Reports and communications	5.0
2. Surveys	20.0
3. Goods (rental or purchase)[b]	10.0
4. Training, seminars, and conferences[c]	50.0
5. Miscellaneous technical assistance administration costs	10.0
6. Contingencies	20.0
Subtotal (A)	**250.0**
B. Climate Change Fund[d]	
1. Consultants	
a. Remuneration and per diem	
i. International consultants	500.0
ii. National consultants	140.0
2. Out-of-pocket expenditures	
i. International and local travel	100.0
3. Contingencies	10.0
Subtotal (B)	**750.0**
Total	**1,000.0**

Note: The technical assistance (TA) is estimated to cost $1,100,000, of which contributions from the Asian Development Bank (ADB) and the Climate Change Fund are presented in the table. The Government of Uttarakhand will provide counterpart support in the form of counterpart staff, office and housing accommodation, office supplies, secretarial assistance, relevant data, information, reports, and other in-kind contributions. The value of the government contribution is estimated to account for 10% of the total TA cost.

[a] Financed by ADB's Technical Assistance Special Fund-other sources.

[b] This would include touchscreens.

[c] May include travel costs of ADB staff acting as resource person(s).

[d] Established by ADB.

Source: ADB estimates.

LIST OF LINKED DOCUMENTS

http://www.adb.org/Documents/LinkedDocs/?id=38272-044-TAReport

1. Terms of Reference for Consultants