



Technical Assistance Report

Project Number: 51308-002
Transaction Technical Assistance Facility (F-TRTA)
December 2017

India: Enhancing Capacity of State Utilities in Preparing Energy Sector Projects

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Asian Development Bank

CURRENCY EQUIVALENTS

(as of 1 December 2017)

Currency unit	–	Indian rupees (₹)
₹1.00	=	\$0.01549
\$1.00	=	₹64.5650

ABBREVIATIONS

ADB	–	Asian Development Bank
COBP	–	country operations business plan
DDUGJY	–	Dindayal Upadhya Gram Jyoti Yojana
DISCOMS	–	distribution companies
IPDS	–	Integrated Power Development Scheme
kV	–	kilovolts
PFA	–	Power for All
PPR	–	preliminary project report
QCBS	–	quality- and cost-based selection
SCADA	–	supervisory control and data acquisition
TRTA	–	transaction technical assistance

NOTE

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

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TRANSACTION TECHNICAL ASSISTANCE AT A GLANCE

1. Basic Data		Project Number: 51308-002	
Project Name	Enhancing Capacity of State Utilities in Preparing Energy Sector Projects	Department /Division	SARD/SAEN
Nature of Activity	Project Preparation	Executing Agency	The Ministry of Power
Modality	Facility		
Country	India		
2. Sector		Subsector(s)	
✓ Energy		Energy sector development and institutional reform	ADB Financing (\$ million)
			0.75
		Total	0.75
3. Strategic Agenda		Subcomponents	
Inclusive economic growth (IEG)		Pillar 2: Access to economic opportunities, including jobs, made more inclusive	Climate Change Information
			Climate Change impact on the Project
			Low
4. Drivers of Change		Components	
Governance and capacity development (GCD)		Institutional development	Gender Equity and Mainstreaming
Knowledge solutions (KNS)		Organizational development	
Private sector development (PSD)		Knowledge sharing activities	
		Public sector goods and services essential for private sector development	
5. Poverty and SDG Targeting		Location Impact	
Geographic Targeting	Yes	Rural	Medium
Household Targeting	No	Urban	Medium
SDG Targeting	Yes		
SDG Goals	SDG7		
6. Risk Categorization		Complex	
7. Safeguard Categorization		Safeguard Policy Statement does not apply	
8. Financing			
Modality and Sources		Amount (\$ million)	
ADB		0.75	
Transaction technical assistance: Technical Assistance Special Fund		0.75	
Cofinancing		0.00	
None		0.00	
Counterpart		0.00	
None		0.00	
Total		0.75	

I. THE TECHNICAL ASSISTANCE FACILITY

A. Justification

1. The transaction technical assistance (TRTA) facility¹ will provide project preparation support to a series of ensuing projects, comprising (i) Uttar Pradesh Power Distribution Rehabilitation Project (\$500 million); (ii) Meghalaya Power Sector Improvement Project (\$150 million); and (iii) Tamil Nadu Power Transmission Improvement Project (\$500 million).

2. The Government of India has launched several initiatives to improve the technical and financial performance of electricity distribution companies (DISCOMs). These include the ongoing government funded schemes (i) Integrated Power Development Scheme (IPDS) for strengthening the subtransmission and distribution network in urban areas; and (ii) Dindayal Upadhyaya Gram Jyoti Yojana (DDUGJY) for strengthening the rural distribution network, separation of agricultural feeders, rural electrification and metering of distribution transformers and feeders, and the recently announced scheme for electrifying all unelectrified households by 2019.

3. The Ministry of Power (MOP) has also obtained commitments from state governments to provide 24x7 Power for All (24x7 PFA) to all households, industry and commercial consumers; and adequate power to agricultural consumers by 2019. To achieve this objective, the government has launched the Ujwal DISCOM Assurance Yojana (UDAY) and entered into tripartite agreements with state governments and DISCOMs to improve DISCOMs' financial performance (through debt restructuring) and technical performance envisaged under the IPDS and DDUGJY schemes. The investment requirement to achieve the technical performance improvement targets set under UDAY and 24x7 PFA is more than the government funding commitment to IPDS and DDUGJY schemes. There is a critical need for external financing to augment the domestic funding for electricity distribution sector in India.

4. The three ensuing projects to be prepared under the TRTA facility are of similar nature. These projects are aligned with the objectives of 24x7 PFA, IPDA and DDUGJY. The projects aim to improve the quality of electricity supply, reduce aggregate technical and commercial losses, and improve the financial performance of DISCOMs. The outputs include (i) strengthening of subtransmission network; (ii) conversion of 11 kilovolts (kV) and 33 kV sub-transmission lines to underground cables and low voltage lines with bare conductors to aerial bundled conductors in urban areas; (iii) additional distribution substations (33/11 kV) and distribution transformers to enhance distribution capacity; (iv) installation of supervisory control and data acquisition (SCADA) systems for real time network monitoring and operation; (v) installation of smart meters for large consumers, feeders and distribution transformers; and (vi) installation of prepaid meters (for unmetered customers) or replacement of existing electromechanical meters to improve billing efficiency in rural areas; (vii) separation of agriculture and non-agriculture feeders, and pilot testing of solar water pumping; and (viii) installation of new mini and small hydropower plants to increase renewable energy generation.

5. The state governments of Uttar Pradesh, Meghalaya, and Tamil Nadu are preparing preliminary project reports (PPR) on the three ensuing projects, to be endorsed by the Department of Economic Affairs (DEA) of the Government of India for Asian Development Bank (ADB)

¹ The proposed TRTA facility is not included in the ADB. 2017. *Country Operations Business Plan: India, 2018-2020*. Manila. In a letter dated 10 October 2017, the Department of Economic Affairs, Government of India endorsed the TRTA facility and requested ADB's financial assistance. The South Asia Regional Department confirmed that such financial assistance can be accommodated under the 2017 resource envelope.

financing. It is necessary to undertake surveys of existing electricity distribution network to identify the investments required to improve the DISCOMs' performance, undertake detailed engineering planning to optimize the network configuration and protection systems, and to prepare the technical specifications and bid documents. The implementing agencies do not have the staff capable of undertaking these tasks and the TRTA facility will provide external consultants to assist in preparing the investment projects. The consulting requirement of ensuing projects will be updated at the time of approval of concept papers of ensuing projects, and changes in scope of the TRTA facility will be proposed in accordance with project administration instructions on administering grant-financed TA projects.

B. Outputs and Activities

6. **Output 1: Network plan for rehabilitating electricity distribution network in Varanasi Uttar Pradesh and Meghalaya completed.** Activities include (i) detailed surveys of the distribution network to ascertain the condition of the network; (ii) network planning to optimize the network configuration; and (iii) identifying key areas to reduce aggregate technical and commercial losses and improve reliability of the distribution network. Based on the network plan, technical specifications, engineering estimates, and bidding documents will be prepared.

7. **Output 2: Safeguard due diligence of small hydro projects in Meghalaya completed.** This will include identifying potential environmental and social issues, and defining the scope of environment, social studies, and technical studies to be undertaken to meet ADB's Safeguards Policy Statement (2009) requirements.

8. **Output 3: Technical specifications for SCADA, smart and prepaid metering systems prepared** to incorporate smart grid technologies such as (i) real time energy auditing at feeder level and distribution transformer level; (ii) real time transmission asset monitoring; and (iii) demand response for urban distribution networks in the states of Uttar Pradesh and Meghalaya. Detailed survey and data collection of existing metering on distribution network will be undertaken to identify gaps and find optimal solutions covering various range of customers (industrial, rural and urban, etc.) for enhancing billing efficiency, and reducing pilferages. Data will also be collected for future network reconfiguration and improvement.

9. **Output 4: Diagnostic studies to identify possible investment opportunities in Tamil Nadu and several other states completed.** This will be undertaken as part of the preparation of proposed Tamil Nadu Power Transmission Improvement Project, but the coverage of sector assessments will include states of Bihar, Jharkhand, Panjab and Telangana. The financial viability and fiscal impact of investments (in terms of reduction of fiscal subsidy reduction) will be assessed. Based on the analysis, PPRs for ADB financing of proposed investments will be prepared for consideration by relevant state governments, DEA and MOP.

C. Cost and Financing

10. The TRTA facility is estimated to cost \$800,000, of which \$750,000 will be financed on a grant basis by ADB's Technical Assistance Special Fund (TASF-Others). The key expenditure items are listed in Appendix 1.

11. The government will provide counterpart support in the form of counterpart staff, office space, office supplies and other in-kind contributions with an estimated value of approximately 7% of the total cost of the TRTA facility. The government was informed that approval of the TRTA facility does not commit ADB to finance any ensuing project.

D. Implementation Arrangements

12. The TA activities for an ensuing project will start only after ADB approves the project concept paper on the ensuing project.

13. ADB will administer the TRTA facility and will be responsible for the selection, supervision and evaluation of consultants and procurement of goods under the TRTA facility. The MOP will be the executing agency. Uttar Pradesh Power Corporation Limited, Tamil Nadu Transmission Company, and Meghalaya Energy Corporation Limited will be the implementing agencies. The TRTA facility will be implemented over an 18-month period from January 2018 to June 2019.

14. The implementation arrangements are summarized in Table 2.

Table 2: Implementation Arrangements

Aspects	Arrangements		
Indicative implementation period	January 2018–June 2019		
Executing agency	Ministry of Power, Government of India		
Implementing agencies	Uttar Pradesh Power Corporation Limited (UPPCL); Meghalaya Energy Corporation Limited (MECL); and Tamil Nadu Transmission Company (TANTRASCO) will be responsible for TRTA activities in Uttar Pradesh, Meghalaya and Tamil Nadu, respectively. The Energy Division of South Asia Regional Department, ADB will be responsible for TRTA implementation oversight, accountability for the outputs and communication with consultants and stakeholders.		
Consultants	To be selected and engaged by ADB		
	QCBS	22.5 person-months plus survey	\$300,000
	Individual	25.5 person-months	\$325,000
Procurement	The consultants will procure equipment and software required for network surveys and network planning using shopping method in accordance with ADB Procurement Policy (2017 as amended from time to time) and Procurement Regulations for ADB Borrowers (2017, as amended from time to time).		
	Shopping	Multiple contracts	\$50,000
Advance contracting and retroactive financing	not applicable		
Disbursement	The TRTA resources will be disbursed following ADB's <i>Technical Assistance Disbursement Handbook</i> (2010, as amended from time to time).		
Asset turnover or disposal arrangement upon TRTA completion	Upon completion of TRTA, all procured equipment will be handed over to the implementing agencies.		

ADB = Asian Development Bank, QCBS = quality- and cost-based selection, TRTA = transaction technical assistance.

15. **Consulting services.** The TRTA facility will require consultancy services of national consulting firm (22.5 person-months of key national experts) for undertaking surveys to ascertain the investment requirements for upgrading and rehabilitating electricity distribution network in the states of Uttar Pradesh, Tamil Nadu, and Meghalaya. A consulting firm with experience in power distribution network planning will be recruited using quality- and cost-based selection with a quality to cost ratio of 80:20.

16. In addition, individual consultants (8.5 person-months of international experts and 17 person-months of national experts) will be recruited with expertise in (i) SCADA system design and electricity network planning; (ii) power sector assessment; (iii) environment and social safeguard assessment of mini hydro projects; and (iv) power distribution network planning and design. The consultants will be engaged by ADB in accordance with ADB's Procurement Policy (2017, as amended from time to time) and its associated project administration instructions and/or staff instructions. The recruitment of these consultants as individuals is justified to retain the flexibility of engaging these consultants, as required.

II. THE PRESIDENT'S DECISION

17. The President, acting under the authority delegated by the Board, has approved the provision of technical assistance not exceeding the equivalent of \$750,000 on a grant basis to the Government of India for Enhancing Capacity of State Utilities in Preparing Energy Sector Projects, and hereby reports this action to the Board.

COST ESTIMATES AND FINANCING PLAN
(\$'000)

Item	Amount
Asian Development Bank^a	
1. Consultants	
a. Remuneration and per diem	
i. National Consulting Firm including the Survey	300.0
ii. International Consultants recruited as Individuals (8.5 person-months)	150.0
iii. National Consultants recruited as Individuals (17 person-months)	150.0
b. Out-of-pocket expenditures	
i. International and local travel	25.0
ii. Goods (rental and/or purchase) ^b	50.0
2. Contingencies	75.0
Total	750.0

Note: The technical assistance (TA) is estimated to cost \$750,000, of which contributions from the Asian Development Bank are presented in the table above. The government will provide counterpart support in the form of counterpart staff, office space, office supplies, and other in-kind contributions. The value of government contribution is estimated to account for 7% of the total TA cost.

^a Financed by the Asian Development Bank's Technical Assistance Special Fund (TASF-Others).

^b Consists of measuring equipment for network surveys and software for network planning.

Source: Asian Development Bank estimates.

PROJECTS UNDER TECHNICAL ASSISTANCE FACILITY

Table A2.1: Indicative Consultants' Input Allocation
(person-month)

Indicative Risk Category	Total	Uttar Pradesh Power Distribution Network Rehabilitation Project complex	Meghalaya Power Sector Improvement Project low risk	Tamil Nadu Power Transmission Improvement Project complex
A. National Consultancy Firm				
Power Distribution Network Survey and Planning Firm				
Team Leader	9.0	6.0	3.0	
Distribution Network Planning Engineer	4.5	3.0	1.5	
Distribution Network Design Engineer	3.0	2.0	1.0	
Survey Team Leader	6.0	4.0	2.0	
B. Individual Consultants				
Power Distribution Planning Specialist				
International	3.0	2.0	1.0	
National	6.0	4.0	2.0	
Power Sector Specialists				
International	3.0			3.0
National	6.0			6.0
SCADA and Communication Systems Specialists				
International	1.0	0.5	0.5	
National	3.0	1.5	1.5	
National Smart Meter Specialist	2.0		2.0	
International Environment Specialist	1.0		1.0	
International Social Development Specialist	0.5		0.5	

LIST OF LINKED DOCUMENTS

<http://www.adb.org/Documents/LinkedDocs/?id=51308-002-TARreport>

1. Terms of Reference for Consultants