



Technical Assistance Report

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Transaction Technical Assistance (TRTA)

November 2020

India: Enhancing Community Participation, Gender Mainstreaming, and Institutional Capacity Building of Uttar Pradesh Power Corporation Limited

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Asian Development Bank

CURRENCY EQUIVALENTS

(as of 29 September 2020)

Currency unit	=	Indian rupee (₹)
₹1.00	=	\$.01335
\$1.00	=	₹73.95

ABBREVIATIONS

ADB	–	Asian Development Bank
JFPR	–	Japan Fund for Poverty Reduction
MFF	–	multitranches financing facility
TA	–	technical assistance
TASF	–	Technical Assistance Special Fund
UPPCL	–	Uttar Pradesh Power Corporation Limited

NOTE

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

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I. THE PROPOSED PROJECT

1. The multitranche financing facility (MFF) for Uttar Pradesh Power Distribution Network Rehabilitation Project will improve the quality and reliability of power supply in rural areas of Uttar Pradesh. The project will reduce aggregate technical and commercial losses and improve cost recovery in rural electricity supply. The project includes institutional capacity building to (i) expand community participation in rural electricity distribution, especially in meter reading, billing, and collection; (ii) promote gender-sensitive workplace practices in the project executing and implementing agencies, covering employees and contract workers; (iii) improve financial management capacity, focusing on revenue recognition and collection of past receivables; and (iv) develop capacity in project management and safeguard compliance.

2. The project is estimated to cost \$800 million. The Government of India has requested Asian Development Bank (ADB) to provide a multitranche financing facility (MFF) of up to \$430 million equivalent from ADB's ordinary capital resources to finance part of the project. The MFF consists of two tranches, subject to the government's submission of related periodic financing requests, execution of the related work and project agreements for previous tranches under the MFF, and fulfillment of terms and conditions set forth in the project's framework financing agreement. The government has also requested a technical assistance grant of \$2.0 million to finance institutional capacity building under output 3 of the MFF.

II. THE TECHNICAL ASSISTANCE

A. Justification

3. A transaction technical assistance (TA), rather than ADB loan proceeds, is proposed to finance output 3 as its activities will build institutional capacity and pilot test commercial initiatives that do not create assets. Uttar Pradesh Power Corporation Limited (UPPCL) is a regulated entity, which means that the regulator must approve its expenditures and borrowing plans. The regulator is unlikely to allow the financing of capacity building, which does not create assets, through borrowings.

4. The TA objectives are as follows: (i) improve rural revenue collection from prevailing levels of less than 50%; (ii) create jobs for rural women in the electricity supply industry; (iii) improve the revenue management capacity of electricity distribution companies; (iv) promote gender-friendly workplace practices in UPPCL; and (v) improve UPPCL's project management capacity.

B. Outputs and Activities of the Transaction Technical Assistance

5. **Output 1: Innovative bill collection strategies involving the active participation of rural women pilot tested.** The project will develop and pilot test solutions that improve bill collection efficiency for the utility, while improving community engagement through smart devices such as smartphone-based payment applications and monitoring tools. The initiative will contribute to economic welfare through new income options and empower women. The innovative bill collection mechanisms are expected to engage community members and representatives, specifically women's self-help groups and community groups in meter reading, billing, and collection using an incentive-based mechanism. Awareness raising on safe and efficient electricity usage will also be undertaken.

6. **Output 2: Gender-responsive human resource policies and measures for contract workers and regular staff members developed and implemented.** The initiative will help

UPPCL and its contractors comply with gender equality laws and improve employees' attitudes to women participation in the workforce. The TA consultants will develop institutional assessment of human resource policies and practices relating to recruitment and staff development; work/life policies, sexual harassment and discrimination policies; and gender-sensitive work environment after undertaking a gap analysis with the prevailing practices.

7. **Output 3: Initiatives to improve UPPCL's commercial and operational performance based on an applied learning program implemented.** The TA consultants will organize a visit to Japan for UPPCL staff to learn about new technologies in rural electricity distribution, maintenance of distribution networks, and customer relationship management, including information technology (IT)-enabled bill collection from Japanese electricity utilities.

8. **Output 4: Financial management capacity built, and revenue recognition and receivables write-off policy developed and implemented.** Delayed payment by different consumer categories and high levels of accounts receivable have caused UPPCL significant financial stress. The situation needs to be rectified through improved systems that incorporate innovative IT-based solutions. With the increase in number of rural metered consumers, UPPCL must comprehensively review its billing and collection systems and introduce more advanced billing software, electronic meter reading capability, and checks and balances to ensure that meters are read and billed and that bills are collected on time. The Uttar Pradesh government has proposed a direct cash transfer scheme, with a direct debit facility, to subsidize low income residential and agriculture consumers. The TA will support revenue management through (i) a review of UPPCL's billing and collection systems and recommendations to upgrade the billing system with a built-in monitoring mechanism, (ii) integration of the direct cash transfer scheme with UPPCL's billing system, (iii) development of IT-enabled tools for monitoring and taking corrective action against consumers falling behind in bill payment, (iii) preparation of a provisioning policy for uncollectible receivables, and (iv) classification of receivables as collectible and uncollectible and provisioning for uncollectible receivables in financial statements.

9. **Output 5: Project monitoring capacity and compliance with ADB safeguard policies improved.** For the first time, UPPCL is implementing a project financed by an external financial agency. Although ADB loan-financed project management consultants will monitor the contractor's performance, UPPCL needs additional assistance to increase its capacity to comply with ADB's monitoring and reporting requirements and to update safeguard documents for subproject /activities. The contractors, project management consultants, and UPPCL will be trained to handle environmental and social safeguard issues, including hazardous waste management and health and safety. The TA consultants will provide support for polychlorinated biphenyl (PCB) testing of transformers and will independently monitor UPPCL's compliance with the safeguard assessment and review framework and the environmental management plan.

C. Cost and Financing

10. The TA will be financed by the Japan Fund for Poverty Reduction (JFPR) and ADB's Technical Assistance Special Fund (TASF-others). The TA is estimated to cost \$2,250,000 of which \$1,500,000 will be financed on a grant basis by JFPR and \$500,000 will be financed by TASF-others. The TA activities pertaining to outputs 1, 2, and 3 will be financed by JFPR, and those pertaining to outputs 4 and 5 will be financed by TASF-others. The key expenditure items are in Appendix 1.

11. UPPCL will provide support in the form of counterpart staff and other in-kind contributions.

D. Implementation Arrangements

12. ADB will administer the TA; select, supervise, and evaluate consultants; and procure goods.

13. UPPCL will be the TA executing agency and implementing agency. The TA will be implemented over 24 months, commencing in January 2021, and ending in December 2022.

14. The implementation arrangements are summarized in the table.

Implementation Arrangements

Aspects	Arrangements		
Indicative implementation period	January 2021–December 2022		
Executing agency	Uttar Pradesh Power Corporation Limited (UPPCL)		
Consultants	To be selected and engaged by ADB		
	Outputs 1 and 2	National consulting firm: key experts for 144 person-months and non-key experts for 750 person-months	\$1,400,000
	Output 3	International consultant and resource persons for 2 person-months	\$50,000
	Output 4	National consulting firm: key experts for 15 person-months and non-key experts for 50 person-months	\$125,000
	Output 5	International consultant for 2 person-months; national individual consultants for 55 person-months	\$375,000
Procurement	To be procured by consultants in accordance with ADB's Procurement Policy (2017, as amended from time to time)		
Disbursement	The TA 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 TA completion	Upon completion of the TA, all procured equipment, if any, will be handed over to UPPCL.		

ADB = Asian Development Bank, TA = technical assistance.

Source: ADB estimates.

15. **Consulting services.** ADB will engage the consultants following ADB's Procurement Policy (2017, as amended from time to time) and its associated project administration instructions and/or staff instructions.¹ The TA will require international consulting inputs of 2 person-months and national consulting inputs of 1,174 person-months consisting of 174 person-months of key experts and 1,000 person-months of non-key experts. ADB will recruit consultants as required.

¹ Terms of Reference for Consultants (accessible from the list of linked documents in Appendix 2).

16. The disbursements under the TA will be made under ADB's *Technical Assistance Disbursement Handbook* (2010, as amended from time to time). Terms of reference for consulting services are in Appendix 2.

COST ESTIMATES AND FINANCING PLAN

(\$'000)

Item	Amount
A. Japan Fund for Poverty Reduction (outputs 1, 2, and 3)	
1. Consultant expenditure	
a. Remuneration	
i. International consultant	50
ii. National consultants recruited through a firm	960
b. Out-of-pocket expenditures	
i. International and local travel	50
ii. Miscellaneous administration and support costs ^a	105
2. Seminars, workshops, and conferences	100
3. Surveys and pilot testing through a nongovernment organization	125
4. Training and exposure program	50
5. Contingencies	60
Subtotal (A)	1,500
B. Asian Development Bank^b (outputs 4 and 5)	
1. Consultant expenditure	
a. Remuneration	
i. International consultant	30
ii. National consultants recruited through a firm	120
iii. National consultants as individuals	250
b. Out-of-pocket expenditures	
i. International and local travel	60
2. Contingencies	40
Subtotal (B)	500
Total	2,000

Note: The technical assistance (TA) is estimated to cost \$2,250,000 of which contributions from the Asian Development Bank are presented in the table. UPPCL will provide support in the form of counterpart staff and other in-kind contributions. The value of UPPCL's contribution is estimated to account for 11.1% of the total TA cost.

^a Office expenses, communications, and report production.

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

Source: Asian Development Bank estimates.

LIST OF LINKED DOCUMENTS

<http://www.adb.org/Documents/LinkedDocs/?id=51395-003-TARreport>

1. Terms of Reference for Consultants

TERMS OF REFERENCE FOR CONSULTANTS

I. BACKGROUND AND INTRODUCTION

1. The Uttar Pradesh Power Distribution Network Rehabilitation MFF Sector Project will improve the quality of power supply and reliability in the rural areas of Uttar Pradesh. The project will also reduce the aggregate technical and commercial (ATC) losses and improve cost recovery in electricity supply to rural areas.

2. The MFF Sector Project also include institutional capacity building component to (i) enhance the community participation in rural electricity distribution and specially in meter reading, billing and collections; (ii) promote gender sensitive workplace practice in executing and implementing agencies covering both direct employees and contract workers; (iii) improve financial management capacity focusing on revenue recognition and collections of past receivables; and (iv) enhance capacity building on project management and safeguard compliance. The TRTA is designed to provide the consulting inputs for this purpose.

II. OUTPUTS AND ACTIVITIES OF THE TRTA

A. Output 1: Innovative bill collection strategies involving active participation of rural women pilot tested.

3. Uttar Pradesh, along with several other states, is investing in the installation of tamper-proof smart meters to make the state more energy-efficient and as a step towards checking pilferage, providing better power supply, and enhancing revenue recovery. This is likely to ease the process of billing. Nonetheless, collection of dues, especially as most bills are small amounts, remains a challenge as it requires a huge amount of manpower and at times, repeated visits to the consumers, resulting in high transaction costs for the utility. This issue is faced by most utilities in India and UPPCL has requested to examine if some practical, locally based solutions can be pilot tested.

4. The innovativeness of this component is that it will develop and pilot test solutions that improve the bill collection efficiency for the utility, while at the same time, improve community engagement, through smart devices such as smart phone-based payment applications and monitoring tools. This will contribute to the economic welfare of people through new income options and empower women at the same time.

5. It is expected that the innovative bill collection mechanisms will embody the following elements:

- (i) engagement of local community members/representatives, specifically in rural areas by working with village enterprises or facilitation centers to manage meter reading, billing, and collections at the feeder level, linking it to an incentive-based payment for each activity undertaken per household; and
- (ii) engagement of women's self-help groups (SHGs), including additional activities such as breakdown management, streetlights maintenance, etc., thereby improving response time to correct faults and breakdowns in supply, and check local cases of theft more effectively.

6. This output includes piloting four innovative bill collection mechanisms through active engagement of women, supported with behavioral change campaigns to raise awareness on energy saving.

- (i) **Appointment of a franchisee** which can be a local community-based organization such as women's self-help groups, cooperative societies, village electricity committees and individual entrepreneurs, for bill collection in a given area, which can be paid on the basis of collection efficiency achieved. This measure will also increase the income of these institutions.
- (ii) **Enabling digital payment** through avenues like banks, credit cards, mobile payment, etc., to improve the ease of payment. For the electricity bill payers, these options are convenient, cost effective and time saving. Proposed interventions include educating local communities about these options, bringing a shift in consumers' habit of making bill payment as well as facilitating bank linkages, through local women, men, and institutions.
- (iii) **Flexible payment plans** that include alternative payment options aligned with people's affordability and income cycles, to be ascertained through a baseline assessment. Possible options include (a) Spot collection of electricity bill by local community representatives, including women, young men and women, local leaders etc., who are appointed as meter readers. After bill collection, the status can be updated in the same spot billing meters; (b) Annual plan, based on the previous year's consumption, including possible discounts; and (c) part payment plan, for low value defaulters, having difficulty in paying lumpsum amount, can be given an option to pay partial bill amount and in installments.
- (iv) **Targeted approaches** including selective prepaid metering or part payment option for low value defaulters, who are identified using data analytic tools; and regular reach to high value defaulters to ensure timely payment, possibly through sending SMS at regular intervals, app notifications, etc.

7. The proposed bill collection mechanisms to be piloted consist of the following organizations already active in targeted villages:

- (i) women's self-help groups (SHG) that are already active in the targeted villages and set up under the National Rural Livelihood Mission;
- (ii) village based common service centers (CSC) that are being established by the government to provide number of services to rural households under Digital India Program;
- (iii) public distribution shops (PDS) that have been established to distribute public rations to act as the collection agents;
- (iv) primary agricultural cooperative societies (PACS) as collection agents from agriculture consumers for use of electricity in tube wells; and
- (v) rural women from the communities will be engaged as community-based collection agents to collect the electricity bills on weekly basis and different incentive structures and monitoring mechanisms will be developed. The monitoring of collection mechanism and accounting for weekly collections will be facilitated through mobile phone applications that can be used by rural women.

8. The consultants are required to undertake the following tasks:

- (i) undertake a baseline assessment survey in two districts with low collection efficiency to identify target habitations for the pilots, estimate the present level of bill collection efficiency and ascertain the current knowledge, attitudes and

practices related to bill payment, affordability, main barriers to regular electricity bill payment. The survey should include at least 10 villages and at least 5,000 respondents.

- (ii) based on the survey results, identify possible partner organizations and groups belonging to women's SHGs, CSCs, PDS and PACS active in the two selected districts;
- (iii) develop an incentive-based mechanism to engage these organizations to act as the collection agents on behalf of the concerned distribution company (DISCOM); undertake consultations with DISCOM officials and potential partners organizations and finalize the incentive structure and the implementation arrangements;
- (iv) design partnership agreement to engage these entities as collection agents with clearly demarcated roles, responsibilities, incentives, and penalties for under performance;
- (v) prepare an objective selection criterion for engaging partners organizations from the four different types of organizations (i.e. women's SHGs, CSC, PDS and PACS.)
- (vi) finalize the selection of partner organizations in consultation with the relevant DISCOM officials. This should consist of at least 500 organizations including 300 women's SHGs;
- (vii) undertake extensive tailored training for different types of organizations and prepare implementing guidelines for pilot testing the bill collection initiative. At least 1,000 individuals including at least 300 women from women's SHGs and other 200 women working in CSCs, PDSs and PACS trained in new bill collection methods;
- (viii) undertaking awareness campaigns in the selected districts on safe and efficient use of electricity targeting rural women. The consultants are required to record before and after surveys of a representative sample of beneficiaries to assess the effectiveness of this intervention;
- (ix) design an IT based system to integrate the bill collection agents with the billing software of DISCOM. The IT system should also be capable of tracking the performance of each organizations engaged as bill collection agents and should have different modules for the different types of collection agents;
- (x) closely monitor the performance of the collection agents and pilot initiative of engaging community-based collection agents; prepare monthly monitoring reports and propose revisions to the implementation arrangements if required after consulting DISCOM officials;
- (xi) after the 12 months pilot testing phase, prepare a comprehensive review of the pilot testing, assessing the performance of each agent and different types of agents as a group. The consultant is expected to make recommendation on whether to scale up the pilot initiative including recommendations to implementation guidelines to address any shortcoming observed during the pilot testing phase;
- (xii) in the final report the consultants are required to propose a detailed strategy for scaling up the pilot initiative including detailed implementation guidelines.

B. Output 2: Gender responsive human resource policies and measures for contract workers and regular staff developed and piloted

9. This will assist UPPPCL and their contractors to improve their organizational policies in compliance with government gender equality laws and their employee attitudes, to encourage female participation in the workforce. UPPPCL will carry out institutional assessment of HR policies and practices relating to recruitment and staff development, work/life policies, sexual

harassment and discrimination policies, and gender-friendly work environment in UPPCL. Based on the above, a package of gender-responsive employment practices for UPPCL and contractors employed by UPPCL will be developed.

10. The consultants are required to undertake following tasks.

- (i) selection of contractors (10) based on pre-decided qualifying criteria (size, number of employees engaged, type of tasks discharged, willingness to participate etc.);
- (ii) baseline assessment carried out for the select 10 contractors to understand the existing HR policies, employee base, type of occupations for women employee, trends and attitudes;
- (iii) development of a package of interventions for contractors that includes (a) gender and social inclusion capacity building; (b) guidelines for gender responsive HR policies; and (c) steps to enhance employability of women in various functions;
- (iv) identification of trainers from within UPPCL, Madhyanchal Vidyut Vitran Nigam Ltd. (MUVN) and Purvanchal Vidyut Vitran Nigam Ltd. (PuVVNL) and development of training modules for skill development training on utility related functions such as meter reading; and 500 poor people (200 women) trained in UPPCL related skills, including meter reading, regular operations and maintenance (O&M);
- (v) based on pre-decided criteria and in consultation with the contractors, selection and training of 500 poor people (200 women) to take up employment as meter readers, or in any other capacities with the utility;
- (vi) institutional assessment of HR policies and practices relating to recruitment and staff development, work/life policies, sexual harassment, and discrimination policies; gender-friendly work environment, in UPPCL, MUVN and Paschimanchal Vidyut Vitran Nigam Ltd. (PUVVNL);
- (vii) based on the above, designing of a package of gender-responsive policies and practices to improve the employment prospects for women in the three organizations;
- (viii) designing a socially and gender-inclusive training module for UPPCL staff, including communication materials, models, guidance notes on gender awareness in the energy sector; and
- (ix) training of 100 UPPCL staff on addressing poverty, gender, and social issues in their operations.

III. REQUIRED CONSULTING SERVICES AND DELIVERABLES

11. A national consulting firm will be recruited to provide the consulting services required to implement the output 1 and output 2. The consulting firm is expected to liaise closely with UPPCL and the 4 distribution companies (DISCOMs) (MUVN, PUVN, Dakshinanchal Vidyut Vitran Nigam Ltd. (DUVN) and PuVVNL), which are the executing agency (EA) and implementing agencies (IAs) of the TA. The consulting firm will be responsible for overall coordination of TA activities, its planning, implementation and monitoring and works in close coordination with the ADB India Resident Mission.

12. The selected consulting firm is expected to mobilize a team of key experts supplemented by other non-key experts/staff to carry out the tasks indicated above. The consulting firm is expected to form a joint venture with a non-government organization (NGO) having strong presence in Uttar Pradesh to undertake the community engagement pilot testing of various initiatives and undertake baseline and completion surveys. The consultant shall ensure the adequacy of staff strength (expertise, numbers, and duration) for completion of respective tasks

within stipulated time frame. The consultant may avail the option of proposing additional manpower resources if required as provided in this section.

13. **Deliverables:** The TA implementation period will be for 2 years from August 2020 to July 2022. The activities under the TA as described above are expected to be completed within 2 years.

14. All activities and targets described under the scope of work should be delivered under this assignment. The consulting organization will be required to prepare and deliver periodic and specific task reports, such as, but not limited to the following:

- (i) inception report with clear plans for implementation;
- (ii) quarterly progress updates including progress on each of the outputs;
- (iii) interim report, at the end of the first year;
- (iv) project completion report; and
- (v) others required as per scope of the consulting assignment.

1. **Team leader (24 person-months)**

15. The expert will have a postgraduate degree or equivalent professional training in engineering, financial management or any related field, and more than 15 years of experience in projects related to commercial aspects of electricity utilities. Prior experience in human resource management, gender and social issues, women's empowerment and social inclusion in the energy sector and collaboration with the government and NGOs would be desired. Academic qualifications in business management, social science and finance at post graduate level is expected.

16. The team leader (TL) will be familiar with the energy sector in India and in South Asia and issues of energy access, and affordability related to energy resources and services. He/she will be familiar with communication and media tools and methodologies and with addressing commercial issues in the energy sector. Prior work with similar projects or NGOs supporting the energy sector and familiarity with ADB's policies and strategies are added advantages. The TL is responsible for overall conceptualizing the strategy for pilot testing the engagement of community-based collection agents.

2. **Revenue management expert (24 person-months)**

17. The expert will have qualifications in financial management and managing revenues of large organizations with large number of customers. The expert should have prior experience in commercial management of electricity utilities in India and implementing strategies and campaigns to improve the revenue collections. The expert is expected to have academic qualification in finance, engineering, and prior relevant experience of at least 10 years. He/she is responsible for the following:

- (i) technically manage the contents under all components of the TA, including strategizing for revenue enhancement, development and roll out of communication campaign, execution of capacity building, and institutional support to DISCOMs and other agencies as required;
- (ii) develop strategies to improve the billing and collection efficiencies of different consumer categories;
- (iii) develop a policy for collecting the past dues (more than 6 months) from rural consumer categories;
- (iv) prepare a provisioning policy for uncollectable and doubtful receivables;

- (v) develop an IT based tool for monitoring the billing and collection improvement strategies to be pilot tested;
- (vi) liaise with the DISCOM management in implementing the billing and collection improvement strategies; and
- (vii) monitor progress of work at DISCOM level for reporting to TL and to UPPCL/ADB.

3. **Gender and human resource management expert (24 person-months)**

18. The expert will have a postgraduate degree in a relevant social science discipline or equivalent professional training, and more than 10 years of experience in social development work, specifically in gender and development, women's empowerment, preferably in energy programs and projects, in collaboration with the government and non-government development institutions. He/she will have experience in developing gender and social inclusion strategies, training modules and as a trainer. He/she will be responsible for the following:

- (i) lead the capacity development activities, including development of training modules, and conducting training program, as required;
- (ii) contribute to development of suitable approaches for communication campaigns and awareness building;
- (iii) support the institutional development expert in developing the institutional assessment methodology, and participate in discussions as required;
- (iv) support the TL in reporting and take the lead in preparing the training implementation and evaluation reports;
- (v) carry out an institutional assessment of HR policies and practices relating to recruitment and staff development including work/life policies, sexual harassment and discrimination policies, gender-sensitive work environment in UPPCL and DISCOMs, and produce institutional gender assessment report for UPPCL and the contractors employed by UPPCL;
- (vi) based on the above, design a package of gender-responsive policies and practices to improve the employment prospects for women in UPPCL group;
- (vii) design a socially and gender-inclusive training module for UPPCL and DISCOM staff, including communication materials, models, guidance notes on gender awareness in the energy sector;
- (viii) develop training modules and training of 100 UPPCL and DISCOM staff on addressing poverty, gender, and social issues in their operations; and
- (ix) support the institutional development expert in developing the institutional assessment methodology, and participate in the discussion organized by institutional development expert and develop methodology and organize women-only focus group discussions for the areas of sexual harassment, discrimination, gender sensitive work environment and practices.

4. **Process improvement and strategy expert (18 person-months)**

19. The expert is expected to have qualification and experience in business management and information technology. The expert is expected to design the systems and processes for pilot testing initiative for community-based collection agents including IT enabled tools to track the performance of collection agents.

- (i) assess and review existing processes related to MBC such as new connection process, reconnection process, disconnection process, meter management process, meter reading, billing and collection process, energy audit process;

- (ii) establish IT enabled systems to track the performance of billing agents and collection agents across UPPCL system; and
- (iii) design strategies for deploying innovative methods in meter reading, billing and revenue collection through process re-engineering and aid in implementation of the same through revenue assurance expert.

5. Community engagement expert (24 person-months)

20. The expert shall have a master's degree in a related field and preferably over 10 years of experience in rural electrification and tariff systems analysis. The expert is responsible for designing the baseline survey to understand the attitudes and barriers to bill collection in low income rural areas. He/she is also responsible for identifying and engaging community-based organizations collection agents and designing training programs for selected individuals. His/ her responsibilities include:

- (i) develop a rapid assessment tool to investigate the social and economic conditions of electrified settlements, the present and future electricity demand, and assess their affordability, and willingness to pay for electricity.
- (ii) through the baseline survey, (a) collect necessary data and information related to prevalent tariffs, collection systems, local demography, socio-economic indicators; and (b) assess the willingness and affordability to pay of consumers together with the existing and future electricity needs, demand and tariff
- (iii) in discussion with the utility, recommend tariff collection models that comply with accepted regulatory principles and guarantees recovery of the total cost and a reasonable amount of profit for the utility, with the participation of private sector, community, elected bodies and NGOs.
- (iv) assessment of existing billing and collection systems
- (v) in collaboration with the utility, CBOs, local community including women, design alternative bill collection strategies to engage rural communities and women as collection agents.
- (vi) identify and train potential bill collection agents
- (vii) identify the potential sites/settlements for piloting the new tariff collection systems

6. Communications expert (24 person-months)

21. The expert will have a postgraduate degree in communications/media and have experience of more than 10 years in communications in the context of social development. Work in gender and development issues, women's empowerment, energy programs and projects, work with government and non-government development institutions are desirable. He/she will be responsible for the following:

- (i) design and execute a baseline assessment to identify target habitations for the awareness campaign, and to ascertain the current knowledge, attitudes and practices related to electricity use among the poor population groups, women, local leaders, school children, government offices, and establishments
- (ii) develop and pilot the campaign strategy, including target audience, key messages, channels and communication material on metering, billing, tariffs, and complaint redressal; efficient use of electricity and electricity conservation, including electrical safety; and energy use for livelihood enhancement
- (iii) identify and train campaign leaders, including women, from among the communities

- (iv) lead the rolling out of communication campaigns covering 5000 low income and rural habitations
- (v) lead the end-line survey to assess the percent increase in number of women and men adopting energy conservation practices and energy-saving technologies.

7. Information technology/metering expert (12 person-months)

22. The expert will have experience in billing software and metering technologies of electricity sector. He/she will be responsible for the following:

- (i) devise strategies to facilitate ease of use of prepaid metering system for the consumers/end-users
- (ii) suggest options for recharge/payments systems/token for prepaid meters to enhance customer satisfaction and increasing user acceptance, especially in rural areas
- (iii) design an IT system to provide necessary interface between the collection agents and the billing systems of DISCOMs. The IT system should have the functional capability of monitoring the daily collections of collection agents, transferring of bill paid by the consumers to billing system. The IT system should enable on-line monitoring of bills collected and cash returned by the billing agents. The IT system should have adequate means to detect the possible fraud and misallocation of cash collected by the agents.

8. NGO team for community engagement, public dissemination, and pilot testing of alternative revenue collection strategies

23. The consulting firm may form joint venture with a national NGO to undertake the following tasks, and will select target locations for the interventions, based on pro-poor, gender equity and social inclusions criteria, in partnership with the government implementing agency.

- (i) implement a baseline assessment to identify target habitations for the pilots, estimate the present level of bill collection efficiency and ascertain the current knowledge, attitudes and practices related to bill payment and electricity use among the rural population.
- (ii) community mobilization, including information; education, and communication (IEC) activities to orient and prepare women and men in the community for the upcoming project activities.
- (iii) support the Utility in the piloting of four new bill collection strategies among rural consumers.
- (iv) lead the preparation of relevant IEC and behavioral change communication (BCC) materials and the roll out of the communication campaign.
- (v) identification of UPPCL contractors and supporting them to develop and pilot gender
- (vi) communication materials, models, guidance notes on gender awareness in the energy sector, and train UPPCL staff on its use.
- (vii) prepare and implement baseline and end-line surveys to gather, interpret and report on project results as well as challenges encountered.
- (viii) implementation of project activities at field level

24. The NGO will work under the supervision of the community engagement expert and communication expert and will be responsible for undertaking the surveys (including base line and completion surveys), engaging local communities and piloting various initiatives at field level.

As part of the proposal, the consulting firm is expected to provide a detailed work plan for the proposed NGO including the qualification and experience of the community engagement team to be mobilized through the NGO. The NGO is expected to provide the 25 non-key staff members who would act as community mobilization agents and collectively provide 1,000 person-months.

C. Output 3: New initiatives to improve the commercial and operational performance based on learnings from applied learning and exposure program implemented

25. This includes undertaking an applied learning and exposure program in Japan to learn from Japanese electricity utilities on new technologies in electricity distribution in rural areas, maintenance practices of distribution network, and customer relationship management practices including IT enabled bill collection procedures.

26. An international consultant will be recruited for 2 person-months to organize the learning and exposure program in Japan including the coordination with Japanese utilities, preparing training material, organizing the logistics in Japan and engaging Japanese resource personnel, and preparing final report of the learning and exposure program. In addition, 3–4 resource persons will be engaged to undertake the learning program in Japan.

D. Output 4: Financial management capacity including accounting systems and billing systems improved and developed.

27. High levels of accounts receivable have caused significant financial stress on UPPCL and its subsidiaries. The root causes include weaknesses in billing, collection, and monitoring of the entire process. The existing billing and collection systems (BCS) are either not fit for the purpose, or their operations do not meet the requirements of UPPCL and its subsidiaries. These need to be addressed through improved internal procedures and upgraded systems that incorporate innovative IT based solutions. With the increase in number of rural metered consumers, UPPCL group will have to undertake a comprehensive review of its existing BCS and introduce more advanced billing software, electronic meter reading capabilities and checks and balances to ensure consumers meters are read and billed and bills are collected on time.

28. The government has also proposed major reforms to the subsidy payment mechanism. This involves billing the full cost of supply to the consumer and the government making the subsidy payment applicable to each consumer as a direct cash transfer with auto debit facility to DISCOM account. The billing and revenue management system will have to be revised to facilitate the proposed change to subsidy payment and the consultant is to make the necessary recommendations. In addition, the consultant is required to make semiannual monitoring reports on the implementation of subsidy policy including the non-payment of the subsidy to any consumer category.

29. The financial audit reports for UPPCL and its subsidiaries have been qualified by the auditors for two key issues, namely, unreconciled inter-unit and inter-company balances, and the lack of a fixed assets register maintained following applicable accounting standards.

30. This output will support UPPCL and its subsidiaries in addressing these 3 issues. The detailed tasks under consist of following:

Task 1: Review of existing billing and collection system

- (i) review the existing BCS of each of the 5 DISCOMs in the UPPCL group and assess whether they can be upgraded to meet the requirements or need to be replaced.
- (ii) draft specifications for the upgrade/replacement procurement of BCS, including the timeline for such upgrade/replacement. The upgrade/replacement should be fast-tracked for implementation at the earliest.
- (iii) identify requirements for hardware compatible with the upgraded (or new) BCS, including staff training in its operation.
- (iv) devise procedure for transfer of existing customer-wise itemized outstanding bills for collection to the upgraded/new BCS.
- (v) develop guidelines and operational procedures to ensure that 100% of bills for all classes of consumers—whether metered or unmetered—are generated through the (upgraded or new) BCS, and 100% of all collections, regardless of the channel through which they are collected, are recorded in the BCS and set off against one or more outstanding invoices. No billing or collection should be permitted to be recorded outside the BCS.
- (vi) key features of the upgraded (or new) BCS should include (a) generation of periodic reports including aging analysis (daily, weekly, monthly, quarterly, annual, or other customizable period) on all outstanding bills for collection that are more than 30 days old; (b) generation of regular reminders to responsible offices and officers; and (c) generate escalation notices to higher levels for urgent corrective action, identifying all bills for collection that exceed 60 days.
- (vii) the BCS should also a feature to generate requests for balance confirmation from customers that can be utilized by internal and external auditors.
- (viii) the BCS periodic reports should have an interface for automatic recording of sales, accounts receivable and collections in the financial accounting system.

Task 2: Analysis and reconciliation of existing accounts receivable

- (i) from the existing billing and collection system (BCS) for each utility and any other available and reliable sources of data, create an opening balance of outstanding accounts receivable for each customer, broken down by bills with the date on which they were generated. Work backwards, starting with the latest bills issued and payments received.
- (ii) identify the differences between the itemized customer-wise accounts receivable thus generated and the aggregate amount of accounts receivable from the financial accounting system.
- (iii) reconcile receivable balances between financial accounting system and the BCS.
- (iv) obtain balance confirmations from all commercial and industrial consumers, government departments, and residential customers with an aggregate outstanding value exceeding the lower of ₹100,000- or 3-months' average invoice.
- (v) ageing analysis of receivable balances will be carried out for different consumer categories. The analysis will be segregated by distribution circle and by consumer category.

Task 3: Develop a policy for provisioning

- (i) based on the analysis performed under task 2, and after considering the likelihood of recoveries of receivables due to on-going initiatives and views of UPPCL and DISCOM management, a provisioning and write-off policy will be developed.
- (ii) the political and commercial sensitivities involved in writing off accounts' receivable should be directly addressed, by explaining that UPPCL may recognize an

- impairment in accounts receivable through a provision in compliance with accounting standards. However, this would not preclude UPPCL from pursuing its legal remedies to recover such amounts from the defaulters. Legal advice should be obtained in this context, as may be required. A write-off is final, as UPPCL acknowledges that the amount is irrecoverable (including through legal recourse).
- (iii) assess the impact on profitability and UPPCL balance sheet of implementing the provisioning and write-off policy. Propose strategies to cushion the impact on balance sheet.
 - (iv) assist UPPCL in responding to any questions and clarifications from UPERC.

Task 4: Develop a procedure for timely reconciliation of inter-company and inter-unit balances

- (i) identify the reasons for persistence of inter-company and inter-unit reconciliation differences in UPPCL and all DISCOMs; and
- (ii) develop guidelines for ensuring that the underlying causes are addressed with effect from [date to be provided] for all companies, to completely eliminate future reconciliation differences, with strict and periodic monitoring of all inter-company and inter-unit transactions by higher levels of management in UPPCL and all its subsidiaries.

Task 5: Fixed assets register and fixed assets management

- (i) identify shortcomings (compared to the requirements under Indian Accounting Standards, generally accepted accounting principles and good practice) in the current arrangements for recording fixed assets, and control over them including periodic physical verification, record of movements either within or outside a DISCOM, and write-off of damaged assets. Consider the qualifications and suggestions from audited financial statements;
- (ii) recommend the procurement of off-the-shelf or customized software for fixed assets registers (FAR), and their interface with the financial accounting systems for each DISCOM and UPPCL;
- (iii) include a facility for regular report generation in the new FAR system, for providing itemized lists of fixed assets with their location, condition, age and value, impairment assessments, lists for physical verification and updates, list of capital works-in-progress including an aging analysis, list of assets damaged and withdrawn from use or disposed of, and flexibility to design other reports as may be required;
- (iv) recommend procedure for recording capital works-in-progress, monitoring capital inventories, and declaring the date of commercial use;
- (v) recommend arrangements for geo-tagging, specific identification of assets, their custody, physical verification, recording of their physical condition (including impairment) and operations and maintenance requirements;
- (vi) recommend arrangements for dealing with movement of fixed assets between different units within a DISCOM, or transfer to other DISCOMs, or disposal of items withdrawn from service;
- (vii) recommend procedure for recording fixed assets procured off-the-shelf and declaring the date on which they are put to commercial use;
- (viii) reconcile the current capital work-in-progress as reported in the annual financial statements of each DISCOM and UPPCL with the itemized list of capital works-in-progress from field units; and
- (ix) recommend a procedure for dealing with unidentifiable capital works-in-progress

(value available in the financial statements, but not traceable to the itemized listing).

31. The deliverables for this output include the following:

(i) **Inception Report** within 1 month of commencement, covering all 5 tasks

(ii) **Task 1**

Within 2 months of commencement: Assessment of the existing BCS and recommending its upgrade/replacement, together with recommendations for specifications for the new system including its procurement, and procurement of associated hardware and staff training

Within 6 months of commencement: Final report including guidelines on 100% billing and collection through the BCS, regular balance confirmations, etc.

(iii) **Task 2**

Within 3 months of commencement: A breakdown of DISCOM-wise, customer-wise, itemized, accounts receivable as of [date to be provided], and differences with the financial accounting system; should include aging analysis and recommendations on next steps

Within 7 months of commencement: Actions taken to complete the reconciliations and balance confirmations

(iv) **Task 3**

Within 8 months of commencement: Draft provisioning and write-off policy; report should include a description of the reconciliation and confirmations of accounts receivable accomplished and propose the amounts to be provided for in the books of each DISCOM with reasons, implications of the provisioning on the financial performance of each DISCOM

Within 10 months of commencement: The provisioning and write-off policy to be adopted by each DISCOM, including the levels of authority required to create a provision or recommend and approve a write-off; should also include the legal actions to be pursued, notwithstanding the provision or write-off, against the defaulting consumers

(v) **Task 4**

Within 4 months of commencement: Draft report with detailed procedures to be adopted for eliminating future interunit and intercompany reconciliation differences

Within 6 months of commencement: Final report on the procedures incorporating suggestions from UPPCL and its subsidiaries and ADB

(vi) **Task 5**

Within 3 months of commencement: Report recommending specifications for procurement of new FAR software.

Within 6 months of commencement: Report on procedure for managing capital work-in-progress, custody, physical verification, impairment assessment and valuation of fixed assets

Within 8 months of commencement: Progress report on reconciliation of capital works-in-progress and fixed assets with financial accounting system

Within 10 months of commencement–Final report on reconciliation of capital works-in-progress and fixed assets with financial accounting system.

- (vii) **Quarterly progress reports within 30 days of the end of each quarter:** Outlining work plans, implementation progress, problems encountered, any necessary modifications to working methodology, and any other pertinent information
- (viii) **Draft final report on overall implementation of all 5 tasks** within 11 months of commencement
- (ix) **Final report on overall implementation of all tasks** within 12 months of commencement, incorporating comments from UPPCL, its subsidiaries, and ADB

32. The consulting firm/consortium should have a track record and demonstrated experience in supporting distribution utilities of similar complexity in India in financial management and regulatory assignments for at least 20 years. The implementation period for this assignment shall be 12 months. Table 1 summarizes the estimated consulting service requirements for international and national consultants.

Table 1: Composition of Specialists of the Consulting Firm

Key Experts	
A. National Consultants	Person-months
Team Leader & Financial Management Expert	6
Finance & Accounting Experts	8
Revenue Management Expert (2 positions)	16
Subtotal (A)	30
B. Non-Key experts	
Finance and accounting specialists (field level staff)	50
Subtotal (B)	50
Total	80

IV. Key Specialists

33. The consultancy assignment shall have experts in financial management and accounting. The TOR of the consultants is provided below:

- a) **Financial management expert and team leader (TL) (national, 6 person-months).** An experienced financial management expert with over 15 years of experience in financial management, accounting, tax, and auditing of power sector utilities in India. The expert should have prior experience in leading the development and implementation of billing and collection software, including drafting specifications for such software. The expert will have professional qualification in accounting (such as a chartered accountant, cost, and management accountant). The financial management expert shall act as the TL and be responsible for overall implementation of the assignment.
- b) **Finance & accounting experts (national, 8 person-months).** Each expert would be an experienced finance and accounting expert with over 15 years of experience in financial management, accounting, tax, and auditing of power sector utilities in India. The expert will have professional qualification in accounting (such as a chartered accountant, cost and management accountant) and will take lead in the helping UPPCL and the 5 DISCOMs in updating the trade receivables reconciliation, ageing analysis and development of provisioning policy. The experts should have prior experience in carrying out or leading the reconciliation of accounts receivable with millions of customers.
- c) **Revenue management experts (2 national, 6 person-months and 8 person-months).** Each expert would be an experienced professional with 10 years' experience on commercial aspects and revenue management of public utilities in India, with an emphasis on electricity distribution or similar business.

V. Non-key Experts

34. Apart from the above key staff, the consulting firm shall apply a team of accounting and finance experts and specialists to support in implementation of the assignment who will be the field level staff. The consulting team through the core team shall be responsible for delivering the objectives. The indicative number of field level experts, period of deployment and their responsibilities are mentioned below. However, the financial management expert/TL shall have the flexibility to plan the deployment, reallocate roles and responsibilities and prepare/amend work plan for the field level experts, in coordination of ADB and UPPCL.

35. Finance and accounting staff (non-key) at circle level (national, multiple resources, combined 50 person-months): The consulting firm shall deploy suitable number (at least 5) of finance and accounting specialists (graduate in accounting or CA interns) at circle level. The resources shall be rotated within the different circles as per a plan approved by ADB. The specific tasks include but not limited to following:

- (i) implementation of trade receivables reconciliation and ageing analysis of trade receivables of UPPCL and the 4 DISCOMs as per guidance of the experts at the circle level; and
- (ii) collection of data for preparation/updating of FAR and inventory listing .

E. Output 5: Project monitoring capacity and capacity to comply with ADB safeguard

policies improved

36. UPPCL is implementing a project financed by an external financial agency for the first time. Although project management consultants who will monitor the performance of the contractor are included in the activities financed under the ADB loan, UPPCL needs additional assistance to enhance its capacity to comply with the monitoring and reporting requirements of ADB. In addition, UPPCL needs assistance to prepare safeguard documents for components to be financed under the Project, in particular updating the initial environmental examination (IEE) preparing social due diligence reports for subprojects as stipulated in the project's SARF including consultations with the local communities. This output will provide the necessary expertise to UPPCL on as needed basis. The consultants under this component will assist the project implementing agencies in meeting this requirement.

37. **Project management expert (national, 18 person-months).** Consultant with post graduate qualifications in engineering or finance or business management and experience of over 7 years will be recruited to provide project management services to ADB in relation to the proposed Uttar Pradesh Power Distribution Network Rehabilitation Project. The consultant is expected to closely liaise with the loan funded project management consultants (PMC) working for UPPCL and project management agents (PMA) working for DISCOMs in monitoring the implementation of the project. The consultant is expected to provide necessary inputs to ADB in preparing the periodic financing request for Tranche 2. The consultant is also expected to monitor the implementation of outputs 1, 2, 3 and 4 under the technical assistance and provide necessary guidance to national consulting firms recruited.

38. **Environment assessment expert (national, two experts for 10 person months each).** Output 1 and output 2 of the proposed Uttar Pradesh Power Distribution Network Rehabilitation Project involve physical activities and are subject to safeguards due diligence as per ADB's loan processing requirements. The project is categorized as category B for environment under ADB's categorization system. SARF and IEE have been prepared as part of project processing. However, to meet ADB's *Safeguards Policy Statement (SPS) 2009* requirements, all subprojects and their components/activities need to be further assessed for their environmental and social impact and risks in accordance with the SARF and suitable mitigation and monitoring measures developed. The consultant is expected to carry out further environmental assessment for the subprojects and, as required by ADB, following screening of subprojects and their components/activities, update the existing IEE in accordance with the SPS and SARF and to meet applicable Government of India and State of Uttar Pradesh laws and regulations pertaining to environment, health, and safety.

39. The consultant will consolidate screening and categorization forms for each division included in each subproject for submission to and clearance by ADB, in doing so they will confirm their accuracy and recommend to ADB whether site-specific assessment is required. If ADB requires the consultant to update the IEE for a particular subproject and/or requires a site-specific assessment, the consultant will consider direct, indirect, cumulative and induced impacts and risks on physical, biological, socioeconomic, and physical cultural resources in updating the IEE.

40. The consultant will need to ensure that in updating the IEE in accordance with the IEE update template in the SARF, the following tasks are completed. This is not an exclusive list and the consultant will also perform all other tasks to ensure the SPS (2009) requirements are met.

- (i) informed by the safeguard screening forms the accuracy of which should be checked by the consultant, and in consultation with the DISCOMs and turnkey contractor, confirm subproject components/activities included.

- (ii) informed by the safeguard screening forms the accuracy of which should be checked by the consultant, prepare a description of the existing environment specifically related to the selected subproject based on up to date baseline data, including representative air and noise monitoring data following the EMP requirements; there is no need to repeat baseline details already included in the IEE.
- (iii) informed by the safeguard screening forms the accuracy of which should be checked by the consultant, identify all residential and sensitive receptors in the project area of influence (30m) and all legally protected areas and internationally and nationally important biodiversity areas and physical cultural resources in the wider study area (up to 10km).
- (iv) undertake site visits and with reference to the SARF, IEE and International Finance Corporation Environmental, Health and Safety (IFC EHS) general guidelines and transmission and distribution guidelines identify and assess (quantifying if possible) the location-related environmental, health and safety impacts and risks of the subproject including consideration of the magnitude and duration of both temporary and permanent impacts arising from the construction, operation and maintenance phases of the subproject. For potentially significant impacts site-specific assessment must be undertaken.
- (v) in reference to the SARF and project EMP in the IEE, identify the need for any additional site-specific mitigation measures for the anticipated environmental impacts and risks of the subproject, sufficient that no residual significant impacts are expected to occur. Mitigation measures should reflect national requirements and international good practice as set out in the IFC EHS general guidelines and transmission and distribution guidelines, detailed site-specific mitigation measures must be elaborated for all potentially significant impacts.
- (vi) prepare an update to the IEE report (as an annex) for the subproject in line with the outline and format presented in the SARF including the results of meaningful consultation to be undertaken by the consultation expert. In all there will be 14 annexes prepared; one covering ABC works and one covering all the feeder separation subprojects.
- (vii) revise the IEE incorporating comments received on the draft annexes from UPPCL and ADB, final to be cleared and disclosed on the ADB website prior to commencement of any construction works under a subproject.
- (viii) once the IEE has been finalized ensure its findings have been locally disclosed by the DISCOMs.
- (ix) following subproject approval update the IEE as required to reflect any changes following detailed route surveys or any other change in component/activity scope or design during project implementation. Updated IEE to be cleared by ADB prior to any change in the project scope or design.

41. The consultant should prepare and submit following reports/deliverables:

- (i) consolidated screening and categorization forms for each division included in each subproject based on the village and feeder level screening forms prepared by the PMA.
- (ii) draft IEE Update
- (iii) final IEE Update

42. The consultant will have a master's degree in environmental science or management or related discipline and have more than 8 years' experience undertaking environmental assessment. The consultant should have experience in assessing environmental impacts and

risks and preparing IEEs and EMPs of energy sector investments including distribution works projects. The consultant must have a good understanding of SPS (2009) and be fluent in both spoken and written English.

43. **Consultation expert (national, 4 person-months).** A consultation expert with experience in community consultation on environmental and social issues with over 5 years' experience will be recruited.

44. The consultant is required to undertake meaningful consultations with affected communities in accordance with SPS and SARF requirements for updating the IEE, as guided by the environmental assessment specialist, and to prepare for each consultation an environmental and social consultation report containing number consultees, gender split, photographs, environmental and social issues raised, and how the subproject has or will respond to consultee concerns. In undertaking meaningful consultations, the consultant will ensure that a sufficient number of affected persons are consulted, including an adequate split of male and female participants. The consultant will submit a report for inclusion in the IEE describing the consultation activities undertaken for the subproject including number consultees, gender split, photographs, issues raised, and how the subproject has or will respond to consultee concerns. The consultant will need to follow national requirements and the COVID-19 guidance included in Appendix 8 of the IEE to ensure the safety of the communities involved.

45. **Environment, health, and safety capacity development experts (international, 2 person-months; national, 4 person-months).** An environment expert, health and safety expert, and hazardous materials and waste management expert will be appointed to deliver capacity development activities as follows:

Environment expert (international, 2 person-months)

- (i) support UPPCL, the DISCOMs, their consultants and contractors in understanding the international good practices for environmental management, and the mitigation and monitoring requirements set out in the IEE and EMPs including corrective actions required for the existing substations;
- (ii) provide formal environmental management trainings at the appropriate stage in project implementation as set out in the SARF including preparation of all training materials in a format that can be used for future reference, document attendees for trainings through photographs and attendance list; and
- (iii) develop environment management checklists based on the EMP for use by focals/consultants with environmental responsibilities in undertaking their supervision and monitoring activities during detailed design and pre-construction, construction, operation, and maintenance.

Health and safety expert (national, 2 person-months)

- (i) support UPPCL, the DISCOMs, their consultants and contractors in understanding the international good practices for health and safety management, and the mitigation and monitoring requirements set out in the IEE and EMPs including corrective actions required for the existing substations;
- (ii) support the environment expert to provide formal health and safety trainings at the appropriate stage in project implementation as set out in the SARF including preparation of all training materials in a format that can be used for future reference, document attendees for trainings through photographs and attendance

- list, including awareness raising of occupational and community health and safety risks of COVID-19 and national and World Health Organization (WHO) recommendations for management;
- (iii) develop occupational and community health and safety checklists based on the EMP for use by focal/consultants with health and safety responsibilities in undertaking their supervision and monitoring activities during detailed design and pre-construction, construction, operation, and maintenance; and
 - (iv) facilitate occupational and community health and safety risk assessment workshops for the design, construction, and operational risks related to project components/activities to be attended by UPPCL, the DISCOMs, their consultants and contractors and resulting in risk assessments that will inform approval of detailed designs and the development of occupational and community health and safety (H&S) plans; risk assessment and plans to include consideration of COVID-19 risks and management, particularly given works are within local communities and transient.

Hazardous materials and waste management expert (national, 2 person-months)

- (i) support UPPCL, the DISCOMs, their consultants and contractors in understanding the national requirements and international good practices for hazardous materials and waste management, specifically PCBs, and the mitigation and monitoring requirements set out in the IEE and EMPs including corrective actions required for the existing substations;
- (ii) provide formal hazardous materials and waste management, specifically PCBs, trainings at the appropriate stage in project implementation as set out in the SARF including preparation of all training materials in a format that can be used for future reference, document attendees for trainings through photographs and attendance list;
- (iii) help UPPCL, the DISCOMs, their consultants and contractors to develop an inventory of transformers, determine the risk of PCB presence in transformers, undertake testing of transformer oil, and take appropriate remedial action if PCBs are found; and
- (iv) undertake gap analysis of UPPCL and the DISCOMs' current practice versus national requirements and international good practice on hazardous materials and waste management for the design, operation and maintenance of transformers, substations, storage yards, and maintenance workshops and develop easy to understand systems/procedures with a supporting good practice manual with photos/drawings in order to facilitate adherence to national requirements and adoption of international good practice as well as assisting UPPCL and the DISCOMs to comply with the management system related improvements required by the corrective action plan for existing substations which is included in the project EMP.

46. The consultants are expected to have a master's degree in a relevant discipline and have more than 15 years' experience in their field. Understanding and demonstrated application of international good practice for environmental, health and safety management such as per the

IFC EHS General and Transmission/Distribution Line Guidelines and Indian environmental legislation is essential.

47. Environment, health, and safety supervision expert (national, 8 person-months).

Given the limited capacity of UPPCL and the DISCOMs to ensure compliance with ADB's *Safeguards Policy Statement (SPS) 2009* requirements, additional support is required for supervision and monitoring of safeguards implementation following subproject approval. The consultant is expected to carry out environmental site supervision with the support of the H&S supervision expert for the subprojects in order to ensure SPS, SARF, EMP, and Government of India and Government of Uttar Pradesh environmental requirements are met, as follows:

- (i) support UPPCL, the DISCOMs, their consultants and contractors in ensuring compliance with loan covenants related to environmental safeguards, the SPS, and SARF.
- (ii) help UPPCL, the DISCOMs, and their consultants to monitor and supervise implementation of the SARF and the IEE and EMPs by themselves and their contractors.
- (iii) help UPPCL, the DISCOMs, and their consultants identify if any additional site-specific construction measures needed based on final locations and routings, ensuring any necessary site-specific ecological measures are incorporated into design and construction.
- (iv) help UPPCL, the DISCOMs, and their consultants in reviewing and approving the contractor's preconstruction safeguards documentations as required by the EMPs (and confirm they conform with the EMPs and the requirements of the IFC EHS general and transmission/distribution line guidelines.
- (v) review documentation and undertake spot checks (as environmental audits) of existing substations and active sites during the construction period to check UPPCL, DISCOM and their consultants supervision and monitoring activities and adequate implementation of EMP measures and, advise them, their consultants and contractors if improvements are needed, document each site visit in field visit note including photographs.
- (vi) provide advice to UPPCL, the DISCOMs, their consultants and contractors on quantitative monitoring required by the EMPs and ensuring adequate record keeping for environmental monitoring purposes.
- (vii) provide advice to UPPCL and their consultants on preparing the semiannual environmental impact monitoring reports during construction in accordance with template agreed with ADB.
- (viii) report to ADB the need to update the IEE and EMPs in the event of unanticipated impact, including a change in scope or design.
- (ix) help UPPCL, the DISCOMs, their consultants and contractors to develop and implement corrective action as necessary to address expedience of performance standards or non-compliance issues.
- (x) help UPPCL, the DISCOMs, their consultants and contractors continue to conduct meaningful consultations with the affected communities especially in relation to the distribution line routings.
- (xi) help UPPCL, the DISCOMs, their consultants and contractors to operationalize and effectively implement the grievance redress mechanism, including raising awareness of its existence with affected communities, resolving grievances related to environmental issues that have been submitted, and keeping adequate documentation.

- (xii) support UPPCL, the DISCOMs, their consultants and contractors in ensuring compliance with loan covenants related to environmental safeguards (environment includes health and safety for purposes of ADB SPS 2009).
- (xiii) help UPPCL, the DISCOMs, and their consultants to monitor and supervise implementation of the SARF and the EMPs by themselves and their contractors.
- (xiv) help UPPCL, the DISCOMs, and their consultants identify if any additional site-specific construction measures needed based on final locations and routings, ensuring adequate horizontal and vertical clearances and not passing over school compounds etc.
- (xv) help UPPCL, the DISCOMs, and their consultants in reviewing and approving the contractor's preconstruction safeguards documentations as required by the EMPs (e.g. occupation and community H&S plans, traffic management plans) and confirm they conform with EMPs and IFC EHS general and transmission/distribution line guidelines requirements.
- (xvi) review documentation and undertake spot checks (as health and safety audits) of existing substations and active sites during the construction period to check UPPCL, DISCOM and their consultants supervision and monitoring activities and adequate implementation of EMP measures and, advise them, their consultants and contractors if improvements are needed, document each site visit in field visit note including photographs.
- (xvii) provide advice to UPPCL, the DISCOMs, their consultants and contractors on quantitative monitoring required by the EMPs and ensuring adequate record keeping for H&S monitoring purposes.
- (xviii) help UPPCL, the DISCOMs, their consultants and contractors to develop and implement corrective action as necessary to address expedience of performance standards or non-compliance issues related to health and safety including appropriately responding to any H&S incidents that occur during the project implementation.

48. The consultant will have a master's degree in environmental science or management or related discipline and have more than 5 years' experience of undertaking environmental site supervision. The consultant will have at least 8 years' experience in carrying out environmental site supervision, monitoring and implementation of EMPs for construction of major infrastructure projects, preferably for transmission and/or distribution line projects. Understanding and demonstrated application of international good practice for environmental management such as per the IFC EHS general and transmission/distribution line guidelines and Indian environmental legislation are essential.

49. **Social development specialist (national , 7 person-months).** Outputs 1 and 2 of the proposed Uttar Pradesh Power Distribution Network Rehabilitation Project involve physical activities and are subject to safeguards due diligence as per ADB's loan processing requirements. The project is categorized as category B for resettlement and C for indigenous people under ADB's categorization system. SARF and a resettlement plan for Tranche 1 have been prepared as part of project processing. However, to meet ADB's *Safeguards Policy Statement (SPS) 2009* requirements, all subprojects and their components/activities need to be assessed for their social impact and risks in accordance with the SARF.

50. The consultant will have a master's degree in social science or related discipline and have more than 8 years' experience of undertaking social development and assessment. The consultant should have experience in assessing resettlement and social impacts and risks and preparing resettlement plan of energy sector investments including distribution works projects.

The consultant must have a good understanding of SPS (2009) and be fluent in both spoken and written English.

51. The consultant is expected to carryout social assessments for the subprojects in accordance with the SPS and SARF and to meet applicable Government of Uttar Pradesh and State of Uttar Pradesh laws and regulations and provide training to UPPCL, DISCOMs and relevant project entities for their capacity building. The scope of work includes preparation of the social due diligence report following the policies and procedures outlined in the SARF. The consultant will need to ensure that the following tasks are completed. This is not an exclusive list and the consultant will also perform all other tasks to ensure the SPS (2009) requirements are met.

- (i) informed by the safeguard screening forms the accuracy of which should be checked by the consultant and in reference to the SARF, prepare an accurate project description of the selected subproject which is in line with the scope of works in the report and recommendation of the President (RRP) and other project documentation, including details of scale, location, plans and cross sections of project components, construction methods, timescales, materials etc.
- (ii) informed by the safeguard screening forms the accuracy of which should be checked by the consultant and in reference to the SARF, prepare a detailed description of the existing land use and ownership status specifically related to the selected subproject.
- (iii) informed by the safeguard screening forms the accuracy of which should be checked by the consultant and in reference to the SARF, identify all private land in the subproject area affected by the feeders and poles.
- (iv) undertake site visits and with reference to the SARF and RP and assess number of households affected, size of the impact (i.e. xx acres of land, xx number of tree and xx acres of crop cultivation).
- (v) in reference to the SARF and RP, avoid the impact and for unavoidable impacts consult with affected persons and seek their consent to support on land use for pole erection referring consultation format in the Appendix 9 of SARF. If required and necessary, prepare compensation plan and estimate necessary budget to provide compensation at replacement cost (i.e. fair market rate)
- (vi) undertake meaningful consultation ensuring that a sufficient number of affected persons are consulted and including an adequate split of male and female participants. Describe the consultation activities undertaken for the subproject including number consultees, gender split, photographs, issues raised, and how the subproject has or will respond to consultee concerns.
- (vii) prepare a social due diligence report for the subproject in line with the outline and format presented in Appendix 8 of the SARF.
- (viii) update social due diligence reports as needed to reflect any changes following detailed route surveys or any other change in component/activity scope or design during project implementation.
- (ix) provide inputs for semiannual safeguard monitoring reports.
- (x) provide guidance and advice to UPPCL, DISCOM and relevant project entities on implementing SARF and RP and any social safeguards compliance issues and provide training as needed.