





Asian Development Bank

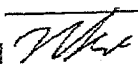
Memorandum
South Asia Department


5 May 2011

FOR APPROVAL

To: Sultan H. Rahman, Director General, SARD

Through: Yongping Zhai, Director, SAEN 
Hun Kim, Country Director, INRM 

From: Naoki Sakai, Senior Climate Change Specialist, SAEN 

Subject: **C-TA 0003-IND Cluster TA Subproject – Rajasthan Solar Park Capacity Development Project**
—Approval of Cluster TA Subproject Implementation 

A. INTRODUCTION

1. On 31 August 2009, ADB approved the provision of a Cluster Technical Assistance (C-TA) for *Advanced Project Preparedness for Poverty Reduction*, in an aggregate amount not exceeding \$14 million equivalent to the Government of India (GOI). This will be financed on a grant basis by the Government of the United Kingdom through the Department for International Development (DFID), to be administered by ADB under the DFID-ADB Partnership Agreement for India 2009-2013 signed on 18 November 2009. The impact of the C-TA is increased poverty reduction in low income states in India and outcome of the C-TA is achievement of comprehensive project preparedness in the poorer states in the ADB India Program (including Bihar, Jharkhand, Madhya Pradesh, Chattisgarh, Orissa, Rajasthan, Uttarakhand and Assam) and in the pro-poor sectors.

B. THE PROPOSED CLUSTER TA SUBPROJECT

1. Background

2. India is bestowed with solar irradiation ranging from 4 to 7 kWh/square meter/day across the country¹ and certain regions namely the western and southern, including Rajasthan, have high solar incidence. With rapid growing electricity demand, availability of land and increasing reliance on imported sources of fossil fuel, India has initiated steps to tap into the large potential for solar energy development. In 2010, the Government of India (GOI) launched the Jawaharlal Nehru National Solar Mission (JNNSM) to (i) create an enabling policy framework for deployment of 20,000 MW of solar power by 2022; (ii) ramp up capacity of grid-connected solar power generation to 1,000 MW within three years in the first phase i.e. by 2013 and an additional 3,000 MW by 2017 in the second phase through the mandatory use of the renewable purchase

¹ Most of Europe receives 0.5-4 kWh of solar energy kWh/square meter/day.

obligation by utilities backed with a preferential tariff; (iii) deploy 20 million solar lighting systems for rural areas by 2022; and (iv) create favorable conditions to enhance solar manufacturing capability, particularly solar thermal for indigenous production and market leadership. JNNSM calls for nation wide deployment of solar park development and large scale demonstration projects. Achieving the ambitious target for 2022 of 20,000 MW will be dependent on the lessons learnt during the implementation of the first two phases, which if successful, could lead to conditions of grid-competitive solar power. The transition could be appropriately scaled up through capacity development of all the stakeholders related to issues of technology, finance, project management and policy development.

3. Promoting the availability and use of clean energy is one of the highest priorities of the Asian Development Bank (ADB). In 2010, ADB funded \$1.76 billion worth of projects with clean energy components, exceeding its \$1 billion target for the third year in a row. From 2013, this target will increase to \$2 billion a year. The Asia and Pacific region, where demand for energy is projected to almost double by 2030, could start using clean power from sustainable solar energy and other renewable sources within the next 3 years.

4. In May 2010, ADB announced its Asia Solar Energy Initiative (ASEI) to catalyze 3,000 megawatts of solar power generation projects from 2010 to 2013 in ADB developing member countries. As part of ASEI, ADB is taking a holistic approach to support solar power development in India from public and private sector windows, e.g., *TA 7099: Integrated Renewable Energy Development Program* which led to Gujarat solar park development as the first project, 44941: India, Solar Power Generation Guarantee Facility, and capacity development for banking sector for solar financing. As the next step, there exists a need for capacity development for transfer of best practices from the Gujarat solar park models to Rajasthan. This continuous and well-consorted technical and financial assistance will support GOI in achieving the ambitious target.

5. The Government of Rajasthan (GOR) has initiated solar park development and identified the location of the Rajasthan Solar Park. GOR set out the back-up policy and regulatory framework in April 2011. In order to attract developers for a total of more than 1,000MW of solar power plants will be developed within the solar park. In this regard, GOI and GOR requested ADB to provide technical and financial support for development and operation of the solar park.

2. Impact and Outcome

6. The TA's impact will be a large scale solar power project developed in a cost-effective manner in Rajasthan. The outcome is strengthened capacity for Rajasthan solar park development with a 1,000 MW power generation capacity.

3. Methodology and Key Activities

7. The TA aims to strengthen capacity of the agencies of GOR, i.e., Rajasthan Renewable Energy Corporation Ltd (RREC) and power sector utilities to develop and operate the solar park in Rajasthan. Specific focus of the TA will be to (i) support GOR agencies to develop a master plan for the solar park, (ii) develop coordination mechanisms to be formulated and operated among GOR, the private sector, e.g., solar park developers, and independent power producers (IPPs), international agencies, and other stakeholders and (iii) conduct social and environment due diligence works.

8. **Masterplan Development:** The proposed TA will assist GOR to develop the master plan for Rajasthan solar park referring to the similar master plan for Gujarat solar park articulated by government of Gujarat with ADB's support. The master plan will include (i) state policy and regulatory framework to be applied for IPPs in the park, (ii) land design and demarcation, (iii) water facility development, and (iv) evacuation transmission line development. The master plan will also include financing plan where ADB's financing assistance to develop the park infrastructure will be considered.

9. **Coordination Mechanism:** The lessons learned in the Gujarat solar park development is necessity to develop a coordination mechanism at initial stage among the government agencies and the private sector, e.g., developers, financiers, and technology providers. The mechanism may need to be institutionalized to ensure full operationalization. The TA will assist GOR to develop a coordination mechanism involving the private sector, e.g., developers, technology providers, and financiers, and international agencies and other development partners. In particular, the mechanism will promote international private sector participation in terms of technology transfer and mobilizing financing. The TA will set up institutional arrangement, operationalize the mechanism, and organize at least two workshops to facilitate communication among all the stakeholders.

10. **Social and environmental due diligence works:** The TA will assist GOR to conduct comprehensive social and environmental due diligence works for the solar park and associated facilities. Poverty analysis would be one of the most critical factors for this exercise.

4. Cost and Financing

11. The total cost of the subproject is estimated at \$600,000 equivalent. ADB will provide technical assistance not exceeding the equivalent of \$500,000. This will be financed by ADB, on a grant basis, from funds provided by the Government of the United Kingdom. The Government of India will provide the remaining balance equivalent to \$100,000.

5. Implementation Arrangements

12. The TA will be implemented over 13 months, between July 2011 and August 2012. RREC owned by the Government of Rajasthan will be the executing agency. As envisaged, 10 person-months of consulting services by four international consultants will be required. All the consultants will be individually recruited, as it will be difficult to source the broad range of required specializations from a single firm. ADB will recruit consultants according to its Guidelines on the Use of Consultants (2010, as amended from time to time). Disbursements under the TA will conform to ADB's Technical Assistance Disbursement Handbook (2010, as amended from time to time).

13. Equipment, e.g., computers, photocopiers, fax machines, and office air-conditioners, will be procured under the TA funds by ADB according to its Procurement Guidelines (2010, as amended from time to time). At TA completion date, the equipment should be turned over to RREC. An advance payment facility, to be replenished on liquidation, will be used to disburse funds to cover administrative and operating costs. RREC will be required to maintain operation and administration accounts, to have these accounts audited annually, and to report the results of the annual audit to ADB.

C. RECOMMENDATION

14. Relevant department/offices have been consulted and comments received have been incorporated.
15. Pursuant to para. 27 of OM Section D12/OP and para. 19 of the TA-C paper para. 28, your approval is requested for the implementation of the proposed TA Cluster Subproject for the Rajasthan Solar Park Capacity Development Project in an amount not exceeding the equivalent of \$500,000 on a grant basis, funded by the Government of the United Kingdom.
16. Such approval will be reported to the Board in the Quarterly Summary Report on TA Cluster Subprojects.

Attachment: (1) Design and Monitoring Framework
(2) Cost Estimates and Financing Plan
(3) Terms of Reference

cc: The Secretary; Deputy Director General, SARD; Directors, COS1; OCO; SAOC; Country Director, INRM; Assistant General Counsel, OGC; Assistant Controller, CTLA; Senior Advisor to VPO1; Lead Development Effectiveness Specialist, SAOD; Senior Social Development Specialist (GAD), SAOD; R. Hasan, INRM;

DESIGN AND MONITORING FRAMEWORK
Rajasthan Solar Park Capacity Development Project

Design Summary	Performance Targets/Indicators	Data Sources/ Reporting Mechanisms	Assumptions and Risks
<p>Impact</p> <p>Large scale solar power project developed in a cost-effective manner in Rajasthan</p>	<p>Grid connected solar power generation capacity in India to increase to at least 1000 MW by 2013 and 4000 MW by 2017 (2010 Baseline: 6 MW)</p> <p>Grid connected solar power generation to reach at least 1000 MW by 2013 in Rajasthan (2010 Baseline: 0 MW)</p>	<p>MNRE Annual Report</p> <p>RREC Annual Report</p>	<p>Assumptions</p> <p>Timely and cost effective development of the first solar park would spur additional solar energy development through solar parks in Rajasthan</p> <p>Risks</p> <p>Delay in formulation and implementation of policy and regulatory framework in Rajasthan.</p>
<p>Outcome</p> <p>Strengthened capacity for Rajasthan solar park development with 1,000 MW power generation capacity</p>	<p>Commitment of the Independent Power Producers to generate up to 1,000 MW based on the relevant quality of solar park master plan. 2013 (2010 Baseline: 0 MW)</p>	<p>RREC Annual Report.</p>	<p>Risks</p> <p>The solar park is not competitive vis-à-vis other locations for potential solar energy developers.</p>
<p>Outputs</p> <p>A. Master Plan of Rajasthan Solar Park Development</p> <p>B. Coordination mechanism formulated and operated among the Government of Rajasthan, solar park developers, and IPPs</p> <p>C. Social and environment due diligence works</p>	<p>Satisfactory quality of master plan to acceptable to the relevant agencies, including RREC, IIT and other stakeholders.</p> <p>Formulation of coordination mechanism involving at least 100 private sector and other agencies.</p> <p>Two workshops will be held to exchange information and views of the stakeholders</p> <p>IEE and RP to be developed</p>	<p>RREC Annual Report</p> <p>RREC Annual Report</p> <p>TA Review Mission</p>	<p>Assumptions</p> <p>Full commitment of the Government of Rajasthan to develop the solar park taking the private public partnership approach.</p> <p>Risks</p> <p>Less interest by the private developers to participate in the solar park in terms of competitiveness with other locations.</p>

Design Summary	Performance Targets/Indicators	Data Sources/ Reporting Mechanisms	Assumptions and Risks
<p>Activities with Milestones</p> <p>1. Component A</p> <p>1.1 Recruitment of international consultants (1 July 2011)</p> <p>1.2 Review of the exiting documents including indicative master plan and policy and regulatory framework (1 August 2011)</p> <p>1.3 First draft master plan developed (1 February 2012)</p> <p>1.4 Final master plan developed (1 August 2012)</p> <p>2. Component B</p> <p>2.1 First Workshop held to discuss the coordination mechanism (1 August 2011)</p> <p>2.2 Coordination mechanism developed (1 December 2012)</p> <p>2.3 Second workshop held to initiate the coordination mechanism (1 July 2012)</p> <p>3. Component C</p> <p>3.1 Recruitment of international consultants (1 July 2011)</p> <p>3.2 Review of the exiting documents including indicative master plan and policy and regulatory framework (1 September 2011)</p> <p>3.3 Field survey (1 February 2012)</p> <p>3.4 Draft IEE and RP (1 August 2012)</p>			<p>Inputs</p> <p>ADB: \$500,000</p> <p>GOI: \$100,000</p>

ADB = Asian Development Bank, DMF = Design and Monitoring Framework, EA = executing agency,, GOI = Government of India, GOR = Government of Rajasthan, IPP = Independent Power Producer, PPMS = Project Performance Monitoring System, TA = technical assistance.

COST ESTIMATES AND FINANCING PLAN
(US\$'000)

Item	Total Cost
A. Government of the United Kingdom Financing	
1. Consultants	
a. Remuneration and per diem	
i. International consultants	250.00
ii. National consultants	0.00
b. International and local travel	20.00
c. Reports and communications	10.00
2. Equipment ¹	20.00
3. Training, seminars, and conferences	60.00
4. Miscellaneous administration and support costs	90.00
5. Contingencies	50.00
Subtotal (A)	500.00
B. Government of India	
1. Office accommodation and transport	30.00
2. Remuneration and per diem of counterpart staff	20.00
3. Others	50.00
Subtotal (B)	100.00
Total	600.00

Source: Asian Development Bank estimates.

^{1/} The Equipment will be computers, photocopiers, fax machines and office air-conditioners

OUTLINE TERMS OF REFERENCE FOR CONSULTING SERVICES

A. Introduction

1. The technical assistance (TA) will require the services of four international consultants.

B. Scope of Work

2. The consultants should have (i) extensive experience in and knowledge of the institutional and commercial aspects of the development of solar or other renewable energy parks, especially Gujarat solar park; (ii) suitable knowledge of renewable energy development in India; and (iii) familiarity with the policy, guidelines, and operation manuals of the Asian Development Bank (ADB). The consultants should have extensively consulted with the relevant stakeholders, including the private sector, government agencies, and development partners. The terms of reference for the consultants include, but are not limited to, the following.

1. Solar Park Development Specialist (International, 4 person-months)

- (i) Based on the outcome of the study funded under TA 7099 covering engineering aspects for development of the master plan, develop a solar park master plan with a detailed action plan and timelines in close coordination with Government of Rajasthan and other partners.
- (ii) Refine the proposed indicative masterplan of the Rajasthan solar park (RSP) and assist Rajasthan Renewable Energy Corporation Limited (RREC) to conduct the feasibility study of the RSP
- (iii) Draft the detail project report for the RSP and assist RREC to get concurrence of the relevant agencies of GOR and GOI
- (iv) Advise the state transmission company plan to evacuate power from the solar park and assess technical issues associated with evacuation of power and propose, if required, appropriate solutions to such issues.
- (v) Evaluate the experience from similar solar and wind cluster parks to identify relevant best practices and to propose an optimal arrangement regarding the nature of equipment or facilities required to ensure stable power flows from the solar park.
- (vi) Provide inputs for the preparation of procurement plan, contract packages and related due diligence for the project.
- (vii) Based on an assessment of existing arrangements for industrial parks, special economic zones in India and similar arrangements elsewhere, propose and evaluate appropriate business models to implement the solar park concept in Rajasthan through a solar park agency.
- (viii) Recommend the proposed legal status of the solar park agency, appropriate organization structure, governance and management mechanism, dispute resolution and other requirements for the solar park agency in discussion with stakeholders.
- (ix) Demarcate the roles and responsibilities between government agencies, the solar park agency and the investors in the park and guide national

consultants to draft contractual agreements to be entered into between relevant agencies, solar park agency and potential investors.

- (x) Develop a three year work program, job descriptions for top three tiers of the solar park agency, a budget plan and a capacity development plan.
- (xi) Advise state government agencies for the development of conducive policy & regulatory framework for establishment of solar parks.
- (xii) Undertake extensive consultations with stakeholders particularly central and state government, regulatory agencies, international and national private sector investors and development partners.

2. Public Private Partnership Specialist (International, 2 person-months)

- (i) Develop coordination mechanism for the domestic and foreign private sector including financiers, developers, technology providers as well as the government agencies to facilitate solar park development.
- (ii) Design and organize two workshops in India and outside of India to promote solar park development.
- (iii) Undertake extensive consultations with stakeholders particularly central and state government, regulatory agencies, international and national private sector investors and development partners.

3. Environment Specialist (International, 2 person-months)

- (i) Prepare Rapid Environmental Assessment Checklist and determine environmental category for the Project
- (ii) Prepare Environmental Impact Assessment or Initial Environmental Examination for both the solar park and possible ADB financing portion depending on the project categorization (environmental category A or B) assigned by ADB in accordance with the 2006 ADB *Environmental Assessment Guidelines*
- (iii) Prepare Environmental Management and Monitoring Plan (EMP and MP) for the project. The EMP shall include a cost estimate plan for implementation of the proposed mitigation measures

4. Social Safeguard Specialist (International, 2 person-months)

- (i) Assess impact of this program on poverty reduction in terms of direct poverty reduction on the local community and indirect paths through employment and economic growth in the target area.
- (ii) Conduct social and environmental due diligence works for the solar park in line with ADB *Safeguards Policy 2009*.
- (iii) Prepare required checklist to determine categorization for project.
- (iv) Prepare project descriptions and a summary of environmental and social safeguard issues identified to support the determination of the project categorization.
- (v) Review the outputs of the social safeguard specialist, environment specialist and gender specialist. Liaise with local community and coordination between International Specialist, GOR, GOR appointed safeguard consultant (as required)

- (vi) Review national legal policies on land acquisition and involuntary resettlement to verify adequacy and consistency with ADB's *Safeguard Policy (2009)* and if gaps are found, recommend measures to bridge the gap. Analyze and confirm the following aspects (at national and local levels) that will apply to land acquisition and resettlement in the project area: (a) laws and regulations, including local practices; (b) budgetary processes (tentative agreement from concerned authorities on provision of outlays necessary for land acquisition and resettlement); and (c) relevant administrative arrangement and requirements.
- (vii) If the Project involve resettlement, prepare a resettlement plan (RP) with full stakeholder participation including participation by relevant government agency. RP should be implementable in the Indian context and meet ADB policy requirements.
- (viii) Determine the replacement costs of all categories of losses; and prepare an indicative budget for land acquisition and resettlement costs with specific sourcing and approval process.
- (ix) Assess the need for an Indigenous Peoples Development Plan (IPDP); and carry out any further indigenous people-targeted surveys as necessary.
- (x) Prepare a socioeconomic analysis, including a poverty profile and characteristics and determinants of primary project beneficiaries in the target areas of the proposed investment components based on a review of existing studies, data, and development plans. The analysis will include a review of poverty by gender and ethnic minority and propose specific actions to benefit vulnerable indigenous peoples and minorities (with appropriate inputs from the gender specialist)
- (xi) Analyze access to electricity, affordability, consumption levels, and consumer satisfaction across socioeconomic groups in target project areas, assess the determinants and elasticity of the demand for power by different socioeconomic groups, categorize areas where electrification would have the largest growth and poverty reduction impacts given the underlying potential of those areas; and assess the implications on employment generation for poor.
- (xii) Define groups that would benefit from the proposed investment components, prepare an estimate of the distribution of the project's financial and economic benefits, and summarize the likely net benefits for each group in accordance with ADB's Handbook for Integrating Poverty Impact in Economic Analysis for Projects. Given the available dataset, assess the direct, indirect, and distributional impacts of the project under different growth scenarios with and without the project, summarize the distributional impacts in a matrix, calculate the poverty impact ratio, and carry out appropriate risk and sensitivity analyses with respect to the poverty impact ratio.
- (xiii) Review land acquisition and relocation plans for project if it involves resettlement, and assess conformity with ADB *Safeguard Policy (2009)*, including (a) time-bound arrangements, public consultation, public disclosure, relocation, compensation for affected inhabitants, and (b) costs related to relocation, compensation for land acquisition, and right-of-way.

- (xiv) Incorporate all mitigation measures into the cost estimates of the proposed components.
- (xv) Prepare the TOR for the NGO/consultant who will be in charge of the implementation of the RPs and IPDP.

C. Output/Reporting Requirements:

3. Reporting requirements. Finalized reports will be submitted in accordance with milestones to be confirmed at TA commencement.

