ADB

Report and Recommendation of the President to the Board of Directors

Project Number: 45224
September 2013

Proposed Multitranche Financing Facility and Administration of Loans and Technical Assistance Grant
India: Rajasthan Renewable Energy Transmission Investment Program

Asian Development Bank

CURRENCY EQUIVALENTS
(as of 26 July 2013)

Currency unit	–	Indian rupee/s (Re/Rs)
Re1.00	=	$0.0169
$1.00	=	Rs58.96

ABBREVIATIONS

ADB	–	Asian Development Bank
CTF	–	Clean Technology Fund
EMP	–	environment management plan
JNNSM	–	Jawaharlal Nehru National Solar Mission
kV	–	kilovolt
MFF		multitranche financing facility
MW	–	megawatt
OCR		ordinary capital resources
RREC	–	Rajasthan Renewable Energy Corporation
RRVPNL	–	Rajasthan Rajya Vidyut Prasaran Nigam Limited
TA	–	technical assistance

NOTES

(i) The fiscal year (FY) of the Government of India and its agencies begins on 1 April and ends on 31 March. “FY” before a calendar year denotes the year in which the fiscal year starts, e.g., FY2014 begins on 1 April 2013 and ends on 31 March 2014.

(ii) In this report, "$" refers to US dollars.

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INVESTMENT PROGRAM AT A GLANCE

1. Project Name: MFF - Rajasthan Renewable Energy Transmission Program **2. Project Number:** 45224-002 (Facility Concept)

3. Country: India **4. Department/Division:** South Asia Department/Energy Division

5. Sector Classification:

Sectors	Primary	Subsectors
Energy	√	Electricity transmission and distribution
		Renewable energy

6. Thematic Classification:

Themes	Primary	Subthemes
Economic growth		Widening access to markets and economic opportunities
Environmental sustainability		Natural resources conservation
Private sector development	√	Public sector goods and services essential for private sector development

6a. Climate Change Impact

Adaptation	Low
Mitigation	High

6b. Gender Mainstreaming

Gender equity theme (GEN)	
Effective gender mainstreaming (EGM)	√ (Tranche 1)
Some gender benefits (SGB)	
No gender elements (NGE)	

7. Targeting Classification:

General Intervention	Targeted Intervention		
	Geographic dimensions of inclusive growth	Millennium development goals	Income poverty at household level
√			

8. Location Impact:

National	High
Rural	Low
Urban	Low

9. Project Risk Categorization: Complex

10. Safeguards Categorization:

Environment	B(Tranche1)
Involuntary resettlement	B(Tranche 1)
Indigenous peoples	C(Tranche 1)

11. ADB Financing:

Sovereign/Nonsovereign	Modality	Source	Amount ($ Million)
Sovereign	MFF-Facility (Loan)	Ordinary capital resources	300.0
Total			300.0

12. Cofinancing:

Financier	Category	Amount ($ Million)	Administration Type
ADB Clean Technology Fund	Official-Loan	198.0	Full
ADB Clean Technology Fund	Official-Grant	2.0	Full

13. Counterpart Financing:

Source	Amount ($ Million)
Government	300.0
Total	300.0

14. Aid Effectiveness:

Parallel project implementation unit	No
Program-based approach	Yes

I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on a proposed (i) multitranche financing facility (MFF) to India for the Rajasthan Renewable Energy Transmission Investment Program,[1] (ii) administration of loans to be provided from the ADB Clean Technology Fund (CTF) to India for the Rajasthan Renewable Energy Transmission Investment Program, and (iii) administration of a technical assistance (TA) grant to be provided from the ADB CTF for Rajasthan Renewable Energy Capacity Development and Implementation Support.[2]

2. At the end of 2011, the state of Rajasthan in India had installed renewable energy capacity of about 1,767 megawatts (MW) of wind generation and 45 MW of solar generation, all of which was transmitted using the existing transmission grid. The state's renewable energy investment plan aims for a total of about 8,000 MW of solar and wind generation capacity by 2018—largely private sector.[3] These include private solar and wind power projects planned primarily for the renewable energy resource-rich districts of western Rajasthan in Jodhpur, Bikaner, Barmer, and Jaisalmer. One such project is a solar power generation park being developed in Bhadla by the Rajasthan Renewable Energy Corporation, the state nodal agency for renewable energy. The proposed investment program will support the development of facilities to transmit renewable energy from western Rajasthan to the state and national grids.[4]

II. THE INVESTMENT PROGRAM

A. Rationale

3. **Background.** India has an annual electricity deficit of 8%, and nearly 350 million of its people have no access to electricity. The country is increasingly dependent on fossil fuel imports of coal and gas to generate electricity.[5] In its Integrated Energy Policy 2006,[6] the government estimated that India needed to alter its energy source mix and increase electricity generation fivefold by 2032 to meet projected demand. Due to its tropical location, some regions in India benefit from solar irradiation ranging from 4–7 kilowatt-hours per square meter of area. The solar irradiation available in the western regions, particularly in the desert regions of Rajasthan, is at the higher end of this spectrum. India also has significant wind potential in its western region. These advantages have led to India's decision to invest in renewable energy particularly in the state of Rajasthan.

4. **Policy framework and institutional arrangements.** The federal and state governments have sound policy frameworks and strategies for developing renewable energy, which the Integrated Energy Policy sees as a way to meet India's two goals of improving energy security and expanding the use of clean energy to meet fast-rising electricity demand. Solar energy development is an important part of the government's 2008 National Action Plan for Climate Change, and the government launched the Jawaharlal Nehru National Solar Mission (JNNSM) in 2010 to create an enabling framework to deploy 20,000 MW of solar power generation

[1] The design and monitoring framework is in Appendix 1.
[2] Financed by the Clean Technology Fund. The CTF is a $5.2 billion fund providing middle-income countries with resources to scale up demonstration, deployment and transfer of low-carbon clean technologies. India's CTF investment plan was endorsed in November 2011 by the CTF trust fund committee. CTF financing approvals for the investment program were received on 29 July 2013.
[3] This capacity is expected to be developed by the private sector to supply to utilities within and outside Rajasthan.
[4] The Asian Development Bank (ADB) provided project preparatory technical assistance. ADB. 2011. *Technical Assistance to India for Preparing the Rajasthan Renewable Energy Program.* Manila.
[5] The country currently imports 15%–20% of the coal used to generate its electricity.
[6] Government of India. Planning Commission. 2006. *Integrated Energy Policy*. New Delhi.

capacity across India by 2022. The government of Rajasthan has followed suit with its own framework through adoption of a solar policy in 2011 and a wind policy in 2012. These policies emphasize private and public sector investments, including partnerships, to shorten the development timeline, reduce development costs, facilitate replication and address scale up issues encountered with a stand-alone project approach. The Rajasthan Electricity Regulatory Commission has set renewable energy procurement obligations for the distribution utilities in the state and is regulating the workings of the electricity transmission and distribution companies.[7]

5. **Road map.** India's Ministry of New and Renewable Energy aims to add nearly 30,000 MW of wind power and 10,000 MW of solar power capacity over 2012–2018 in renewable energy rich states including Rajasthan. Nearly 1,000 MW of solar power capacity has been awarded under phase 1 of the JNNSM, and this is expected to significantly rise under phase 2 of the JNNSM that will be implemented starting 2013.[8] For Rajasthan, the total installed renewable energy capacity of wind and solar is expected to reach 8000 MW by 2018. In Rajasthan, the state's renewable energy investment plan includes establishment of renewable energy parks, solar and wind generation projects, transmission and smart grid facilities, associated infrastructure, and community power schemes. The renewable energy park model conceives replicable private sector projects being set up at a single location to generate and sell renewable energy. Rajasthan's use of the park model is expected to accelerate investment in renewable energy generation because the government will provide the infrastructure including transmission facilities for electricity for plant construction, roads, site development, and security. It will also facilitate permits and allocate land. Development of privately owned generation projects would be financed by financial institutions such as the Indian Renewable Energy Development Agency. The park model marks a departure from traditional approaches to developing renewable energy projects and achieves greater economies of scale.

6. The state government has mandated Rajasthan Rajya Vidyut Prasaran Nigam Limited (RRVPNL), the public sector electrical transmission licensee in Rajasthan, to transmit the power produced from wind and solar renewable energy projects in the state. In addition to private solar photovoltaic projects, the solar park in Bhadla will also host concentrated solar thermal projects. The state government's overall investment plan for renewable energy development amounts to more than $11 billion during 2012–2018. About $9.5 billion of this amount would be for renewable energy power generation mainly from the private sector, while more than $1.6 billion would be invested in transmission and financed from various sources, including ADB's proposed investment program.[9]

7. The policy framework, road map, and investment program for renewable energy in the country and the state of Rajasthan are fully consistent with ADB's strategy for the energy sector and ADB's draft country partnership strategy for India for 2013–2017, which supports renewable energy development, expanded transmission systems, and institutional strengthening.

8. **Multitranche financing facility.** In May 2010, ADB announced the Asia Solar Energy Initiative to catalyze 3,000 MW in solar energy projects through innovative public–private partnerships. ADB's operations departments have been active through public and private sector support in this strategic space for some time. ADB's private sector operations have financed

[7] The utilities in Rajasthan are required to procure 5.7% of their overall power needs from wind power projects and 1.0% from solar power projects during 2013–2014.

[8] More than 800 MW of capacity awarded under phase 1 of the JNNSM is in Rajasthan and in advance stages of construction.

[9] ADB estimates based on government plans for 5,700 MW of renewable energy capacity addition by 2018 (para 5).

stand-alone solar power projects across India, including projects in Rajasthan.[10] ADB support for the public sector activities has been provided mainly through financing for transmission facilities. This included support for the transmission infrastructure for solar parks in the state of Gujarat in 2010. The pipeline of renewable energy projects is strong and growing.

9. The Government of India and Rajasthan requested support from ADB for the development of renewable energy projects in Rajasthan, including in its planned solar parks, as well as financing through an MFF to set up transmission and associated infrastructure to manage integration of renewable energy. The preconditions for the use of the MFF are all in place—a road map and strategy, a policy framework, investment and financing plans, and reliable safeguard arrangements. The MFF is the modality most suited to a long-term partnership in these activities, given the phased nature of investments in electricity generation and the need for flexibility in project design and implementation. It is also possibly the best way to provide continuity when trying to combine investments in physical and nonphysical aspects of renewable energy development. An MFF allows the Rajasthan government and ADB to spend more time on implementation work.

B. Impact and Outcome

10. The impact will be the accelerated development of renewable energy sources in Rajasthan and India. The outcome will be the achievement of a cleaner electricity mix and a more efficient and effective generation and transmission system in Rajasthan.

C. Outputs

11. Physical outputs will include the construction of the bulk power transmission system in western Rajasthan. The bulk power transmission system include the construction of three grid substations (400 kilovolt [kV]) and nine grid substations (220 kV) and associated facilities; augmentation of four 400 kV grid substations and three 132 kV substations; and the construction of about 1852 kilometers of 400 kV, 220 kV, and 132 kV of transmission lines primarily in western Rajasthan. Nonphysical outputs include developing institutional capacity for renewable energy parks and transmission systems (see also para. 17).

12. Project 1 will include physical and nonphysical investments. Physical investments will be for construction of the bulk power transmission system in western Rajasthan, including: two 400 kV grid substations and associated facilities in Bhadla and Ramgarh; two 220 kV substations and associated facilities at Bap and Kanasar; augmentation of two 400 kV grid substations at Akal and Bikaner; upgrade of three substations to 132 kV in Bhadla; and construction of almost 600 kilometers of 400 kV, 220 kV, and 132 kV transmission lines in Bhadla and Ramgarh. The nonphysical outputs comprise project management and capacity building. Project 1 will finance the costs to prepare future MFF investments and supervise the first generation of capital investments.

D. Investment and Financing Plans

13. Private sector led investment under Rajasthan's renewable energy investment plan will be supported by public sector transmission network investment under the investment program.

[10] ADB. 2011. *Report and Recommendation of the President to the Board of Directors: Loan for the Dahanu Solar Power Project.* Manila.

The investment program with an estimated cost of $800 million over a 5-year period in Table 1 is large but modular and phased.

Table 1: Investment Program
($ million)

	Item	Amount
A.	**Base Cost**[a,b]	
	1. Land acquisition and right of way	4.0
	2. Equipment and materials	626.0
	3. Environment and social mitigation	17.0
	Subtotal (A)	**647.0**
B.	**Project Management and Capacity Building**[c]	**27.0**
C.	**Contingencies**[d]	**110.0**
D.	**Financing Charges During Implementation**[e]	**16.0**
	Total (A+B+C+D)	**800.0**

[a] Includes taxes, duties, freight, and insurance to be financed from ordinary capital resources and CTF.
[b] In 2013 prices.
[c] Includes overhead costs associated with project management, implementation, and monitoring. This includes about $2 million for technical assistance associated with project 1 and as described in para. 17.
[d] Physical contingencies computed at 10% for transmission lines and 3% for other equipment; Price contingencies are computed in accordance with ADB. 2005. *Financial Management and Analysis of Projects*. Manila. The impact of foreign currency fluctuation has been computed following the purchasing power parity method.
[e] Includes interest and commitment charges. Interest on the ADB ordinary capital resources (OCR) loan has been computed following the 5-year swap rate for the London interbank offered rate, a spread of 0.40%, and a maturity premium of 0.10%. A commitment charge of 0.15% is applied to the undisbursed balance of the OCR loan. For the ADB CTF loan, a management fee of 0.18% on the undrawn balance and fixed interest rate of 0.25% are applied.
Source: Asian Development Bank estimates.

14. The government requested an MFF in an amount up to $498 million loan and $2 million grant from ADB to finance the investment program. The financing plan (table 2) includes $300 million from ADB ordinary capital resources (OCR), $198 million loan and $2 million grant from the ADB CTF,[11] to be administered by ADB. The MFF will be drawn down in three tranches, subject to the submission of periodic financing requests, execution of loan and project agreements for each tranche, and fulfillment of terms and conditions and undertakings set forth in the framework financing agreement. The first tranche amounts to $150 million—$62 million from ADB's OCR and $88 million from the ADB CTF. Financing from ADB's OCR will have a 25-year term, including a grace period of 5 years, a straight-line repayment method, an annual interest rate determined in accordance with ADB's London interbank offered rate (LIBOR)-based lending facility, a commitment charge of 0.15% per year, and such other terms and conditions set forth in the draft loan and project agreements. Based on these loan terms and the repayment method, the average loan maturity is 15.25 years, and the maturity premium payable to ADB is 0.10% per annum. The ADB CTF loan financing comes with a 40-year term, including a grace period of 10 years, an annual interest rate of 0.25%, a management fee of 0.18% per year, and such other terms and conditions set forth in the draft loan and project agreements. The remaining financing will be mobilized by RRVPNL, including debt from lenders and equity support from the government of Rajasthan. Tranche 2 of about $220 (table 2) million is expected in 2014 and Tranche 3 is expected in 2015. Details of the technical assistance grant of $2 million from the ADB CTF to Rajasthan are outlined in para 17.

[11] Financed by the Clean Technology Fund.

Table 2: Financing Plan
($ million)

Source	Project 1	Project 2	Project 3	Projects 1 to 3	Share of Total (%)
Asian Development Bank					
Ordinary capital resources	62.0	150.0	88.0	300.0	37.5
ADB Clean Technology Fund[a]	90.0[b]	70.0	40.0	200.0	25.0
Government of Rajasthan	127.0	104.0	69.0	300.0	37.5
Total	**279.0**	**324.0**	**197.0**	**800.0**	**100.0**

[a] Financed by the Clean Technology Fund.
[b] This includes a $2 million technical assistance grant from the ADB Clean Technology Fund associated with project 1 and as described in paragraph 17.
Source: ADB estimates.

E. Implementation Arrangements

15. RRVPNL, the state transmission licensee in Rajasthan, and the Energy Department of Rajasthan will be the executing agencies for the investment program. Rajasthan Renewable Energy Corporation (RREC), the state government nodal agency responsible for developing renewable energy will coordinate with the state government to provide the necessary land for power project developers. RRVPNL has the capacity to execute and monitor the implementation of the investment program-financed transmission projects. This capacity is underpinned by the establishment of a dedicated project management unit at RRVPNL since 2012 for design, supervision, and procurement. Project implementation will be handled by RRVPNL's regional office in Jodhpur, Rajasthan. Private sector investment proposals and the related bidding process will be handled by a committee of secretaries from the government, supported by RREC. Project management, preparatory work for future subprojects, and implementation support will be financed by the Rajasthan government.

16. **Procurement**. Goods, equipment, and civil works financed by ADB will be procured in accordance with ADB's Procurement Guidelines (2013, as amended from time to time). RRVPNL has undertaken advance procurement actions, including the placement of bidding documents in the market and requested that ADB authorize these actions and allow retroactive financing. RRVPNL will follow competitive bidding procedures acceptable to ADB for public sector transmission investments. Private sector renewable energy developers selling power to utilities will be selected through a competitive process and will enter into supply contracts with their clients.[12] The construction of their facilities will most likely follow turnkey contracts selected through a competitive process. RREC will coordinate with RRVPNL on the choice and sequencing of the development of transmission lines to evacuate the renewable energy produced in the region, including that from wind and solar parks. The implementation arrangements are summarized in Table 3 and described in detail in the facility administration manual.[13] Retroactive financing will be allowed for up to 20% of the individual loan amount for expenditures incurred 12 months prior to loan signing.

[12] Private sector bidding began for phase 1 of the Bhadla solar park in 2013 under the Rajasthan solar policy. Bids were received at Rs6.45 per kilowatt-hour and a power purchase agreement was signed in 2013.
[13] Facility Administration Manual (accessible from the list of linked documents in Appendix 2).

Table 3: Implementation Arrangements

Aspects	Arrangements		
Implementation period	01 June 2013– 30 June 2018 (for the MFF) 01 June 2013– 30 June 2016 (for tranche 1)		
Estimated completion date	30 June 2018 (for the MFF) and 30 June 2016 (for Tranche 1)		
Management			
(i) Oversight body	Empowered committee of secretaries, Government of Rajasthan		
(ii) Executing agencies	Energy Department of the Government of Rajasthan, and RRVPNL		
(iii) Management unit	PMU set up in RRVPNL and to coordinate with RREC. PMU includes full-time staff for design, procurement, supervision, monitoring, and reporting. Implementation handled through RRVPNL field office in Jodhpur, Rajasthan.		
Procurement (tranche 1)	International competitive bidding	8 packages	$150 million
Retroactive financing and/or advance contracting	Advanced contracting, retroactive financing approved for equipment and materials.		
Disbursement	The loan and grant proceeds will be disbursed in accordance with ADB's *Loan Disbursement Handbook* (2012, as amended from time to time) and detailed arrangements agreed between the government and ADB.		

ADB = Asian Development Bank, PMU = project management unit, RREC = Rajasthan Renewable Energy Corporation, RRVPNL = Rajasthan Rajya Vidyut Prasaran Nigam Limited.
Source: Asian Development Bank.

III. TECHNICAL ASSISTANCE

17. The TA for Rajasthan Renewable Energy Capacity Development and Implementation Support is estimated to cost $2,000,000, which will be financed on a grant basis by the ADB CTF.[14] The TA will be attached to project 1 of the MFF and will provide technical support for (i) infrastructure planning for the subsequent phases of the Bhadla solar park, (ii) community development initiatives around the solar park, (iii) institutional capacity development of RRVPNL and RREC, (iv) system studies for the renewable energy integration road map, (v) identification of enterprise resource planning tools and (vi) asset accounting.[15] Consultants will be recruited by ADB in accordance with the ADB Guidelines on the Use of Consultants (2013, as amended from time to time).

IV. DUE DILIGENCE

18. Potential projects under the investment program were first examined by RRVPNL, the Central Electricity Authority, and the Rajasthan Electricity Regulatory Commission. These assessments covered technical and commercial matters. ADB also conducted its own independent due diligence on these projects including climate risk assessments.[16]

A. Technical

19. Several technical studies on the renewable energy roll out plan and transmission evacuation requirements were prepared by RRVPNL and reviewed by the Central Electricity Authority and Ministry of New and Renewable Energy. The work focused on technology aspects, the nature and characteristics of the investment plans, and the most appropriate

[14] Financed by the Clean Technology Fund.
[15] Technical Assistance (accessible from the list of linked documents in Appendix 2). Based on the results of studies undertaken under the TA, additional support could be considered in subsequent tranches of the MFF.
[16] Climate change adaptation report (accessible from the list of linked documents in Appendix 2).

electricity evacuation arrangements and renewable energy integration proposals. ADB followed up these assessments with its own and found the technical studies acceptable. TA for the Capacity Development of Rajasthan Solar Park provided support to RREC for the studies for the establishment of the first phase of the Bhadla solar park.[17] The work undertaken indicated that the sequencing of the generation developments under the investment plan and of transmission under the investment program is technically feasible and execution arrangements are satisfactory. A road map for renewable energy integration for RRVPNL will be refined under project 1 and implemented under the investment program. Support for the development of the master plan for the second phase of the Bhadla solar park will commence starting 2013 under the TA associated with project 1.

B. Economic and Financial

20. The due diligence process included an assessment of the likely level of investor participation in renewable energy projects in Rajasthan, including in the Bhadla solar park. Bidding for 1200 MW of wind power will be carried out to meet the requirement of Rajasthan distribution utilities till 2016 under the state wind policy. Under the JNNSM, at least 3,000 MW of capacity is to be competitively bid out by 2017 and a significant slice of which is expected to be in Rajasthan.[18] Procurement for 75 MW of solar photovoltaic power at Bhadla solar park for Rajasthan distribution utilities was completed in 2013. 200 MW of solar power capacity is to be tendered out annually during 2014–2018 at the Bhadla solar park. In addition, private generating enterprises are setting up wind and solar projects to supply power purchasers outside Rajasthan through long-term contracts and renewable energy certificates. Due diligence shows that private sector generation projects are financially viable with demand from private operators with sufficient access to finance in India and elsewhere (footnote 10). The financial analysis for the transmission infrastructure (a prerequisite and integral part of the overall investment plan) was conducted using standard ADB approaches. It was found to be viable, with the financial internal rate of return for project 1 at 2.1% and a weighted average cost of capital of 1.1%.[19]

21. The economic evaluation of the investment program and project 1 compares benefits and costs under with- and without-investment scenarios.[20] The evaluation found project 1 to be economically viable, with an economic internal rate of return of about 16.4%.

C. Governance

22. ADB conducted an assessment of RRVPNL's governance, including its financial management and procurement capacities. The financial management assessment concluded that RRVPNL has the ability to fulfill ADB's fiduciary requirements. RRVPNL has a procurement unit of more than 40 qualified staff. This team has the capacity and experience to handle international competitive bidding operations and is familiar with ADB rules and procedures. ADB provided support to RRVPNL in the preparation of bidding documents for the first set of investments, and RRVPNL staff have participated in ADB procurement seminars. RRVPNL has set up a project management unit to report on the investment program.

23. An empowered committee comprising senior secretaries of the state government has been set up to finalize clearances of solar and wind power projects. RREC will support this

[17] ADB. 2011. *Technical Assistance for the Rajasthan Solar Park Capacity Development Project .* Manila.
[18] Under the JNNSM, 3,000 MW–9,000 MW of solar power is expected to be commissioned during 2013–2017.
[19] Financial Analysis: Project 1 (accessible from the list of linked documents in Appendix 2).
[20] Economic Analysis: Project 1 (accessible from the list of linked documents in Appendix 2).

committee and report on the performance of private sector-led investments. RREC will oversee the private generation program and report on it to government authorities and through the project management unit to ADB.

24. Consistent with its commitment to good governance, accountability, and transparency, ADB reserves the right to examine and review directly any alleged corrupt, fraudulent, collusive, or coercive practices relating to the MFF and the projects. To support these efforts, relevant provisions of ADB's Anticorruption Policy (1998, as amended from time to time) was explained to and discussed with the government, RRVPNL and other agencies. The specific policy requirements and supplementary measures are described in the facility administration manual.[21]

D. Poverty and Social

25. Industry and services constitute more than 60% of Rajasthan's gross domestic product. The state registered high growth rates of 8.5% during 2007–2012. The power sector plays a key role in contributing to economic growth, development, and social well-being. The growth of renewable energy in Rajasthan will directly and indirectly contribute to poverty reduction by creating temporary and permanent jobs and enhancing energy security.

26. A socioeconomic and poverty assessment was carried out along the transmission routes and in the area of the substations identified for support under project 1, as well as in the vicinity of phase 1 of the Bhadla solar park. These areas lack basic infrastructure and other services, including access to good quality water supply, medical facilities, and electricity. Economic activity and growth is weaker than it should be due to a lack of income-generating opportunities, the low skill levels of the local population, and limited access to markets. The investment program will create economic opportunities. A gender action plan has been prepared for project 1. The plan includes interventions to support sustainable, socially inclusive development in the areas adjacent to renewable energy parks. As part of its responsibilities, RREC has set up a community development fund by levying an upfront nominal fee on renewable energy projects that will support social development projects. The TA associated with project 1 will support the executing agencies in making the community development fund operational and support livelihood opportunities. The loan agreement includes a commitment from the executing agencies to implement the gender action plan. The TA will enhance the impact of the renewable energy investment plan through effective community development and gender mainstreaming.

E. Safeguards

27. An environment assessment and review framework, a resettlement framework, and an indigenous peoples planning framework were prepared, outlining the environment and social safeguard principles and requirements.[22] RRVPNL will undertake environmental and social safeguard due diligence on individual investments based on the environment assessment and review framework, resettlement framework, and indigenous peoples planning framework, and submit quarterly reports on implementation of environmental management plans (EMPs), resettlement plans for projects, and if required, indigenous peoples plans.

28. Project 1 investments are classified as category B for environment. Major components proposed include supply and installation of transmission substations and transmission lines. The construction work is limited to building foundations for the transmission towers and substations.

[21] Facility Administration Manual (accessible from the list of linked documents in Appendix 2).

[22] Environment Assessment and Review Framework; Resettlement Framework; Indigenous Peoples Planning Framework (accessible from the list of linked documents in Appendix 2).

Based on the environmental assessment and surveys conducted by RRVPNL, potential adverse environmental impacts of this work are minimal and can be mitigated through implementation of the EMP. Budgetary provisions have been made to cover the environmental mitigation and monitoring requirements, and the EMP is part of the bidding documents. RRVPNL will supervise the construction contracts and EMP implementation. The initial environmental examination for Project 1 was disclosed on ADB website.

29. Project 1 is classified category B for involuntary resettlement and category C for indigenous peoples. Social surveys and consultations were undertaken in accordance with ADB's Safeguard Policy Statement (2009). Project 1 will not entail any permanent land acquisition. The proposed grid substations will be built on government land. The transmission lines will have a temporary impact at some locations through disruption of crop cultivation during construction. This will be also minimal, since the transmission routes are mostly through vacant land. Project 1 will not have any social risks or impacts of a permanent or irreversible nature. Due diligence was also undertaken for the Bhadla solar park, and the results are included in an appendix of the resettlement plan.[23] Budgetary provisions have been made to compensate affected people for these losses if and when they occur. There are no structures or buildings affected, and no physical displacement is foreseen. The loan agreements include a standard assurance related to core labor standards for contractors (including equal pay for equal types of work), and an awareness program on HIV/AIDS, and sexually transmitted diseases. Additionally, the social impact assessment provided baseline information for the gender action plan. The resettlement plan for Project 1 was disclosed on ADB website.

F. Risks and Mitigating Measures

30. The major risks are (i) lack of coordination in the development of renewable energy generation and transmission, (ii) potential technical problems integrating renewable energy with the transmission network, and (iii) poor financial performance by RRVPNL. Coordination issues will be addressed by a state government committee while the MFF modality provides flexibility on the transmission investment roll out in subsequent phases. The integration requirements are addressed under the renewable energy integration road map under the investment program. Assurances regarding the financial sustainability of RRVPNL have been provided. Risks and mitigating measures are described in detail in the risk assessment and risk management plan.[24]

Table 4: Summary of Risks and Mitigating Measures

Risks	Mitigating Measures
Possible lack of coordination between the development of renewable energy generation plants and development of the transmission system	Empowered committee of government secretaries to coordinate the planning and development of generation and transmission systems. Central government agencies, including CEA, and the state regulator, to periodically review plans. Periodic coordination between state and central transmission agencies. MFF modality will ensure transmission systems are developed in response to the requirements of generation capacity developers. 220 kV and 132 kV transmission systems will be developed early at identified locations to evacuate output from initial projects.
Low utilization of the infrastructure in the Bhadla solar park	PPA signed for 75 MW of solar power in the solar park under the GOR policy in 2013. Implementation of plans for phases 1 and 2 of the solar park to attract investors. The availability of water earmarked for the solar projects from the nearby canal, availability of level land, high levels of solar radiation, proximity to the transmission evacuation station provide locational advantages to developers.
Potential difficulties in managing possible grid	RRVPNL renewable energy integration road map to be implemented with ADB TA support on planning studies, component design, and training.

[23] Resettlement Plan (accessible from the list of linked documents in Appendix 2).
[24] Risk Assessment and Risk Management Plan (accessible from the list of linked documents in Appendix 2).

Risks	Mitigating Measures
instability due to large integration of new renewable generation	Investment for renewable energy integration proposed under future tranches Changes proposed in regulatory codes and commercial arrangements.
Weak financial position of RRVPNL	Financial restructuring plan of RRVPNL to be approved in 2014 to address legacy issues, pending receivables and claiming a reasonable return through tariffs. TA support to address accounting issues including rate base regulatory disallowances.

CEA = Central Electricity Authority, GOR = Government of Rajasthan, kV = kilovolt, MFF = multitranche financing facility, RRVPNL = Rajasthan Rajya Vidyut Prasaran Nigam Limited, TA = technical assistance.
Source: Asian Development Bank

V. ASSURANCES

31. The government, the state government of Rajasthan, and RRVPNL have assured ADB that implementation of the projects under the MFF shall conform to all applicable ADB policies including those concerning anticorruption measures, safeguards, gender, procurement, consulting services, and disbursement as described in detail in the facility administration manual and loan documents.

32. The government, the state government of Rajasthan, and RRVPNL have given ADB certain undertakings for the MFF, which are set forth in the framework financing agreement. Specific covenants agreed by the government, the state government of Rajasthan, and RRVPNL with respect to individual tranches under the MFF are set forth in the loan agreement and project agreement for project 1 and will be set forth in the loan agreements and project agreements for subsequent tranches.

VI. RECOMMENDATION

33. I am satisfied that the proposed multitranche financing facility would comply with the Articles of Agreement of the Asian Development Bank (ADB) and recommend that the Board approve:

(i) the provision of loans under the multitranche financing facility in an aggregate principal amount not exceeding $300,000,000 to India for the Rajasthan Renewable Energy Transmission Investment Program, from ADB's ordinary capital resources, with interest to be determined in accordance with ADB's London interbank offered rate (LIBOR)-based lending facility, and such other terms and conditions as are substantially in accordance with those set forth in the framework financing agreement presented to the Board;

(ii) the administration by ADB of loans under the multitranche financing facility in an aggregate principal amount not exceeding $198,000,000 to India for the Rajasthan Renewable Energy Transmission Investment Program to be provided from the ADB Clean Technology Fund, and such other terms and conditions as are substantially in accordance with those set forth in the framework financing agreement presented to the Board; and

(iii) the administration by ADB of technical assistance not exceeding the equivalent of $2,000,000 to the Government of India for the Rajasthan Renewable Energy Capacity Development and Implementation Support to be provided from the ADB Clean Technology Fund on a grant basis.

Takehiko Nakao
President

4 September 2013

DESIGN AND MONITORING FRAMEWORK FOR THE INVESTMENT PROGRAM

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks[a]
Impact Accelerated development of renewable energy sources in Rajasthan and India	**National** Grid-connected solar power generation capacity across India increases to at least 20,000 MW by 2022 (2012 baseline: 500 MW) Renewable energy procurement targets are met by 2022 (2012 baseline: limited compliance) **Rajasthan** Grid-connected solar power generation capacity increases to 10,000 MW by 2022, and grid-connected wind power generation reaches more than 4,000 MW by 2018 (2011 baseline: About 45 MW for solar, 1,767 MW for wind) At least 5.4 million tons of carbon emissions are avoided each year due to renewable energy projects in Rajasthan by 2018[a] (2011 baseline: less than 1 million tons annually)	MNRE annual report CEA report RREC annual report RREC annual report	**Assumptions** Successful development of the bulk transmission system supports renewable energy generation development in Rajasthan and provides a replicable model for other states in India. A combination of support measures that include effective implementation of renewable purchase obligations, penalties for noncompliance, and feed-in tariffs further deepen the renewable energy certificate market and support solar and wind energy development.
Outcome Cleaner electricity mix with more efficient and effective generation and transmission system achieved	Transmission network capacity expands to transmit up to 8,000 MW of renewable power generated in Rajasthan by 2018 (2011 baseline: about 1,800 MW) Institutional capacity in RRVPNL to operate high-penetration solar and wind power generation in Rajasthan is developed by 2018 (2012 baseline: limited)[b] Private sector-led renewable energy projects are developed in solar and wind parks in Rajasthan (2011	RRVPNL annual reports RRVPNL annual reports RREC annual reports	**Assumptions** Up to 5,700 MW of grid-connected solar and wind power generation is set up in Rajasthan in a timely manner under NSM and GOR policy by 2018. Non investment program infrastructure required by the private developers completed in a timely manner. Key aspects of the agreed road map to integrate renewable energy are met. **Risk** Expected growth in

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks[a]
	baseline: none)		generation capacity does not match the increase in transmission capacity.
Outputs			**Assumptions**
1. Bulk power transmission system in Rajasthan expanded	RRVPNL constructs 3 400/220/132 kV GSS at Bhadla, Ramgarh, and Jaisalmer with associated automation and control infrastructure, and 9 220/132 kV GSSs at Bap, Kanasar, Chhatrail, Pokaran, Kolayat, Ramdev Nagar, Badisid, Aau, and Bajju by 2018	RRVPNL annual report	Counterpart funds for timely project implementation are made available by the government of India, GOR, and RRVPNL. Approval of contract awards by the relevant authorities is timely.
	RRVPNL completes augmentation of 4 400 kV GSS at Akal, Jodhpur, Barmer, Bikaner, and upgrades of PS 2,3,4 to 132 kV GSS by 2018	RRVPNL annual report	Land acquisition, right of way, environmental and social clearances, transmission line construction approvals are timely.
	RRVPNL constructs about 1440 km of 400 kV, 355 km of 220 kV, 57 km of 132 kV of transmission lines by 2018	RRVPNL annual report	**Risk** Increases in the prices of equipment and materials exceed contingency and inflation forecasts.
			Assumptions
2. Institutional capacity for renewable energy parks and transmission system developed	Timely preparation, procurement, supervision, implementation, monitoring and reporting of the program are achieved by 2015, including GIS-based asset accounting and renewable energy integration studies,	RRVPNL annual report	RREC coordinates with government departments to support timely project implementation. Techno-commercial assessment of the proposed drinking water solution successfully completed prior to implementation.
	Community development policy for renewable energy park is prepared by 2014 (including gender indicators and targets)	RREC annual report	
	Technical studies for phase 2 of Bhadla solar park are done by 2015.	RREC annual report	
	Skills training interventions for about 20 women-led, self-help groups and community-based organizations are carried out	RREC annual report	

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks[a]
	by 2015, including training in animal husbandry and livelihoods		
	About 400 women and girls are trained in health, nutrition, and hygiene by 2015, with RREC	RREC annual report	
	Pilot community models for renewable energy-based water supply benefit about 200 families by 2015, with RREC	RREC annual report	
	Training is provided for about 15 CSR champions within RREC, RSPL, RRVPNL, and other stakeholder groups in GOR (including at least 50% women) by 2015	RREC annual report	

Activities with Milestones	Inputs
Project 1 – Creation and/or augmentation of pooling substation and associated infrastructure, identified transmission lines 1.1 Procurement of major equipment: Issuance of bidding documents begins from Q2 2013 and contract awards start from Q1 2014 1.2 Construction starts by Q2 2014 1.3 Substations and transmission lines commissioned by Q2 2016 **Project 2 – Creation and/or augmentation of existing substations and development of identified transmission lines** 2.1 Procurement of major equipment: Issuance of bidding documents begins from Q2 2014 and contract awards start from Q4 2014 2.2 Construction starts by Q1 2015 2.3 Substations and transmission lines commissioned by Q1 2017 **Project 3 – Construction of remaining infrastructure** 3.1 Procurement of major equipment: Issuance of bidding documents begins from Q2 2015 and contract awards start from Q4 2015 3.2 Construction starts by Q1 2016 3.3 Infrastructure commission by Q1 2018	**Loan** **ADB OCR: $300 million** **ADB CTF: $198 million** **Government of Rajasthan (including RRVPNL): $300 million** **Technical Assistance Grant from ADB CTF: $2 million**

ADB = Asian Development Bank, CTF = Clean Technology Fund, GOR = Government of Rajasthan, GSS = grid substation, kV = kilovolt, MW = megawatt, RERC = Rajasthan Electricity Regulatory Commission, RREC = Rajasthan Renewable Energy Corporation, RRVPNL = Rajasthan Rajya Vidyut Prasaran Nigam Limited.
Sources: ADB, RRVPNL, and Government of Rajasthan.

[a] ADB estimates based on the renewable energy capacity addition plan for Rajasthan state to be published by RREC and grid emission factors to be published by Ministry of Power.

[b] To be supported through ADB. 2011. Technical Assistance for Smart Grid Development in South Asia. Manila

LIST OF LINKED DOCUMENTS

http://adb.org/Documents/RRPs/?id=45224-002-3

1. Framework Financing Agreement
2. Periodic Financing Request for Project 1
3. Sector Assessment (Summary): Rajasthan Power Sector
4. Facility Administration Manual
5. Contribution to the ADB Results Framework
6. Development Coordination
7. Financial Analysis: Project 1
8. Economic Analysis: Project 1
9. Country Economic Indicators
10. Summary Poverty Reduction and Social Strategy
11. Gender Action Plan: Project 1
12. Environmental Assessment and Review Framework
13. Initial Environmental Examination: Project 1
14. Resettlement Plan: Project 1
15. Resettlement Framework
16. Indigenous Peoples Planning Framework
17. Risk Assessment and Risk Management Plan

Supplementary Documents

18. Technical Assistance
19. Climate Change Adaptation Report