



**Government of Rajasthan
Energy Department**



ADB Sub-Regional Conference

Private Sector Partnership for Inclusive Solar Park Development in Rajasthan

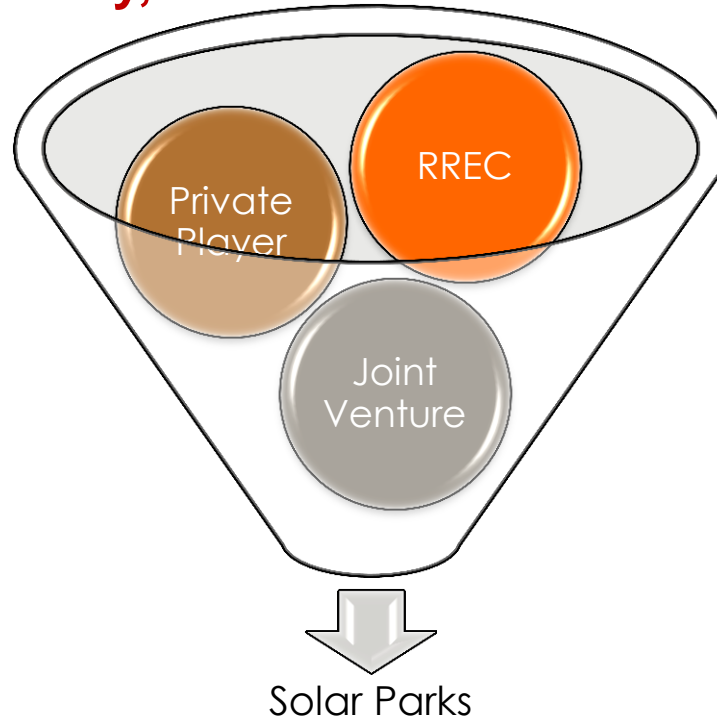
Jaipur, 12th April 2016

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Advantage Rajasthan-Solar

- ❑ Highest Solar Radiation in the Country (5.72 kWh/m²/day).
- ❑ Vast Tracts of unused barren land at highly affordable cost.
- ❑ Highest No. of sunny days (325 days in a year)
- ❑ Maximum Solar Power Potential in the Country
 - Solar Potential of Country – 748 GW.
 - Solar Potential of Rajasthan - 142GW
- ❑ Achievements
 - India- Around 5775 MW
 - Rajasthan- 1283.25 MW (~23% of overall installed capacity in India)
- ❑ Target –
 - National Solar Mission – 100 GW
 - Rajasthan – 25 GW

- ❑ **Provisions for Development of Solar Parks under Rajasthan Solar Energy Policy, 2014:**



- ❑ **Individual projects to be awarded to Project developers through competitive bidding**

- **JVCs created for Solar Parks in Rajasthan (In-principle approval of 4 Solar Parks of 3750 MW by MNRE).**

**M/s Saurya Urja
Company of
Rajasthan Limited**

- Capacity: 5000 MW
- In-principle approval: 1000 MW

**M/s Adani
Renewable Energy
Park Rajasthan
Limited**

- Capacity: 10000 MW
- In-principle approval: 500 MW + 1500 MW

**M/s Essel Saurya Urja
Company of
Rajasthan Limited**

- Capacity: 5000 MW
- In-principle approval: 750 MW

❑ **Shared Responsibilities:**

➤ **State Government-**

- ❖ Facilitation in identification of suitable Govt. land for solar parks and allotment of land as State Equity.
- ❖ Facilitation in creation of evacuation network
- ❖ Assistance/Facilitations in obtaining Statutory Clearances for the development of Parks.

➤ **JV Partner-**

- ❖ Development of Solar Park as per timeframe.
- ❖ Other Facilities to be developed by JVC – Water arrangements, approach roads and Street Lights, internal transmission system etc..)
- ❖ Not treat these projects as commercial projects for profit generation (Maximum calculated for 16% IRR).

❑ **Benefits :**

- State will have control on the implementation of the solar parks/projects being 50% partner in the JVC.
- Transparency in every aspect.
- Infrastructure cost of the solar parks/ projects can be optimized.
- Faster execution of the project.
- Monitoring of the progress of the solar parks can be done

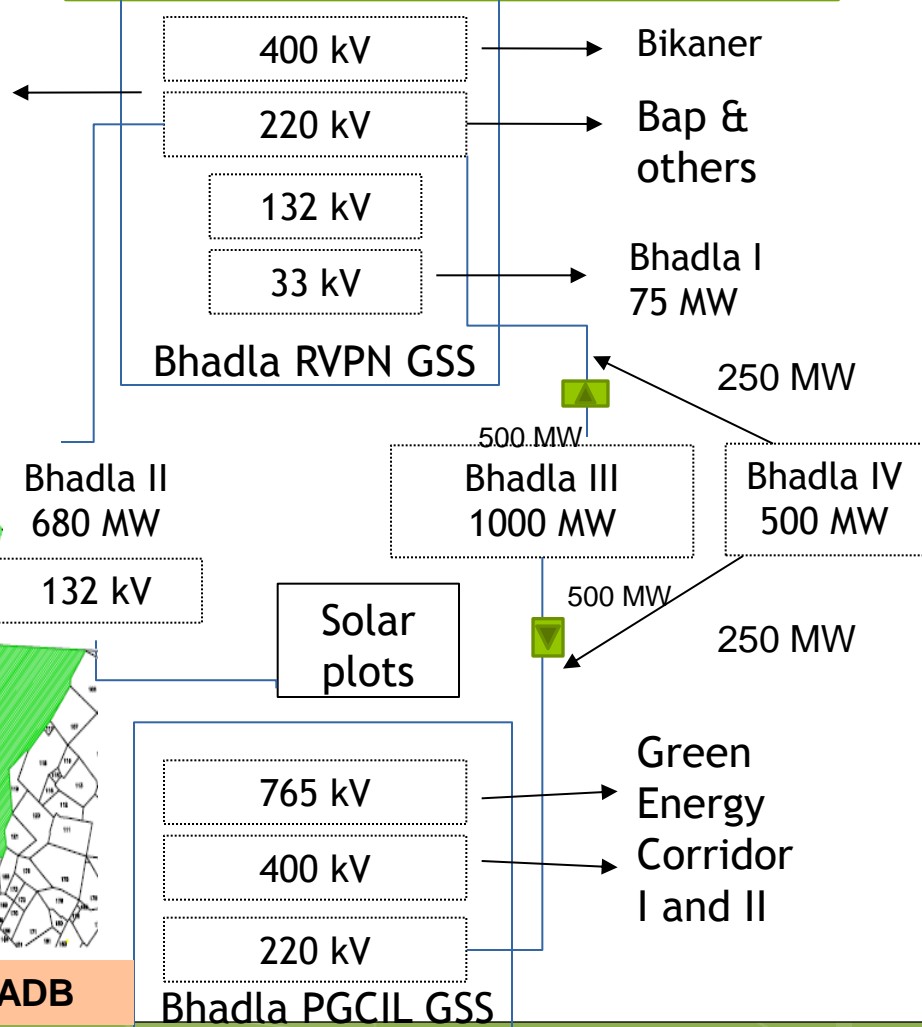
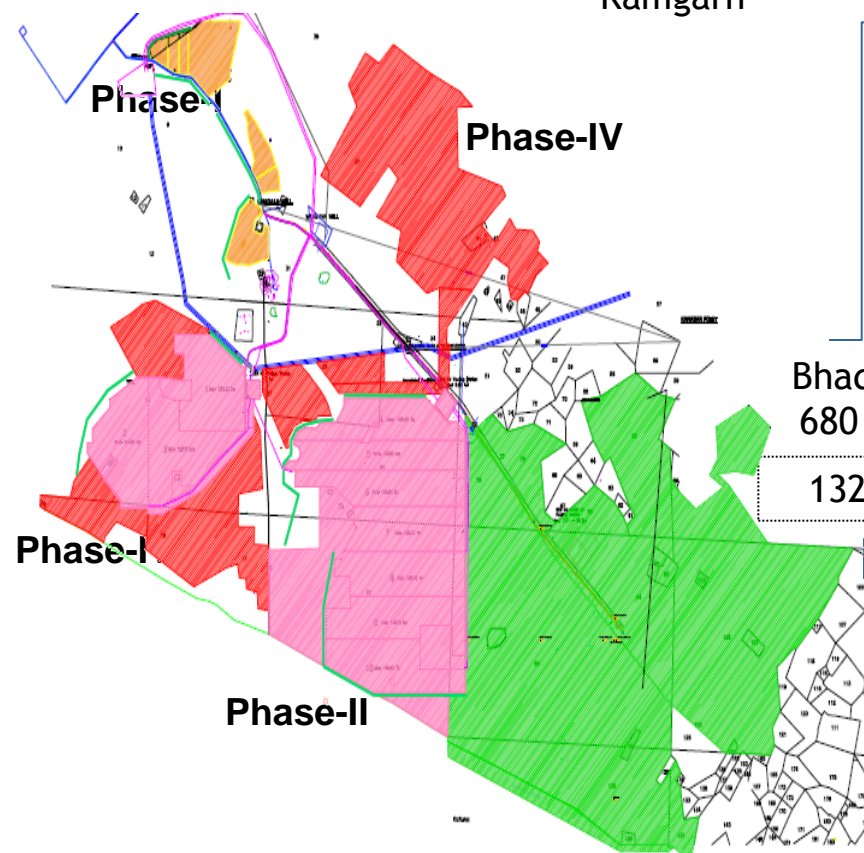
❑ **Bhadla Solar Park Design- Designed to Reduce the Cost of Project:**

- **Solar resource assessment**
 - GHI is 2010 kWh/m² per year based on NIWE(CWET) data (nearest station: Bodana)
- **Suitable Soil**
 - Soil survey, geophysical analysis, resistivity test report and topographic map available
- **Easy Land allotment**
 - Land has been leased for development of Bhadla Phase I, II and III
- **Optimal Internal power evacuation**
 - Two symmetric pooling stations of 220 kV/ 132/33 kV planned to evacuate power
 - Two double circuit overhead 220 kV lines to Bhadla RVPN GSS planned
 - Single and double circuit 132 kV overhead lines planned from individual project to pooling station
 - No shadings from transmission lines and towers
- **Adequate and sustainable water usage**
 - Pipeline from Indira Gandhi Nahar canal planned
 - Water availability capped to incentivise water savings and recycle
- **Suitable road and access facilities**
 - Two new internal 7 m wide roads (plus 1 m gravel shoulders on both sides) planned
 - Upgrade of the existing road to 10 m wide (plus 1 m gravel shoulders on both sides) planned
- **Green belt**
 - To reduce the impact of erosion, soiling and stabilisation of sand dunes

ADB has provided support in design, bid management and M&E

CASE- STUDY SOLAR PARK BHADLA-I AND II

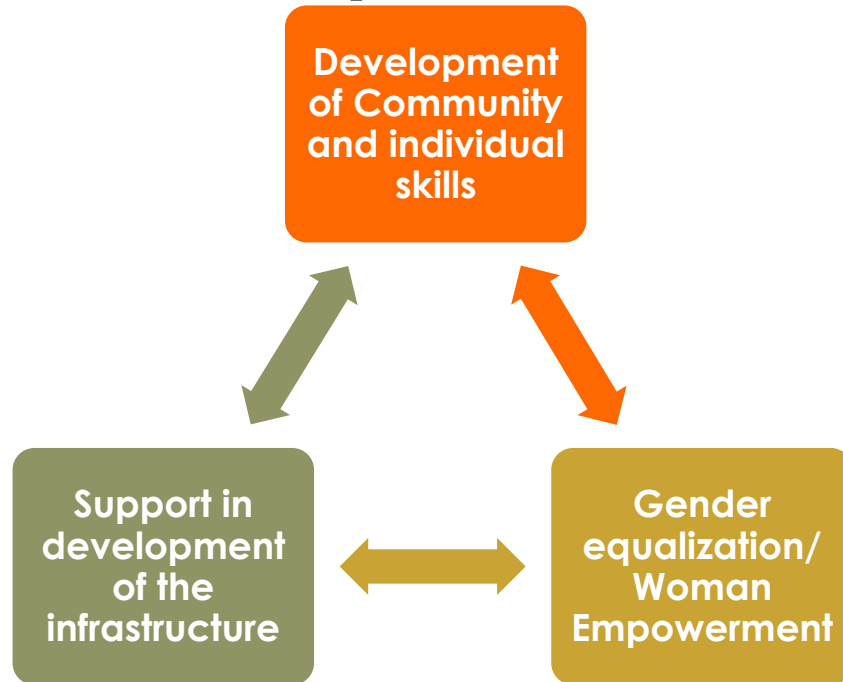
□ Solar Park Bhadla-II – Power Evacuation System



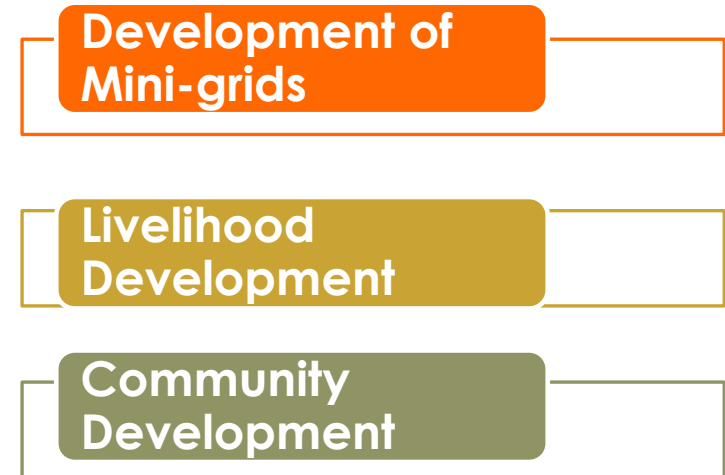
400 KV substations and lines are funded by ADB

❑ **Development of community residing nearby Bhadla Solar Park area**

➤ **Approach of RREC towards Community:**



➤ **Activities taken up for the Benefit of Community:**



Lessons/ findings from the project will work as guiding factor for other parks;

Development of Mini-grids

❑ **Activities & beneficiary villages**

- Implementation of Off-grid Lighting System
 - 16 unelectrified villages are identified by Discom
- Implementation of mini-grid System
 - 4 villages included under this scheme;
 - Water scheme is included for large village;
- Review and rehabilitation of existing 83 mini-grids (to be undertaken)

❑ Villages proposed under RREC CSR Program

S. No.	Village/ Dhani	Populati on	No. of Households	BPL HH	Load Assumed	General Load
1	Kalaron Ki Basti	1150	80	5	Light : 3 x 8 & 2 x5Wp = 34Wp for 8 Hrs; Fan: 60 Wp for 6Hrs. TV: 60 Wp for 4 Hrs.	SLS : 10x10 LED= 100 Wp for 10 Hrs. Pump: 3kW for 6 Hrs. With Bore well & storage Tank
2	Ismile Ki Dhani	200	30	20	Light : 3 x 8 & 2 x5Wp = 34 Wp for 8Hrs. Fan: 60 Wp for 6Hrs. TV:60 Wp for 4 Hrs.	SLS : 5x10 LED= 50 Wp for 10 Hrs.
3	Nathha Ram Ki Dhani	150	20	3	Light : 3 x 8 & 2 x5Wp = 34 Wp for 8Hrs. Fan : 60 Wp for 6Hrs. TV: 60 Wp for 4 Hrs.	SLS : 5x10 LED= 50 Wp for 10 Hrs.
4	Akhli	100	18	15	Light: 3 x 8 & 2 x5Wp = 34 Wp for 8Hrs. Fan: 60 Wp for 6Hrs. TV: 60 Wp for 4 Hrs.	SLS : 5x10 LED= 50 Wp for 10 Hrs.

❑ Villages proposed for off-grid implementation under State Scheme

Sr. No.	Discom	District	Village Name	No. of Household	Population
1	jdVVNL	Pali	Bhaban	219	878
2			Lakhankakhet	141	664
3		Barmer	Khejariyali	246	1,380
4			Paboosari	197	1,240
5			Nohdiyala	172	908
6		Udaipur	Ambadeh	227	1,290
7			Nal	140	838
8			Parlai	171	884
9		Pratapgarh	Rana	158	870
10	JVNL	Karauli	Shyampur	197	996
11			Lotda	179	1,015
12			Garhmandora	125	757
13		Baran	Mahodari	247	1,275
14		Alwar	Umrideori	144	655
15			Karksa	124	756
16	AVVNL	Udaipur	Umariya	130	730
				2,817	15,136

Livelihood Development

❑ **Activities undertaken for Livelihood Development**

- Conduct social survey in the project area;
- Mapping of existing livelihoods and skill-sets available with the community;
- Mapping of existing SHGs/FGs in the project affected /catchment area;
- Assessment of available alternatives/ livelihood options for sustenance;
- Assessment of skill demand at project site and in the open market;
- Development of Draft Livelihood Strategy for Different Target Groups
 - strategies to empower women and particularly well-functioning and operating village level self-help groups
 - Broad strategies for skills training, financing and entrepreneurial opportunities
- Explore possibility of partnerships with other stakeholders for design and implementation for livelihood activities;

CASE- STUDY – SOLAR PARK BHADLA-I AND II

■ Social Survey & its results

■ Objective of the Survey:



■ Results of Social Survey:

Development Needs	Percentage of HH
Water Supply	47
Hospital	40
Internal Road	35
Maternity Centre	30
Primary Health Centre	23
Electricity	22
Schools	20
Bank Branch	14
Qualified Teachers	10
Water in Canal for Irrigation	7
Post Office	6
Community Centre	6
Handpump	4
Up gradation of School Infrastructure	4
Need Temple	2
Bus Service	2
Toilet for Women	1
Separate Girls School	1

Legend: **Health: RED**, **Education: Green**

- Top five development needs of the area are: Health care, Water supply, Education, Road connectivity, Electricity;
- Schemes will be finalized under CDP Action plan and implemented under NGP support;

❑ **Activities under Livelihood Development**

- **Artisan Cluster Development:** Facilitate interaction with women artisans of Bhadla and adjoining villages to undertake an assessment of potential and willingness of women artisan to produce Ralli (hand patched quilts) on a commercial scale that can cater to domestic and international market
- **Goat Cluster Development :** Preparation and submission of proposal for enhancing livelihoods of 357 households from Nure Ki Bhurj, Bhadla, , Rola, Kanasar & Dedasari village through Goat Cluster Development;
- **Selection of NGO** for implementation of Gender Action Plan (GAP), livelihood activities and community development activities in Bhadla and adjoining villages

Community Development

❑ Inclusive and Sustainable Development:

Inclusive and Sustainable Development

Community benefits



Employment opportunities



Basic physical & social infrastructure improving living



True empowerment with a say in planning & execution of

Requirement

Framework for necessary action by relevant state agencies for solar parks development
(being developed by RREC and in JV with Govt. of Rajasthan)

Aim

Provide guidelines for formulation of development plan for communities around the solar parks & streamline process of planning, fund management, execution and monitoring and review of the community development activities

❑ Steps to Community Development

- **Review of community development requirements** based on an assessment of the area in proximity to renewable energy projects;
- **Finalization of draft community policy** with targets for empowerment of such communities including through access to infrastructure including electricity and drinking water, vocational training, livelihood;
- Review the design of terms and conditions, criteria for disbursing funds and financing;
- Support on **identifying target groups, livelihood opportunities, community** based consultations and behavioural change communication strategy;

❑ Community Action Plan: Proposed Activities

Sr. No.	Area of Working	Proposed Work	Detailed Activities
1	Health	Improvement in Healthcare services and facilities	<ol style="list-style-type: none"> 1. Providing basic medical equipment, if any 2. Medical officer and other staff 3. Medicines at free of cost
2	Health	Mobile Clinic	<ol style="list-style-type: none"> 1. Providing mobile clinic which has all the medical facilities same as clinic
3	Education	Improvement in quality of education and school infrastructure	<ol style="list-style-type: none"> 1. Improvement in school infrastructure like classroom, drinking water facilities, toilets (separate for boys and girls) 2. Arrange for Teacher
4	Water Supply	Drinking Water	<ol style="list-style-type: none"> 1. Provide support in preparation of Tube wells

❑ Community Action Plan: Proposed Activities

Sr. No.	Area of Working	Proposed Work	Detailed Activities
5	Livelihood	Goat Cluster	<ol style="list-style-type: none"> 1. Goat rearing 2. Breed Improvement 3. Proper feeding practice 4. Shelter 5. veterinary services
6	Woman Empowerment	Distribution of Sewing Machine	<ol style="list-style-type: none"> 1. To give training to woman's for sewing 2. To give sewing machine at free of cost
7	Woman Empowerment	Construction site Facilities	<ol style="list-style-type: none"> 1. Construct separate toilets for men and women at project sites 2. Introduce and implement occupational health and safety measures separately for working men and women 3. Support RRVPNL to establish a child care facility to look after children of working mothers at construction sites
8	Health	Sanitation	<ol style="list-style-type: none"> 1. Promote construction of toilets

Community Action Plan: Proposed Activities

Sr. No.	Area of Working	Proposed Work	Detailed Activities
9	Lighting	Solar Power Lanterns	<ol style="list-style-type: none"> 1. Supply solar powered lanterns to 100 households from 3 dhanis including living below poverty line and women headed households 2. Training on after sales (O&M) activities to at least 10 women at the dhani/ community level.
10	Livelihood	Training on animal husbandry	Training workshops for 50-70 women on micro enterprises development focused on animal husbandry to ensure improved rearing practices and income
11	Livelihood	Training on embroidery work and handicrafts	Training workshops for 50-70 women on embroidery work and handicrafts to support trained women to establish market linkages to facilitate the sale of finished products
12	Health	Campaign on behavior change	Behavior change communication campaign (including training) for 100 health workers, including women and girls, focused on promoting improved intra-and-inter household.

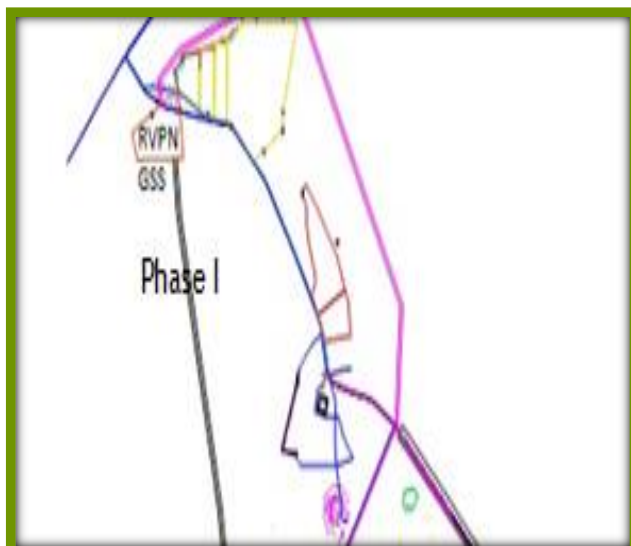
PHASE-I

No. of Projects – 7

MW – 75

Tariff – 6.45

****Recorded lowest in India During the financial Year 2012-13**



**RECORD
BREAKER**

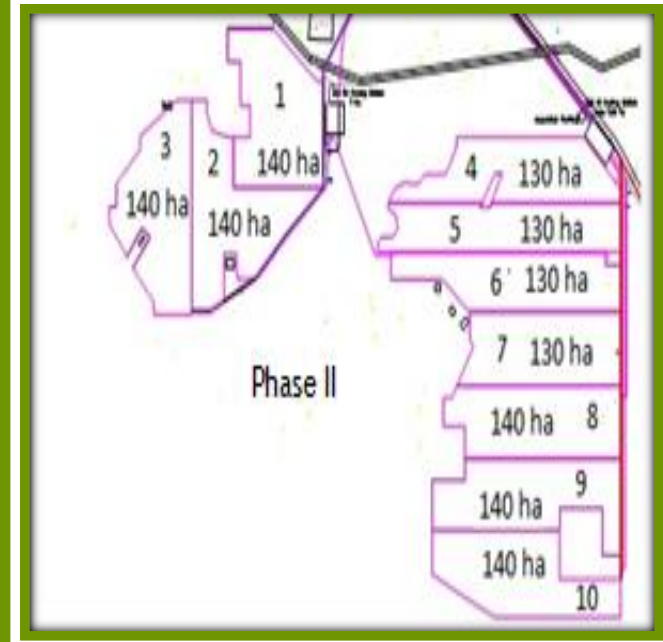
PHASE-II

No. of Projects – 10

MW - 420(Through IPP)+260(Through NTPC)

Tariff – 4.34, 4.35, 4.36

****Recorded lowest in India During the financial Year 2015-16**



THANK YOU

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