



## **Solar Energy : Investor Guide**

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### About this Guide

This is a basic guide about the opportunities for investment in Solar Energy. The idea is to disseminate appropriate Techno-Commercial information as well as touch up on the basics of policies driving investments in this sector.

This guide is for anyone wishing to know about the basics of Solar Energy including Technology, Commercials, Benefits and Government policies. A section is dedicated to various investment opportunities available in India. Due care has been taken to include general policy related information applicable to the entire Country. However some of the benefits **could be** State-specific.

Investment Opportunities and Recommendations section throws light on present opportunities available for a variety of investors. Recommendations have been made based on the investment type, size, returns, risks etc. The opportunities and recommendations are not comprehensive and the guide would be updated considering the dynamic nature of the sector. To receive the latest version of this guide same simply drop a mail to [solar@econserve.in](mailto:solar@econserve.in).

The guide could be shared with others and external references to this guide can be made but no part of this guide should be reproduced elsewhere without prior written consent of **Enerco Energy Solutions LLP**.

***Disclaimer : This guide is for basic information purpose only. Any investor wishing to invest based on the recommendations made herein would do so at their own risk. Enerco Energy Solutions LLP cannot be held responsible for the outcome of any such decisions.***

***We strongly recommend availing our consultancy services for a detailed insight wherein you could benefit from our comprehensive Report. The Report is customized as per the investor profile and requirements with ratings of an opportunity based on detailed assessment and evaluation.***



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## 1. Introduction – Why Solar Energy?

Solar Energy is the term used to denote Heat & Light Energy received from the Sun. Each energy type could be either utilized independently or together using upcoming hybrid technologies. In India primary focus so far has been on Solar Thermal mainly for water heating and on smaller scale for house hold use or for canteen use.

In the recent times Photo Voltaic Solar is evincing widespread interest primarily because of simplicity of operations i.e. conversion of light energy of the Sun into Electrical Power. It is simple to use and requires **negligible** maintenance. Being a Solar rich and power deficit Country – Solar PV presents an excellent opportunity for Power generation.

Geographically India is ideally located to utilize Solar Energy to the maximum and there are two main factors that are driving interest in this:

- Good Solar radiation (as seen in **Fig. 1** below).
- Good number of Sunny days in a year (250 to 350 depending on location)

Both the conditions are met for almost the entire Country making it one of the most sought after destinations by global Solar Power Developers.

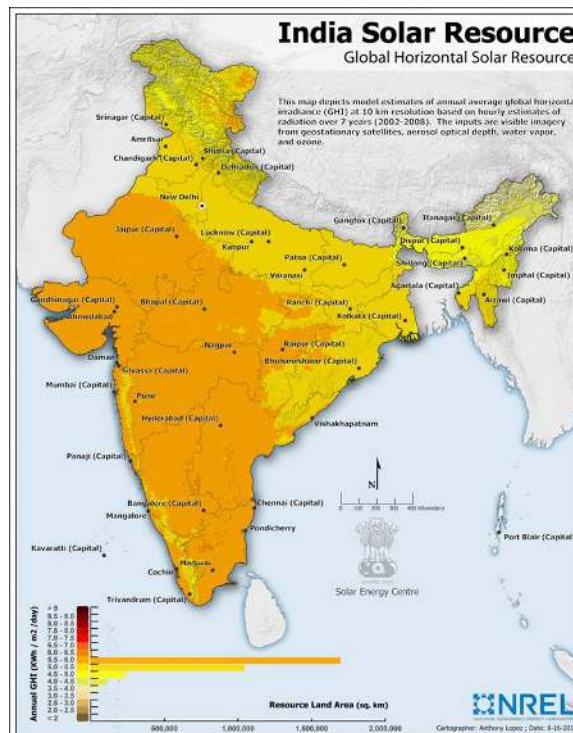


Fig. 1 GHI Solar Radiation Map of India



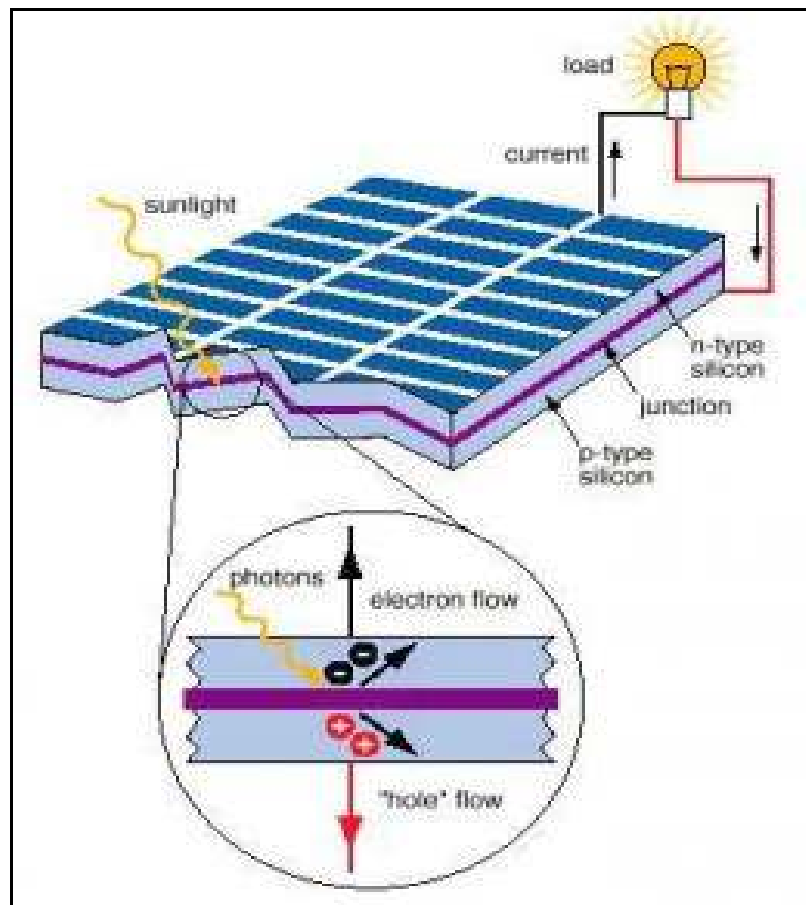
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## 2. PV Solar Technology

A typical PV Solar project consists of a PV Panel or module which is the heart of the system. This module converts the light energy of the Sun into Electrical power as depicted in the figure (**Fig. 2**) below



**Fig. 2 Photo Voltaic Effect**

It offers unprecedented benefits which cannot be offered by other technologies – including other renewable technologies – especially for Industrial Plants and Commercial facilities which incur high cost of power.



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PV Solar offers several benefits that no other fossil fuel or renewable technology can offer. It is thus no surprise that it is the most sought after renewable energy technology due to the benefits such as :

1. Fixed power generation cost throughout the life of project.
2. Nearly zero maintenance cost or OPEX.
3. Excellent life of the project which is around 25 years.
4. Highly Modular and scalable.
5. Low gestation period – multi-MW level projects could be installed within months.

Additionally the Government support for PV Solar translates into following:

1. 40% Accelerated Depreciation – can be claimed by profit making companies who are looking for tax saving.
2. 10 year tax holiday on revenues generated from PV Solar project.
3. Waivers and Discounts on Wheeling & Transmission Charges (State-specific).
4. Industry status – ensuring quicker clearances.
5. Preferential Tariff PPAs signed by various DISCOMs.
6. Net-metering support in several States.
7. 30% Capital Subsidy - based on off-taker type.
8. Priority Sector Lending (PSL) to ensure low cost fund availability.
9. Entrepreneur policy.

Etc.



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### **3. Salient Features of a PV Solar Project**

PV Solar offers several benefits which no other technology can offer. Some of the Salient features of a PV Solar Project are :

1. Project is cash-flow positive from 1<sup>st</sup> year of operations.
2. Equity (25%) Payback can be in 2 years.
3. Debt (75%) Repayment can be done over 10 year period and can be serviced from first day of operations.
4. Using *simple* amortization (without considering interest cost) the cost of power generated from Solar is **less than INR 3.0 per kWh** considering only 10 years period.
5. IRR is in the range of **14% to 20%** and above subject to conditions such as subsidy or incentive applied for, project type (captive or grid-feed), financing options etc.
6. Various Government subsidies and incentives at National as well as State level have been introduced which makes Solar a lucrative investment option.
7. 40% Accelerated Depreciation can be claimed for existing profit-making Companies.
8. For grid-feed projects a long-term Power Purchase Agreement could be signed with State Electricity Boards at Preferential Tariff for 25 years.
9. For captive projects there are certain schemes for making the project viable. Moreover captive projects will also enjoy a sustained benefit of constant **cost of production** as against grid prices which have been rising and are expected to rise further.
10. Net-metering policy announced by several States ensures revenue generation for Captive Solar projects for excess Solar power generated or Solar power generated during non-operational hours (weekends for Educational Institutes).
11. Output of the project could be improved by using enhancements such as Tracking Systems, String Optimizers etc.



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### **4. Investment Opportunities and Recommendations**

There are several investment opportunities which exist in the Solar Energy Space in India. The ideal or most-suited opportunity could be worked out based on the exact requirements of an investor as there is **NO** 'one-size-fits-all' approach.

Typically the factors considered are RoI, Tax benefits, Risks, Long-term gains, Stability etc. Based on the same there are various investment opportunities available in the Renewable Energy space especially in Solar Power.

#### **Opportunity # 1 : 100% Financing on BOO (Build-Own-Operate) basis**

- a. The investor invests in a Solar rooftop or ground project on of an Industrial or Commercial Unit.
- b. 15 to 20 years PPA is signed with the power consumer.
- c. The PPA tariff offered to the consumer is generally lesser than grid tariff and there are various possible workable models for the PPA depending on the off-taker requirement.
- d. At the end of the Tenure the assets could be transferred to the power consumer for a price or for free as per the agreement.

#### **Investing Recommended for**

- ✓ Asset-light high profit businesses such as Jewellery Trading or soft-services such as IT.
- ✓ Real-estate Companies or any high-profit making companies looking to claim 40% Accelerated Depreciation.
- ✓ Returns in the range of 16% to 20% depending on the tariff.

#### **Opportunity # 2 : Acquisition of operational Solar / Wind Projects**

- a. An existing Solar Power project with a signed PPA with a DISCOM can be acquired.
- b. These projects would have a PPA signed at attractive tariff which could be as high as INR 14.0 per kWh
- c. Performance data of the plant would also be available for analysis.

#### **Investing Recommended for**

- ✓ Strategic investors looking to enter Indian renewable energy market.
- ✓ HNIs / NRIs / Pensions Funds looking to park their money in a long-term asset.
- ✓ Returns in the range of 13% to 16% depending on various factors.





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### **Opportunity # 3 : Acquisition of signed PPAs**

- a. PPA signed by a company through it's SPV which is taken over by the investor.
- b. These are shovel-ready projects with land, necessary approvals and clearances in place.

#### **Investing Recommended for**

- ✓ Existing Renewtech Investors looking to quickly ramp up their capacity in the Renewable Energy space.
- ✓ Strategic overseas investors looking to invest in India with low cost of capital.
- ✓ Returns in the range of 14% to 16% depending on the tariff.

### **Opportunity # 4 : Captive Power Plant**

- a. Installation and investment for an onsite Captive Solar Power plant – the generator and off-taker are the same entity.
- b. Company can claim 40% Accelerated Depreciation benefits.
- c. Protects a company from rising energy costs while improving their green quotient.

#### **Investing Recommended for**

- ✓ Industrial plants or Commercial facilities looking to claim 40% AD benefits.
- ✓ Energy-intensive Industrial plants looking to reduce their cost of production as well as to protect itself against rising power cost.
- ✓ Educational institutes looking to claim 30% capital subsidy and net-metering benefits for non-working days.

### **Opportunity # 5 : Solar Park Development**

- a. Development of an offsite Solar Park which consists of various MW level projects with common infrastructure and facilities.
- b. Power could be sold to a Govt. DISCOM or to an Industrial plant or Commercial facility.
- c. Get other investors or Industrial plants to own their assets within the park.

#### **Investing Recommended for**

- ✓ Overseas or Domestic Investors looking for strategic investment and long-term power play in the Indian Solar space.
- ✓ Existing Companies who wish to diversify into Solar Power.
- ✓ Land owners who wish to put their land to better use while the land appreciates in the long-term.
- ✓ Returns in the range of 14% to 18%.



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### **Opportunity # 6 : Solar Park Investment**

- a. Installation and investment in an offsite Solar Power plant in an existing Solar Park.
- b. Cost of installation is lesser as compared to a stand-alone project due to shared infrastructure and pre-approved clearances.
- c. Power is sold to a Govt. DISCOM or to an Industrial plant or a Commercial facility.

### **Investing Recommended for**

- ✓ Investors looking to invest in MW or multi-MW level Solar power projects with all clearances in place.
- ✓ Energy-intensive Industrial plants looking to protect itself against rising power cost., but do not have the necessary space within their plant.
- ✓ HNIs / NRIs looking to invest in Solar Power projects in India.
- ✓ Returns in the range of 16% to 22%.

There are other possibilities which could be explored depending on the specific requirements of an investor / investor group.

### **About Enerco Energy Solutions LLP**

We specialize in the following :

1. Identifying the right opportunity as per investor requirements.
2. Techno-Commercial consulting and financing of Captive Solar Projects for Industrial plants and Commercial Facilities.
3. Solar / Wind operational assets or PPAs – assessment, evaluation, rating and trading.
4. Signing of pvt PPAs for Industrial plants and Commercial facilities.
5. Improving output of existing Solar Power Projects.
6. Development of Solar Parks.
7. Detailed Assessment of an investment opportunity for Risks vs Rewards in Renewable Energy space.
8. Land procurement and Govt. liaison for Solar Project Development.
9. Strategic consultancy for Business Diversification in Solar Energy.
10. Energy Audit and Energy Saving Projects.
11. Techno-Commercial Consulting and Advisory services for Solar Module manufacturing.
12. Power Trading – Arranging for Solar Power generator and off-taker.

If you are looking at any of the above do get in touch with us – TODAY !

To see some of our present offerings please visit – [www.econserve.in](http://www.econserve.in)

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