Innovative Project Financing Mechanism for Solar Power Plants with Public Participation
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Jawaharlal Nehru National Solar Mission (JNNSM) was launched in January 2010 and target for solar power was put at 20000 MW by 2022. This was uphill task at that time as the cost of solar PV system was Rs 220 per Wp. By 2012 the prices crashed to Rs 50 per MW & same daunting task started looking a modest one.

Prof Dr Ajay Girdharilal Chandak
The speed at which the projects are coming will easily surpass the target of 20000 MW by 2022, however considering the national scenario this is grossly inadequate. Even with 20000 MW installation in 2022 the power generated will contribute to less than 3% of the total power requirement of that time. Hence the target bar needs to be raised at least 3 to 6 times the current target. Innovative financing mechanism proposed herewith has potential to raise finance for thousands of MW of solar power plants in very short span.

**Problem Statement**

Favorable factors for solar power projects are that the cost of PV technology is almost bottomed out. Projects provide day-power which is expensive. However cost of power is major constraints for the investment. With Rs 7 to 8 crores per MW investment in the project even a small sized project of 10 MW demands 70-80 crores of rupees. Corporate investment decisions are based on ‘Returns on Investments’. In case of Solar projects major components of annual costs are interest on capital (@ 14%), physical depreciation (@ 6%), and other costs like O & M, insurance etc. (@ 5%). Hence no corporate can invest in the project unless and until it can fetch ROI of around 30% in first few years. With this return on investment solar projects are not viable when compared to cost of coal based power. Even with some incentives like RPO (Renewable Power Obligation) and also mechanisms like VGF (Viability Gap Funding) still the investments in the projects is not attracting the corporate.

**Roof-top installations with battery storage**

These are available for solar, small wind generator or solar-wind hybrid. Cost is high @ Rs 12-18 crores per MW and with batteries coming in picture as high running cost, financially not viable. Environmental impact is also doubtful.

**Roof-top or decentralized systems; grid tied**

These are available primarily for solar option. In some states regulations need to change. However high cost of capital in the range of Rs 12-15 crores per MW. Lower power generation (approx. 40% less than MW scale centralized grid tied power plant) and pumping power in the grid at low voltage are the issues which makes the projects unviable.

Grid tied MW scale solar and wind projects are the only options in current scenario but still need some kind of financial assistance to make it viable. There is no role for common man, small and medium scale industries, commercial organisations etc. in participating existing schemes of projects and project financing.

**Innovative Financing Mechanism, 'Solar Power Projects with Public Participation’**

Innovator proposes a business model, wherein a corporate company, government agency (SECI, DISCOMs, MIDC, PSUs, Local bodies etc.), industry associations etc. can initiate a company. For discussion purpose this company is referred as People's Solar Power Company. The proposed project financing innovation raises capital from residential users, small and medium scale industries, shops and other commercial organisations etc., who are also the end users of the power. Capital of the company can be raised by way of some instrument, like bonds. The innovation is that in return every investor gets his slice of power for the life of the project. This is most innovative feature of the business model.

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take investment guarantee and the projects will be with the government as security.

- Once the project starts generating power then some part of the power is sold to pay for transmission and distribution companies for their services and some part of the power is given to compensate for T & D losses.
- “People’s Solar Power Company” will sell some part of the power for “O & M and insurance” and for its operations and profit.
- Balance of available power is distributed to the investors through the “Distribution Company” which maintains the account.
- There can be many small mechanisms introduced to take care of operational issues. These are the power per investor can be banked if not consumed in the same month. Bonds can be tradable commodity in the market. Bonds can be transferable to different location within the state, bonds can be sellable. In case of surplus power available with any bondholder same can be sold etc.
- There will be additional revenues by selling RECs and CERs. Part of these revenues will be used to pay the costs of transmission, distribution, insurance etc. and balance of these revenues will be distributed between the “People’s Solar Power Company” and “Investors” in predefined proportion.
- Governments can make the investments more attractive by awarding the status of “Infrastructure bonds” or extending provisions of VGF.

Who Gets What?

Returns to different stakeholders will show that the project can be a big success. With sample calculations for 50 MW solar power plant with assumptions as mentioned about following scenario emerges about the returns to different stakeholders.

The Investor

Every investor who has effective investment of Rs 1 lakh will get:
- Approx. 1630 kWh per year for next minimum 20 years.
- Cash bonus of approx. Rs 6900 per year.

People’s Solar Power Company

- Company will get: 8000 MWh of power per year for next 20 years.
- Company is expected to get Rs 8 crores per year by way of its share in sell of RECs and CERs.

Innovator

Gets royalty for his business innovation.

The Government

The Governments will get addition of thousands of MW of solar power plants in the grid, without investment of a single rupee. No subsidy required. This power is day power where we have deficit.

Transmission and Distribution Companies

These companies will get income for their usage of network. Additional power will be great help for power starved companies. Most of the power pumped in the grid will be day-power which is expensive and usage of power by bond holders will be throughout 24 hours which is beneficial to distribution companies.

Role of different agencies: Following roles are envisaged by different agencies in the proposed project.

State Government/ERCs

- Permissions for the project.
- Take investment guarantee for the investors

The business model will freeze the cost of power for 20 years and is insulated for any price rise in the cost of power. With power cost of Rs 7 per kWh today and Rs 24.60 per kWh in 10th year & Rs 99 per kWh in 20th year, the return on investment works out to be: 18% in first year progressively increasing to 38% in 10th year and further increasing to 114% in 20th year.

People’s Solar Power Company

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Innovator

- Gets royalty for his business innovation.
and in return the projects will be leased with
govt. as security.
• Implement RPO mechanism strictly.
• Frame some user friendly policies for
purchase of green bonds by new industries,
new luxury houses, corporations etc.

Distribution Company: Accept the third
party sell and distribution mechanism on retail
and operate the business model.

“People’s Solar Power Company”: After
projects are commissioned, liasoning with
distribution company and maintain accounts of
investors. Work as a professional entity.

USPs of Innovative Financing
Mechanism

Following are USPs of this innovative
financing mechanisms.

Corporate investment projects require
minimum 30% return on capital in first few
years. Even gestation period of one year adds
@ 20% to the capital cost. In the proposed
business model there is no increase in capital
cost during gestation period. Also the model
survives on lower returns in initial years as all
money raised is equity by end users. For
investors the returns of the order of 15% in
first few years is higher than what common
investors get from FDRs in bank. Higher
returns in later years will be highly motivating
for investors.

Also there is big class of investors who are
environmentally conscious and will like to have
their own green power and have no other
option at present. Also many small and
medium scale industries, corporations and
many other such beneficiaries can put in their
investment for assured power for minimum 20
years. The project ensures all ‘Environmentally
conscious’ investors that with their investment
the project is established and their own solar
power is wheeled from project site to their
houses.

Transfer of bonds, selling bonds in market,
banking of surplus power, sell of surplus
power are some of the innovative features.

This business model is patented by
the innovator and any agency like SECI, Govt. of
India or State Govt., distribution companies,
industry organisations etc. can have agreement
with the innovator for adoption of the
business model.

Prof Dr Ajay Girdharilal Chandak
PhD (Solar), MTech (Mech) IITB, Certified Energy Auditor & Renewable
Energy Consultant, PRINCE (Promoters, Researchers & Innovators in
New & Clean Energy), Suman Foundation, Agro Road, Deogur, Dule, India.
He has published many papers and has memberships of 12
professional associations including ‘International Solar Energy Society’,
‘Solar Energy Society of India’, Institute of Engineers, He is Founder
Indian Association of Energy Management Professionals, Solar Cookers
World Network etc. He was elected as board of directors for “International
Solar Energy Society” with HQ at Freiburg, Germany - apex advisory
body of United Nations.

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