

### [Google and KKR investment in Solar](#)

Google and Kohlberg Kravis Roberts and Co. (KKR) planned to invest in six solar PV projects:

- The projects with a net capacity of 106 MW, built in California and Arizona are developed by Recurrent Energy
- Funds were raised by equity investments from both along with debt financing.

### [Promotion of CSP Co-generation by US DOE](#)

The US Department of Energy (DOE) has awarded \$ 10 million to the Sacramento Municipal Utility District:

- The project consists of developing an innovative hybrid Concentrating Solar Power (CSP) and gas fired power plant



*Concentrated Solar Power Collector*

- A 10 MW CSP plant will be combined with 500 MW Cosumnes gas-fired power plant to provide high temperature steam at 550°C
- The fraction of CSP power being small, would cater to about 5 % - 10 % of the steam requirements for cogeneration facility and will significantly reduce the fossil fuel consumption
- Upto 21 GW of CSP will be used for such cogeneration projects along with a provision for thermal energy storage.

### [US DOE awards \\$12 million to reduce soft costs in PV industry](#)

The US DOE awarded \$12 million in the second phase of Rooftop Solar Challenge program:

- Top eight teams that helped in reducing soft costs accounting to more than 60% of total cost for solar rooftop installations in the US received the award.

- Soft costs include permitting, installing, zoning, metering, grid interconnection processing and miscellaneous costs
- This was a part of DOE's SunShot initiative, and open for government officials, private industries, universities and other stakeholders catering to residential and small commercial solar systems.

### [EU guidelines to end high subsidies for renewable energy](#)

Recent guidelines issued from European Commission (EU) could end the subsidies given to renewable energy projects and make way for conventional power projects:

The withdrawal of subsidy comes as a result of decreasing investment cost in renewable energy.

### [IHS Predicts Solar Growth in 2014](#)

A recent report by IHS Inc. USA puts forward a modest number (40-42 GW) as the total solar PV installation by the end of 2014:

- It contradicts the prior optimistic 55 GW solar forecast and predicts this will mostly occur due to China being unable to fulfill its target of 12 GW solar installation
- The report also forecasts that there would not be any shortage of PV component supply and a moderate decrease in the prices is expected.

### [Fraunhofer ISE is the Third International Research Partner in SunShot](#)

The Fraunhofer Institute for Solar Energy Systems (ISE) is the latest addition to the list of international research partners under US DOE's SunShot initiative:

- Fraunhofer ISE along with National Renewable Energy Laboratory and Georgia Institute of Technology will work together on efficiency improvement in high-efficiency silicon solar cells
- Their focus will be on better passivation strategies for solar cell contacts, optimization of emitter and improvization of light trapping in solar cells.

### Japan's latest Venture into Solar

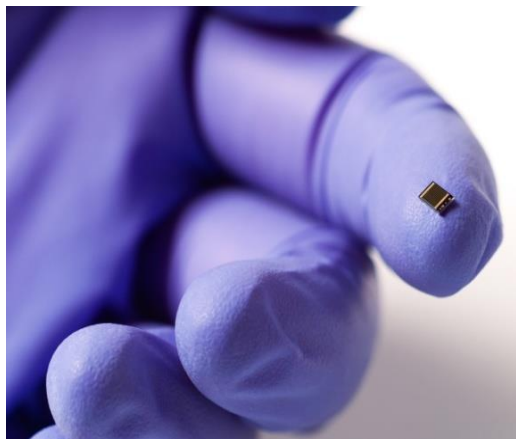
A \$280 million project developed by Kyocera is Japan's largest venture into solar energy after the Fukushima nuclear disaster:

- The 70 MW solar PV plant started operating in November 2013, near the Kagoshima Bay
- The introduction of new feed-in tariffs seems to have increased solar investments in Japan.

### World Record Solar Cell With 44.7% Efficiency

The Fraunhofer ISE, Soitec, CEA-Leti and the Helmholtz Center Berlin jointly announced achieving a new record efficiency of 44.7% using a structure of four solar sub-cells made of III-IV semiconductor material. In addition:

- Scientists at Empa, (the Swiss Federal Laboratories for Materials Science and Technology) have developed thin film solar cells (based on CIGS) on flexible polymer foils with a new record efficiency of 20.4%.  
<http://www.sciencedaily.com/releases/2013/01/130118064733.htm>



*Most efficient solar cell-Fraunhofer Institute of Solar Energy*

- IBM's Materials Science team has partnered with Solar Frontier, Tokyo Ohka Kogyo (TOK) and DelSolar to develop an efficient PV cell made of abundant natural materials (copper, zinc, and tin, referred as CZTS) with a conversion efficiency of 11.1 percent  
<http://ibmresearchnews.blogspot.in/2012/08/shedding-light-on-new-frontiers-of.html>

### New ultra mega projects in India

The Ministry of New and Renewable Energy (MNRE) has recently announced that four new ultra mega solar power plants are likely to come up in India:

- One each in Rajasthan and Gujarat is already finalized and two more plants at Kargil and Ladakh with a capacity of 2000 MW and 5000 MW are being proposed.
- The proposed Ladakh project after completion would be the largest in the country as well as in the world in terms of MW generation
- The project (on a 20,000 acres of land) will come up at an altitude of 11562 feet in Leh district.  
<http://www.dnaindia.com/india/report-ladakh-to-house-world-s-largest-solar-power-project-1922350>

### RfS for 750 MW projects under JNNSM released

The Solar Energy Corporation of India (SECI) has released the Request for Selection (RfS) document for 750 MW grid connected solar PV projects under JNNSM Phase II Batch 1:

- The bidding process has two parts – Part A (Domestic Content Requirement) of capacity 375 MW and Part B (Open) of capacity 375 MW
- The duration of Power Purchase Agreement (PPA) is 25 Years @ Rs. 5.45 per kWh. In case Accelerated Depreciation (AD) is claimed, the tariff will be Rs. 4.75 /kWh
- Upper limit for Viability Gap Funding (VGF) is 30% of the project cost or Rs.2.5 crore/MW/project, whichever is the lower. Total VGF requirement is estimated to be Rs. 1875 crore
- Financial closure shall be within 210 days of signing the PPA and the deadline for commissioning of projects is 13 months from the date of signing the PPA.

### India reaches 2.1 GW of solar PV capacity additions

According to figures from the Ministry of New and Renewable Energy (MNRE), India reached 2.1 GW of cumulative grid-tied and off-grid solar

photovoltaic (PV) installations at the end of August 2013:

Also, 90,000 square meters of solar water heating collector area was added in August 2013, to reach a cumulative total of 7.16 million square meters of collector area.

### [Solar REC trading, November 2013](#)

Solar REC sales dropped by 20.56% from October 2013.

- The price, however remained at the floor of Rs. 9,300/REC
- A total of 47123 Solar RECs have been traded till date.

### [BEST supplies solar power to Mumbai city](#)

The Brihan Mumbai Electric Supply and Transport (BEST) undertaking, a distribution licensee supplying electricity in Mumbai, has taken a big step towards green energy:

- It would supply 20 MW of solar power to the city
- This was approved by the BEST committee in May, when the power utility entered into a deal with M/s Welspun Energy Pvt Ltd

### [India lags behind as the solar shines globally](#)

According to the Mercom's report, India's target of 1GW of solar power for 2013 (just 622 MW by August 2013) is poor compared to other countries. The report points out:

- The total corporate funding in solar sector, including Venture Capital (VC), debt financing and other equity funds raised by public companies, was significantly higher at \$2.18 billion compared to \$915 million in Q2
- Global demand for solar panels is likely to be around 38 GW [gigaWatts] in 2013, a lot higher than in the previous five years. China alone wants to install 35GW by 2015
- China hopes to install 8.5 GW of solar power while Japan hopes to achieve a figure of 7 GW. The figure for US is likely to be 4.5 GW, Germany 4 GW, Italy 2 GW and the UK 1.5 GW.



*Photovoltaic array installed in US*

### [Tribal hamlets to get solar power](#)

Nearly 194 tribal hamlets in Visakhapatnam district in Andhra Pradesh, India will see electricity light up their lives for the first time in December 2014:

- Eastern Power Distribution Company Limited (EPDCL) authorities are likely to work on the solar project, having a total installed capacity of 840 KW
- A total of 5,592 households falling under Paderu agency division of the district will benefit from the project at an estimated cost of Rs 40 crore under the Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY).
- While the Centre will bear 90% of the project cost, EPDCL will contribute the remaining 10% cost of the project.

### [Aptel issues notices to 80 Gujarat solar project developers](#)

On an appeal filed by the Gujarat Urja Vikas Nigam Ltd (GUVNL), the Appellate Tribunal of Electricity (ATE) has issued notices to 80 solar project developers:

- GUVNL is seeking to cut the rate of power to Rs. 9/ unit from the Rs. 12.54/ unit agreed under the Power Purchase Agreement (PPA)
- In 2009-10, the Commission had adopted the capital cost for solar PV projects to be Rs. 16.5 crores/ MW. However, GUVNL argues that several developers had incurred the project costs in the range of Rs. 10 crore/ MW to Rs. 13 crore/ MW. At this rate, the total project cost comes to Rs. 10, 284 crore or Rs. 3,856 crore less.

### [India Plans the World's Largest Ultra Mega 4 GW Solar Power Plant](#)



A 4 GW ultra mega watt level solar project is proposed to come up on a 23,000 acre site close to Sambharlake in north Western Rajasthan

- Initiated by the Ministry of Heavy Industry, 1 GW of solar installation is expected to be complete the first phase by the end of 2016
- The first phase will be implemented through a joint venture company to be formed with equity from BHEL, Solar Energy Corp. of India, Power Grid Corp., Satluj Jal Vidyut Nigam and Rajasthan Electronics and Instruments Ltd
- Rajasthan along with Tamil Nadu shall receive an initial grant of Rs 2500 crores under the Indo-German bilateral development cooperation programme for green energy corridors project that aims to add 30,000 MW to the national grid by 2020
- The Asian Development Bank (ADB) will also provide \$500 million grant to boost power transmission system in Rajasthan from wind and solar power projects.  
[http://articles.economictimes.indiatimes.com/2013-10-09/news/42864516\\_1\\_national-grid-power-grid-corporation-green-energy-corridors](http://articles.economictimes.indiatimes.com/2013-10-09/news/42864516_1_national-grid-power-grid-corporation-green-energy-corridors)  
<http://www.adb.org/news/adb-provide-500-million-renewable-energy-transmission-system-northwest-india>

### Thin Film Solar Panels Top Panel Performance in India

As per Bloomberg analysts, Indian solar plants using silicon-free panels emerged as the best performer in the first year of its operation:



*A Typical thin film photovoltaic array*

- Among 33 solar plants in Gujarat, the thin film panels achieved a Capacity Utilization Factor (CUF) of 19.6% as compared to 18.5% for crystalline silicon
- Moreover, the data also pointed out that Cadmium Telluride panels performed better in Indian conditions.

### Solar Power Tariffs Revised inKarnataka

The Karnataka Electricity Regulatory Commission (KERC) has announced new tariffs for grid connected and rooftop solar plants:

- The new approved tariffs are Rs 8.40/unit for solar PhotoVoltaic (PV), Rs 10.92/unit for solar thermal, Rs 9.56 per unit for small solar PV plants and rooftop installation, and Rs 7.20 per unit for rooftop and small solar PV plants
- A 30% government subsidy on capital cost was provided and the revised tariff was applicable to the developers who signed the PPA on or after April 2013.

#### **Consortium Leads**

Indian Institute of Science, India & National Renewable Energy Laboratory, USA

#### **Research Thrust Leadership**

Indian Institute of Technology Bombay, Center for the Study of Science, Technology and Policy, Sandia National Laboratories, RAND Corporation

#### **Consortium Partners**

#### **Institutes and National Laboratories**

International Advanced Research Centre for Powder Metallurgy and New Materials, Solar Energy Center, Lawrence Berkeley National Laboratory

#### **University Partners**

Indian Institute of Technology Madras, Indian Association for the Cultivation of Science, Arizona State University, Carnegie Mellon University, Colorado School of Mines, Massachusetts Institute of Technology, Purdue University, Stanford University, University of Central Florida, University of South Florida, Washington University in St. Louis

#### **Industry Partners**

Clique Developments Ltd., Hindustan Petroleum Corporation Ltd., Moser Baer India Ltd., Thermax Ltd., TurboTech Precision Engineering Ltd., Wipro Ltd., Corning Incorporated, BHEL, Alpha, SunEdison Corporation, Solarmer Energy, Inc.