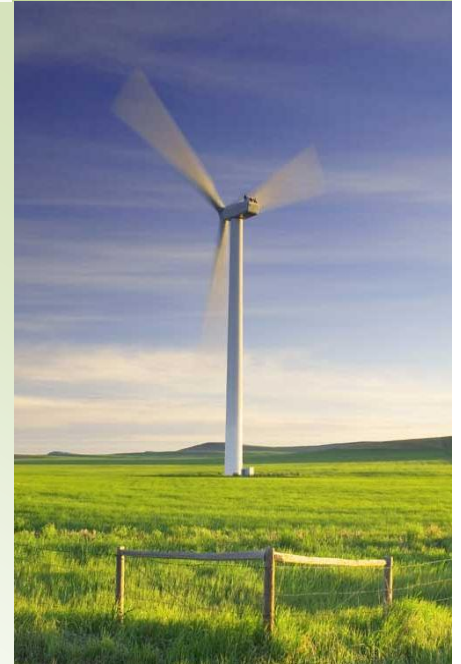


HORIZONS

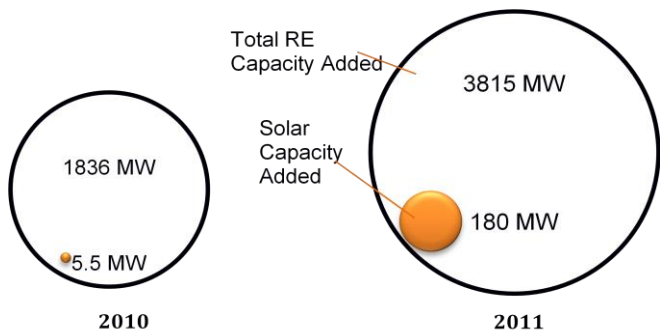
25 April, 2012



Sun Shines over Solar Energy

On 19th April 2012, 604.89 MW of solar energy capacity was inaugurated in Gujarat setting a strong foundation for solar energy in India. This event is a further fillip to prospective investors in solar energy. In 2010, the share of solar energy in renewable energy capacity addition in India was less than 0.5%. In 2011, this increased to almost 5%. This is an early sign for a successful start to India's target of reaching installed capacity of solar energy of 20,000 MW by 2022. This period is also expected to be a good learning opportunity for project developers, banks and EPC service providers.

Solar Capacity Addition in India

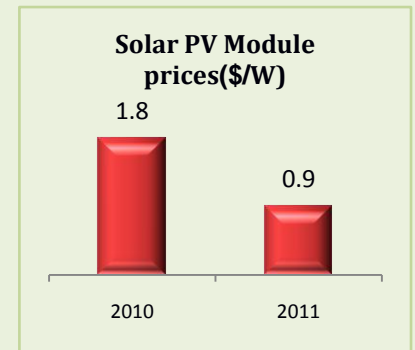


Source: MNRE

Learning for Bankers

Developers in India faced some issues while arranging financing in 2010 as Indian banks were not ready to extend long term loans for solar projects. International funding agencies such as Asian Development Bank (ADB), US Ex-Im bank (EXIM) and International Financial Corporation (IFC) have provided loans to project developers and provided backup to commercial banks in India. Private investors have also provided loans to projects in Gujarat. Today Indian banks are lending on

Decreasing prices of solar PV modules



Source: GTM research, Jan 2012

The growth of Chinese solar PV manufacturing led to a global race to expand capacity in countries with subsidy driven demand. This resulted in supply exceeding demand which led to fall in PV prices. Prices are expected to remain low for another two quarters due to excess inventory with manufacturers. Price correction is however expected as manufacturers are currently selling at losses.

Increasing efficiency of solar modules

Company	Country	Capacity (MW)
Suntech	China	2,400
JA Solar	China	2,100
Trina	China	1,900
Yingli	China	1,700
Motech Solar	Taiwan	1,500
Gintech	Taiwan	1,500
Canadian Solar	China	1,300
Neo Solar Power	Taiwan	1,300
Hanwha Solar One	China	1,100
JinkoSolar	China	1,100

Source: Energy Trend

Number of players in manufacturing of solar PV components has increased over years. This is leading to increasing standardization and commoditization of solar PV modules. This has pushed many players to spend more on R&D to differentiate their product from competitors resulting in gradual increase in efficiencies of solar modules over the years.

Solar Close to Wind?

As bidding under Rajasthan Solar Policy approaches, there are speculations as to whether price parity between solar and wind can be achieved in this process. The current tariff for wind in Rajasthan is ₹4.69/unit but solar energy prices are also dropping significantly (lowest price under JNNSM was ₹7.49/unit). With improved technology and land being made available by the Government at below-market rates, solar energy might get the extra push to come close to wind energy.



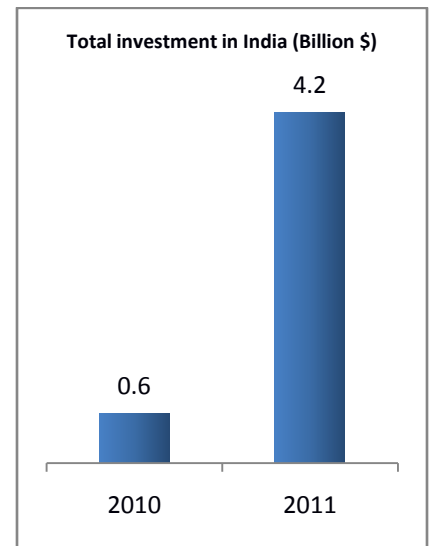
600MW Solar Farm at Patan, Gujarat

the basis of asset financing at higher interest rates, making many projects unviable. As more projects come online under Central and State schemes, Indian Banks need to be encouraged to learn from their foreign counterparts on how to address lending risks typical of renewable energy projects.

Learning for Developers

During reverse bidding process in Jawaharlal Nehru National Solar Mission (JNNSM) Phase 1 Batch II, aggressive bidding led to the lowest bid of ₹7.49/unit while the highest successful bid was ₹9.44/unit. These bids are being considered unviable by some analysts. However developers like Solairedirect SA of France who have quoted ₹7.49 /unit and Alex Green Energy of Kolkata who have quoted ₹7/unit in Orissa have expressed confidence in their ability to drive down costs over time and hence prove their bids workable.

Investment rose 7 times in 2011 while capacity addition was 33 times that of 2010. This can be attributed to falling prices of solar modules, movement up the learning curve for developers as well as economies of scale.



Source: Pew Charitable Trusts, US, April 2012

Supportive Government Policies

A critical factor for continuous growth of solar energy is continued government support in India through policy interventions. Sudden changes in the policy discourage investors hence it is essential that the government maintain its support and ensures clarity to prospective investors.

REC Market in April 2012

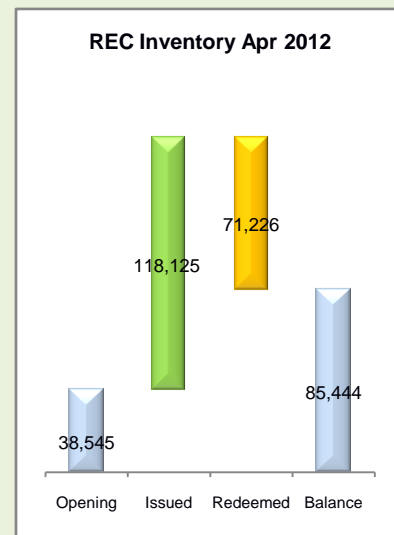


REC Trade April 2012		Buy Bids	Sell Bids	Volume Traded	Clearing Price ₹ per REC
Non-Solar	IEX	237,100	105,844	62,277	2,201
	PXIL	26,813	26,842	8,949	2,201
Solar	IEX	289	-	-	-
	PXIL	225	-	-	-

2012-13 REC Trading Kicks off to a Healthy Start

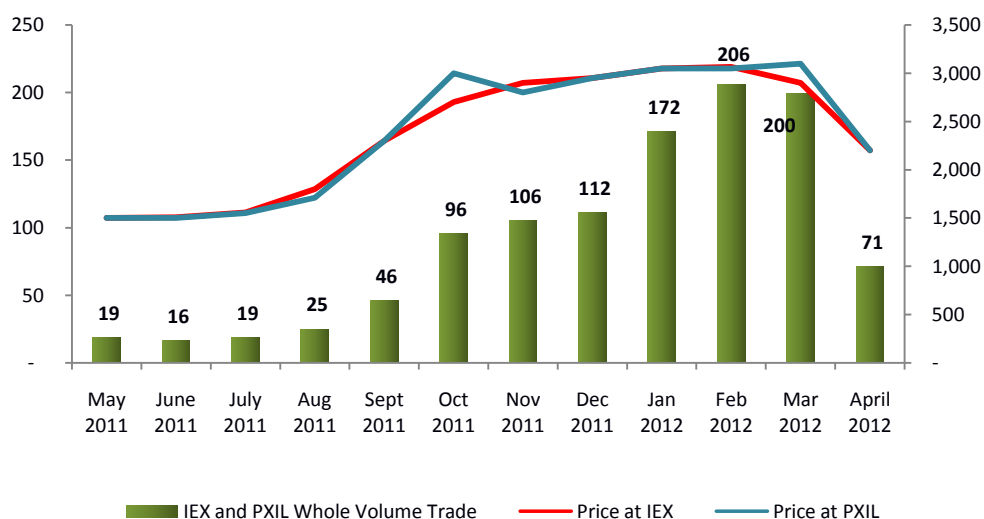
Trading at the start of the financial year (FY2012-13) saw significant increase in both volumes and prices over the opening trade of FY2011-12. The total traded volume was 71,226 while the prices stabilized at ₹2,201 at both the exchanges. Overall, the opening trade this financial year was an improvement over last year.

REC Inventory



Source: REC Registry

Total IEX & PXIL Non-solar REC Trade



Trading volumes at the beginning of this financial year have improved significantly over April last year. This can be attributed to maturity of the REC market and growing confidence amongst market players.

Solar Makes an Entry

In a market dominated traditionally by wind energy, solar energy has tended to be insignificant. That is beginning to change - three solar projects with a total capacity of 8 MW have been registered at the REC Registry in April this year. While demand for solar REC had been seen at the power exchanges lack of supply of RECs has resulted in no trade taking place. With this registration, solar REC trading is expected to start soon.

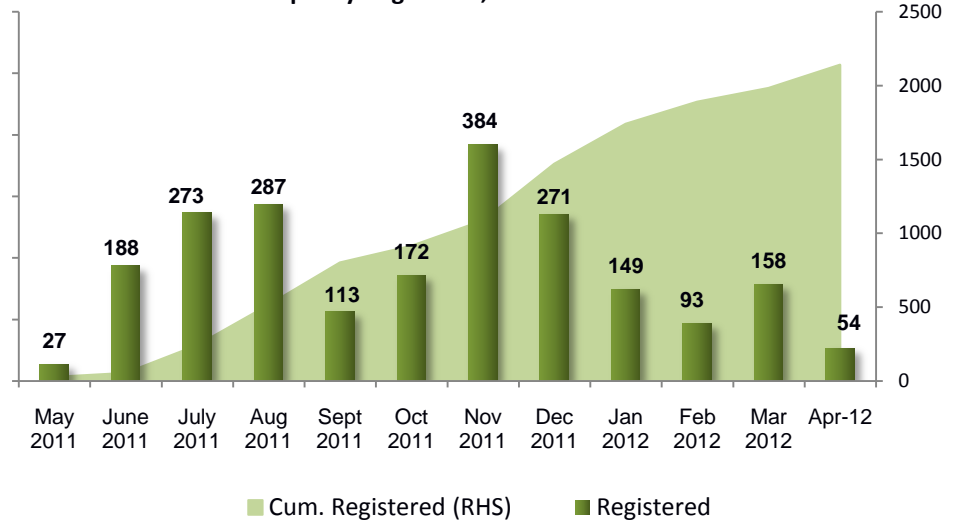
State-wise Registered Capacity 2011-12

State	MW
Haryana	9
J&K	18
Kerala	21
Uttarakhand	24
Madhya Pradesh	21
Punjab	46
Himachal Pradesh	35
Rajasthan	50
Chhattisgarh	92
Gujarat	211
Tamil Nadu	529
Maharashtra	542
Uttar Pradesh	658
Total	2,255

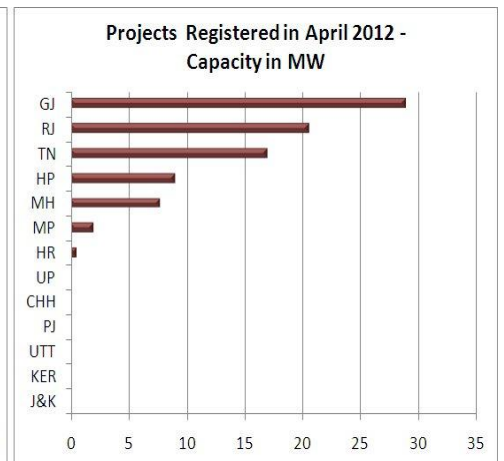
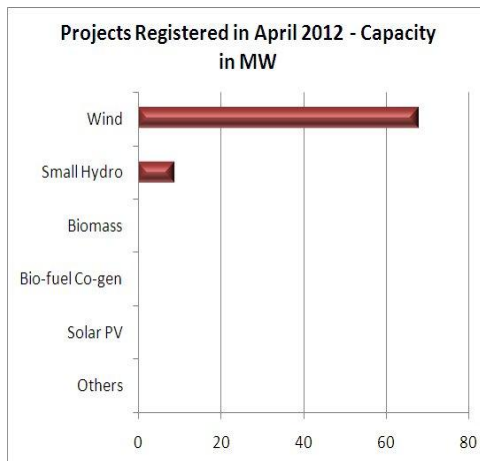
Source-wise Registered Capacity 2011-12

Source	MW
Others	2
Solar PV	-
Small Hydro	139
Biomass	467
Bio-fuel	
cogen	606
Wind	1,041
Total	2,255

Capacity Registered, MW



In total, 54 MW of capacity was registered in April. With this addition, the capacity registered in the last 12 months, i.e May 2011 to April 2012 has touched 2,194 MW.



agneya

Promoted by alumni of IIM Ahmedabad and IIM Bangalore, we at **agneya** work with Renewable Energy Generators to manage their REC accreditation, registration, issuances and trading. We also work with companies covered by the Renewable Purchase Obligation (RPO) on optimum ways to fulfill these obligations. **agneya** also provides services in the following areas –

Renewable Energy Project Management – advising clients on the best possible portfolio of renewable energy (wind, solar, bio) across tariff regimes, technology options, electricity sales structuring and availing incentives like REC and GBI.

Electricity Market Regulations – advising clients on regulatory aspects of electricity market, options for realizing the maximum value from their energy assets and minimizing costs related to regulatory compliance.

Carbon & Energy – measuring carbon footprint, energy audits and current/future energy profiling to assess risks and opportunities related to energy security and climate change.

Sustainability – building robust long term foundations for business i.e. managing economic, environmental and social aspects of business. These include water management, sustainability management and reporting.

For further information on Renewable Energy Certificates or other services, please contact us at –

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