



Access to Energy

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EDITORIAL



*Dr. Akanksha Chaurey
CEO, ITP India*

Clean energy trends that marked 2018 included commitments made by corporations, cities and companies towards adopting clean energy and embracing emission reduction targets. About 40 cities worldwide are operating on 100 percent renewable energy and many more have committed to transitioning to 100 percent renewables. The most aggressive commitment in the US comes from New York through its ambitious energy and climate strategy that is aiming to achieve 100 percent clean, carbon-free power by 2040.

This trend continues in 2019 with the launch of REBA (Renewable Energy Buyers Alliance) in the US, wherein big giants along with their not-for profit partners have formed a trade organisation that will help companies to purchase clean energy. The goal is to support construction of new green power projects by facilitating renewable energy deals pioneered by companies such as Google parent Alphabet, General Motors and Walmart in recent years. Specifically, this alliance will work towards

fine-tuning contracts, addressing regulatory and policy hurdles, supporting the pilots for new technologies, among others.

In the meanwhile, ten oil and gas public sector companies in India have teamed up and launched an INR 3 billion startup fund that will support startups or entrepreneurs serving in areas including renewable energy, environment and safety, and rural development. Such initiatives by corporates will hopefully address the concerns of several small power-consuming small and medium enterprises (SMEs) in India that are not confident of installing rooftop solar due to perceived performance risk, according to a recently published study. India's target of having 40 gigawatt (GW) of rooftop solar capacity by 2022 requires that SMEs embrace rooftop solar which, according to the study, can be done by adopting a multi-pronged approach involving supportive regulations, risk-bearing financing, and building awareness to demonstrate viability of rooftop solar.

Concentrating Solar Thermal Technology Status - Informing a CSP Roadmap for Australia



*Dr. Keith Lovegrove
Managing Director
ITP Thermal Pty Limited*

ITP Thermal Pty Ltd. has published a report on CSP industry background as an input to a CSP Roadmap for Australia. This report serves as a technical appendix to the roadmap and it can also be read as a stand-alone document. The report draws following conclusions:

CSP is a global industry with a 30 year track record of utility scale power generation. It is capable of sustained compound growth in installed capacity and is analogous to the PV industry around one decade previously. CSP offers cost effective dispatchable renewable electricity via the integration of thermal storage. In Australia, with around 15 GWe of baseload coal plants expected to retire by 2040, establishing a modest compound growth rate in CSP installed capacity in the near future, would allow a significant fraction of that coal capacity to be replaced in an orderly and timely manner.

Globally the industry favours systems built at around 100 MWe for cost effectiveness. Whilst the first plants in the 100 MWe scale may seem like large undertakings, it needs to be seen in the context that around 15 of these is needed to replace one large scale coal plant. However, smaller systems are technically possible and there are many systems built at 50 MWe.

Smaller systems face challenges related to reduced turbine efficiencies, higher relative O&M costs and reduced economies of scale. Despite this, if extra value can be derived from network support in fringe of grid opportunities, then support for systems in the 10-50MWe range makes sense. Overall with increasing attention paid to the need for dispatchable renewable generation in addition to variable generation from PV or wind, the coming years should hold considerable opportunity for CSP both in Australia and around the world. However, agencies and policy makers need to be wary of unrealistic expectations.

The full report can be accessed at <https://arena.gov.au/assets/2019/01/cst-roadmap-appendix-1-itp-cst-technology.pdf>

A Public Private Partnership Between Inficold & NISE Disrupting Face of Cold-Storage



*Nitin Goel
CEO, Inficold*

Inficold India Pvt Ltd in association with National Institute of Solar Technology (NISE), an apex Solar Government of India's R&D organization, has developed a solar powered cold-storage which is

inexpensive to own and operate. This relationship forged in early 2017 is now bearing fruits for Indian farmers.

India is world's largest producer of fruits and vegetables (F&V), yet it imports both. Additionally, retail price for fruits and vegetables is very expensive during off-peak seasons. Primary reason for these issues is lack of strong cold chain, necessary pre-cooling and packaging infrastructure, which has the potential to increase shelf life of F&V and allows to maintain its nutritive value.

According to a report by McKinsey, and reporter's calculations, with right infra-structure and coaching for farmers, the agri-sector has potential to add around 1-2% more to the country's economy just by reducing waste and reducing inflationary pressure on F&V.

The cold chain has not been successful at village level thus far due to a few reasons:

1. High cost of owning and operating Cold-Storage
2. Market accessibility for products moving via cold-chain

New policies adopted by government are improving market linkages and market accessibility for farmers. New companies are improving farmer to consumer supply chain. However, high cost of deploying and operating cold-chain infrastructure still remains a challenge.

The partnership between Inficold and NISE has addressed this problem. The solar cold-storage developed by two entities does not require either Lead-Acid batteries or diesel gensets to provide cooling backup when electricity from solar or grid is not available. Couple of prototypes of the product have been installed and working at NISE campus for more than a year and are under-going continuous optimization. Today cost of an 800 cu ft solar cold storage is in excess of Rs. 15 lakhs (\$ 21,000) in the market without government subsidy.



This public private partnership is expected to reduce the capital cost by more than 30% and operating cost by almost 10X from current level. This product with small footprint is ideal for F&V cooperatives with installation at village level. This will allow farmers to save high value product and avoid short selling in local markets at cheaper price. Having such infrastructure will also allow FPOs to have direct market access in urban areas or package fresh F&V and export them with the help of export houses. Either option along with reduction in harvest loss has potential to increase farmer income by 35% as per a calculation by McKinsey.

Inficold is installing solar cold storages along with NISE across the country to demonstrate the technology to farmers and policy makers. It is expected that this technology will lead to a new collection, cooling, packaging and distribution models for agri-preneurs and seed the cold-chain adoption across the market.

This is an invited guest article.

Key Takeaways from India Distributed Energy Forum and Expo



Viraj Gada
India Regional Representative
GOGLA

The India Distributed Energy Forum and Expo (IDEF) was organized by GOGLA and our partners the International Finance Corporation's Lighting Asia/

India program and Ashden/Ashden India Collective on 30th and 31st January, 2019 at Hotel Taj Palace, New Delhi. IDEF as an effort to have a focused event for the distributed standalone solar sector in India with a dedicated Expo. We had some great supporting partners in the event in the International Solar Alliance (ISA), FICCI, Efficiency for Access, Impact Investors Council (IIC), Sa-Dhan, Intellectap, The Climate Group and DGEF/TILA.



The event was sponsored by Platinum Sponsors -D.Light and Signify; and Silver Sponsor -Greenlight Planet.



Here are our “Top 15 key takeaways from IDEF”:

1. **Collaboration and partnerships are key to reaching scale in the sector-** as the global industry association for the off-grid solar energy sector, GOGLA plans to work with more like-minded organizations to further grow the off-grid solar sector in India .
2. **There is a need for the private sector and the government to communicate more and work together-** the private sector can help the government in its efforts of providing 24X7 electricity access to all Indian citizens while the government can provide an enabling environment for the private sector to grow and reach scale .
3. **The ideal public-private relationship relies on complementary (rather than competitive) forces and will take the best from both sides-**
4. **India definitely has the potential to become a global leader in the off-grid solar sector-** even a global hub for innovations if other factors like financing for enterprises, globally harmonized quality standards and an enabling policy environment are in place.
5. **The Indian market for solar lanterns and solar home systems is expected to reach a size of up to USD 327 million by 2023-** as per the report “Peering into the future - India and the solar standalone products market” from a GOGLA commissioned study that was released at IDEF. The study provided a common perspective of where demand may come from in the future and which factors would be driving it. The generally positive outlook presented by cKinetics appeared still very cautious compared with the upbeat tone in the conversations on stage.
6. **The government-driven market will be dominated by the solar water pumps scheme-KUSUM,** which is expected to lead to the installation of 1.75 million off-grid solar pumps by 2022 - nearly ten times the number of currently installed pumps.
7. **An ecosystem approach to market development is needed for boosting the local manufacturing business-** these should include a financing facility for enterprises, progressive and supportive taxation and regulations and alignment between national and international standards.
8. **“India might have missed the bus on panel manufacturing, let us make sure that it does not miss the bus on DC appliance manufacturing”-** India is uniquely positioned to be the market leader in innovation and technology, especially for new and innovative efficient appliances.
9. **Since SMEs and entrepreneurs make a big part of the Indian market, targeted support needs to be provided to them both from the**

- government and investors- there is a need to support start-ups, reducing the cost of borrowings, reducing the FOREX risk (maybe through local currency financing), technical assistance provision through accelerators, incubators and traditional advisory and grant financing, especially for market development and market entry activities.
10. **It is essential for the industry to interact more with the Bureau of Indian Standards (BIS)-GOGLA along with CLEAN (the national renewable energy association) plan to be that bridge and to be the representatives of the private sector in the meetings with BIS.**
 11. **Focused pre-boarding and on-boarding is key for recruiting and retaining good staff-** employees with good on-boarding are 62% more productive; have 50% higher retention rate and 54% higher engagement rates.
 12. **There is no substitute of personal relationship when it comes to last mile distribution of off-grid solar products-** the last-mile business is actually about marketing/demand creation rather than distribution/demand satisfaction.
 13. **Rural customers, just like all other customers, care about product quality-** and would be happy to pay a bit more for quality if proper knowledge and awareness is disseminated to them.
 14. **PAYGo (or pay-as-you-go) definitely has a future in the Indian off-grid solar market-** due to the rising aspirations of customers, there is a need for larger solar home systems for which the best suited affordability mechanism is PAYGo which is currently facing issues of stringent legal requirements and lack of penetration of mobile money; but there is a general consensus that PAYGo would be a reliable consumer financing mechanism in India in the coming years .
 15. **E-waste management of off-grid solar products in India still has a long way to go-** it needs an ecosystem level approach to fix the high costs of reverse logistics of faulty products, lack of a robust recycling ecosystem and the negative recycling value of smaller solar lantern products (that is recycling of these products would require companies to spend additional money).

The above article is contributed by GOGLA .

ITPEnergised Offices

Bristol

ITPEnergised
29 Great George Street
Bristol, UK BS1 5QT
T: +44 (0) 117 214 0510
E: info@itpenergised.com

Edinburgh

ITPEnergised
7 Dundas Street
Edinburgh, UK EH3 6QG
T: +44 131 557 8325
E: info@itpenergised.com

Glasgow

ITPEnergised
The Whisky Bond
60 Elliot Street,
Glasgow, UK G38DZ
T: +44 (0) 131 557 8325
E: info@itpenergised.com

London

ITPEnergised
10 Bloomsbury Way
Holborn, London, WC1A 2SL
T: +44 (0)20 3700 6111
E: info@itpenergised.com

Mainland Europe

ITPEnergised
Lisbon, Portugal
T: +351917208573
E: info@itpenergised.com

Latin America

ITPEnergised
Buenos Aires, Argentina
T: +54 11 3750 9853
E: americas@itpowergroup.com

China

IT Power China
Beijing
T: +86 10 6413 6295
E: china@itpowergroup.com

Australia & Pacific

ITP Renewables / ITP
Thermal, Canberra
T: +61 2 6257 3511
E: info@itpau.com.au

New Zealand

ITP Renewables
Auckland
T: +64 275 818 989
E: admin@itpau.com.nz

Published by:

IT Power Private Limited
410, Ansal Tower, 38 Nehru Place
New Delhi - 110019, INDIA
Tel: +91 (11) 4600-1191/92
Fax: +91 (11) 4600-1193
Web: www.itpower.co.in
Email: info@itpower.co.in

