

# Sustainability Outlook

October, 2012

Sustainability Reporting

Extended Producer Responsibility

Financing Sustainable Infrastructure

Green Leap needed to shape global leadership



Moving from operating defensively,  
to capturing advantage



# SUSTAINABLE BUSINESS LEADERSHIP FORUM

Sustainable Business Leadership Forum (SBLF) is India's only industry focused market development platform connecting thought leadership, business know-how and catalytic tools for enabling organizations to transition towards sustainable business practices.

The Forum equips organizations, managers and industry stakeholders on the 'how' of sustainability through a unique programmatic approach comprising of year round programs and 'on-ground industry oriented' work.

## Value of participating in the Sustainable Business Leadership Forum

- Access to extensive research conducted on various sustainability issues
- Insight into emerging drivers on Resource Conservation and preparing firms for a value oriented response to the same
- Opportunity to coordinate actions in selected areas along with catalysts and other industry players
- Engagement with like-minded organizations, catalysts and industry bodies through participation in working groups and multi-partner consultations
- Opportunity to shape the sustainability conversation in India through SBLF's flagship annual summit

## Shape Industry Task Forces

In addition, based on subscriber inputs and requests for focused research, the Forum facilitates creation of Industry Task Forces, guided by industry groups, to help enable:

- Identification and analysis of adoption challenges for firms and defining appropriate markets, resources and business case for undertaking the sustainability interventions
- Shaping innovative business models and consumer marketing strategies to create brand equity and tap into newer markets

To request an invitation for participating in SBLF or to learn more please write to [SBLF@SustainabilityOutlook.in](mailto:SBLF@SustainabilityOutlook.in)

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## Sustainability Outlook

for a paradigm shift wherein the underlying focus for the firms is active innovation and not reluctant compliance.

In this issue, we cover a wide variety of topics related to the sustainability ecosystem and the opportunity it presents to the Indian industry. The articles reflect upon many of the compliance requirements such as the sustainability reporting mandates and energy efficiency oriented initiatives such as PAT (Perform-Achieve-Trade), outlook on sustainability finance and role of enabling capital to promote sustainability; and opportunity for technology, particularly IT, to emerge as a key enabling tool for business sustainability.

In our Leaderspeak section, we have an opportunity to learn more on the uptake of National Voluntary Guidelines on Social, Environmental and Economic Responsibilities of Business as also emerging SEBI mandate on this front for the top 100 corporates as also hear from one of the global sustainability gurus on the opportunity for innovation.

Our Market Pulse section presents an insight into the preparedness of the Indian industry to address the requirements of Extended Producer Responsibility mandate in context of waste management in consumer electronics space and others.

The launch of this issue coincides with the Annual Summit of the Sustainable Business Leadership Forum and the Parivartan Sustainability Leadership Awards evening. The SBLF Summit, an annual interaction amongst 200 + CXO level and senior business leaders from diverse sectors, endeavors to identify solutions and opportunities posed by issues of resource management and corporate sustainability.

This year's summit aims to identify specific road maps to enable companies to leverage the various Government mandates and shape market success via their sustainability actions. The Spotlight section showcases the thought leaders from the Indian industry and myriad ways in which sustainability driven innovation is changing the business landscape of India.

We, at Sustainability Outlook, aspire to be a synergist for building a new kind of thought process, giving rise to thought leadership.

We hope you enjoy this issue of Sustainability Outlook. Please do send us your feedback and let us know the areas you would like us to cover for you. We look forward to hearing from you at

[Editor@SustainabilityOutlook.in](mailto:Editor@SustainabilityOutlook.in).



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Dear Readers,

Welcome to the October issue of Sustainability Outlook!

Our theme for this issue is – Moving from operating defensively, to capturing advantage. In an era, where resource depletion is the order of the day and the Government is increasingly raising the bar for businesses to adhere to resource conservation practices, it is important to recognize that sustainability dimensions of the firm are paramount to shaping a lasting and successful blueprint of the business.

Sustainability interventions have already and unequivocally illustrated the viability of the associated business cases and also the strategic long lasting benefits these enable for an organization. However, these interventions do require the firms to take a long term view of its goals and objectives and businesses will do themselves a disservice by viewing and architecting these as mere responses to compliance measures.

Despite evidence on ground, most Indian corporates continue to operate in a defensive manner towards sustainability needs. As the initiatives launched by the Government on the sustainability front begin to impact the operational practices of the industries, there is a need

# Leveraging Sustainability to shape the next generation of global corporate leaders

Parivartan Sustainability Leadership Awards is an annual initiative geared to recognize and celebrate sustainability innovations in Indian businesses. The awards, instituted by Sustainability Outlook in 2011, showcase excellence of Indian organizations and individuals as they spearhead the Parivartan (change in Hindi) towards sustainability in business operations.

Sustainability can be a key driver for innovation. As firms look to conserve energy and water; and look to use eco-efficient materials, the outcome is usually a product that is not only good for the environment but also good for business. Parivartan Awards for Sustainability and Innovation is a showcase that allows companies to increase visibility of products and services in the market and be recognized as a leader.

Building on the success of Parivartan Awards 2011, the 2012 awards expanded their focus; introducing newer award categories and encompassing a large number of sectors. The categories for this year include:

- **Corporate Sustainability Stewardship Awards** for companies who have undertaken or rolled out sustainability oriented comprehensive business practice change through: (a) innovation in business model or a key strategy, or (b) demonstrating leadership in resource conservation.
- **Sustainability Disclosure Leadership Award** for corporates who have shown exemplary efforts in disclosing their non-financial performance on environment, social and governance parameters.
- **Sustainability Innovation Challenge Award** for service providers who have innovative solutions to address the resource challenges raised by the industry in 2012.

- **Sustainability Leaders of the Year Award** for corporate executives who have made exemplary contributions in the field of sustainability in the past year.

The award categories provided a unique opportunity to corporates, service providers and individuals to showcase their innovations and thought leadership. The nominations for various categories were shortlisted by a panel of sector experts before being sent for a high level Jury review.

Parivartan 2012 Awardees will be felicitated at the Annual Summit of the Sustainable Business Leadership Forum Leadership Forum on October 11, 2012.



## GRAND JURY



**Jury Chair, Dr. S.Y. Quraishi** Former Chief Election Commissioner (CEC) of India

Dr. S.Y. Quraishi, an IAS officer of 1971 batch, was till recently the Chief Election Commissioner (CEC) of India. Previously he has been instrumental in architecting the power sector reforms in Haryana and has also held senior positions in the Central ministries of Renewable Energy and Steel. Dr. Quraishi has a Ph.D. in Communications and Social marketing.



**Stuart L. Hart**, S.C. Johnson Chair of Sustainable Global Enterprise, Cornell University

Stuart L. Hart is one of the world's top authorities on the implications of environment and poverty for business strategy. He is the S.C. Johnson Chair of Sustainable Global Enterprise and Professor of Management at Cornell University's Johnson Graduate School of Management, where he has founded the Center for Sustainable Global Enterprise. He serves as a trusted board advisor to dozens of global corporations.



**K.C. Mehra**, Resident Director (Corporate), Shapoorji Pallonji Group

Mr. K C Mehra, a veteran corporate executive, has held several leadership roles within the Tata Group including Chairman of Tata Robbins Frazer, Vice Chairman of Forbes Gokak, Joint Managing Director of Tata Steel etc. He has served as Chairman of SKF Bearings and has also been the Honorary Consul General of Sweden in Mumbai. He steers several industry led initiatives and is also the Chair of National Board of Quality Promotion under the Quality Council of India.



**Rita Menon**, Chairperson - cum-Managing Director, India Trade Promotion Organisation

Rita Menon, a 1975 batch IAS officer of Uttar Pradesh Cadre, is currently serving as the Chairperson-cum-Managing Director of India Trade Promotion Organization. Prior to her present assignment, Mrs. Menon was Secretary in the Ministry of Textiles. During her tenure, the textile industry has seen a substantial turnaround. She has also held important positions in UP state institutions.



**Bakul R. Patel**, Board Director, Infrastructure Development Finance Company (IDFC)

Mrs. Bakul R. Patel is Director of the Board of the Infrastructure Development Finance Company (IDFC) AMC. She has previously been the Chairperson of the Maharashtra State Financial Corporation. Mrs. Patel has been one of the original signatories to the historic UNFCCC and was a member of the Indian delegation to the UN Conference on Environment & Development in Rio de Janeiro in 1993.



**Dr. Uddesh Kohli**, Chairman Emeritus – Construction Industry Development Council and Senior Advisor to the UN Global Compact

In addition to being Senior Advisor to the UN Global Compact, Dr. Uddesh Kohli is presently the Chairman Emeritus, Construction Industry Development Council (CIDC) and Chairman of Construction Industry Arbitration Association (CIAA) and Engineering Council of India. He has previously led the Power Finance Corporation as its Chairman & Managing Director and has also been an Adviser at the Planning Commission.



**Bazmi Husain**, Managing Director, ABB India

Bazmi Husain currently leads ABB's activities in India as its Managing Director. He has managed several business units of ABB in India and Singapore during his 3 decades stint with the company and has also served at the global headquarters in Zurich, Switzerland. Prior to his current role, he was leading the smart grid industry segment initiative within marketing & customer solutions group at ABB.



Alliance for an Energy Efficient Economy (AEEE) is a not-for-profit organization, has been leading the mission of an energy efficiency market transformation in India. An alliance of organizations realizing the criticality of creating an energy efficient ecosystem convened to form this common platform.

By working towards addressing barriers to the implementation of energy efficiency, AEEE has been actively engaging with various interest groups that has a stake in India's energy efficiency goals. Since its inception in November 2008 AEEE have grown into a 55 member Association of EE industry leaders, Distribution Companies, academic and research institutes and national and international non-government organizations working in the energy conservation space AEEE is active in energy efficiency policy research, capacity building and implementation advisory. It has successfully worked with the Bureau of Energy Efficiency, its State Designated Agencies, Central and State Regulatory Commissions, and other organizations on various initiatives towards energy efficiency and conservation.



The founding members and supporting partners have established the AEEE as a means to create professional cooperation among market players like the equipment vendors, project developers, consultants and ESCO companies in order to achieve a vision of an Indian economy that is energy efficient.



**Come join us in our endeavours in building an energy efficient nation!!**

For membership details contact

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Mail AEEE @ : [Bhairav@aeee.in](mailto:Bhairav@aeee.in), cc: [info@aeee.in](mailto:info@aeee.in)}

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# Look who's reading your Sustainability Report



Pawan Mehra,  
Managing Director,  
cKinetics

**As India Inc. begins to adopt Sustainability reporting, investors are likely to be combing through it and select winners from the rest.**

The number of corporates coming out with Sustainability reports in India is on the rise. In these reports businesses share about efforts undertaken by them to engage their stakeholders and to preserve the environment they operate in.

When analyzed, the Sustainability Reports reveal a linkage between the nature and quality of disclosure and the financial attractiveness of the business. This linkage is especially strong in certain sectors related to Services, Extractive industries and those related to Energy production. There is room to start making the argument that the Sustainability Reports should get far more attention than what they have received so far.

### Uptake of Sustainability Reporting

While Public Sector Undertakings (PSUs) have historically led the trend on reporting their actions related to environmental, social and governance issues, the reporting has not been systematic; till recently. At present, the number of assured Sustainability reports from India's top 100 listed firms is still only a paltry 21.

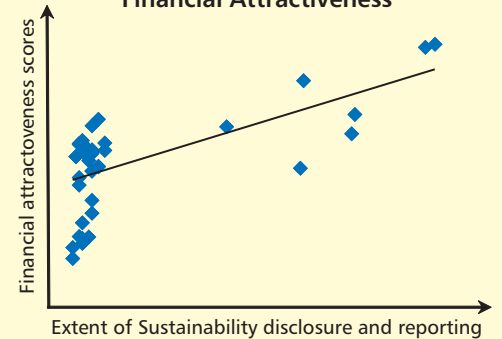
However, this number is only going to increase given the requirements from the regulator for listed companies as well as increasing requirements from stakeholders. Investors are only going to add to this increasing pressure to see more Sustainability related data. Many of these aspects are outlined in this article.

### Linking financial attractiveness and Sustainability Reports

In a recent study, cKinetics analyzed the sustainability disclosure and investor attractiveness of leading listed companies. The focus within the listed companies has been on the 100 largest businesses in India: which are bellwethers for the rest of the industry.

Information from the Sustainability reports and annual reports was extracted and the quality of disclosure on 35 parameters was assessed. For the same companies, their financial attractiveness was also evaluated based on an analysis of their cash flow, stock price, dividend payout, debt-to-equity and other key metrics.

### Sustainability Reporting Linked to Greater Financial Attractiveness



Each dot on the graph above represent a subset of companies amongst India's top 100. Data has been mapped based on its calculated financial attractiveness and its Sustainability disclosure.

The analysis revealed that greater the extent of disclosure and reporting, greater was the financial attractiveness.

### Picking winners

The world's successful investors spot opportunities where others don't see one. Is there an investment opportunity to be made looking at the Sustainability Reports?

In the cKinetics analysis, three sectors in the top 100 companies, stood out as having the strongest linkage between disclosure and financial attractiveness:

- Service Sector companies including software companies and financial institutions amongst others
- Extractive industries including mining, oil and gas, mineral extraction, aluminum and steel companies
- Energy and Utility companies



“Sustainability Reports reveal a linkage between the nature and quality of disclosure and the financial attractiveness of the business”

On mapping India’s leading disclosers against the sectors above, a view emerges on companies that are benefitting more from disclosing their Sustainability related performance (see table). As a corollary, newer investment opportunities would arise by identifying companies in these sectors that are planning on implementing a Sustainability roadmap and then disclosing on them.

**Table: India Inc.'s leading Disclosers over the last 2 years from the top 100**

Linkage between Sustainability Disclosure and Financial Attractiveness		
	Medium	Strong
Non-PSU	ABB Limited GlaxoSmithKline Pharmaceuticals ITC Limited Larsen & Toubro Ltd. Mahindra & Mahindra Ltd. Maruti Suzuki India Limited Tata Motors Limited	Infosys Ltd. JSW Steel Ltd. Reliance Industries Limited Sesa Goa Ltd. Tata Consultancy Services Limited Tata Power Limited Tata Steel Limited UltraTech Cement Limited Wipro Ltd.
PSU		Bharat Petroleum Corp. Ltd. GAIL (India) Limited Oil and Natural Gas Corp. Ltd.

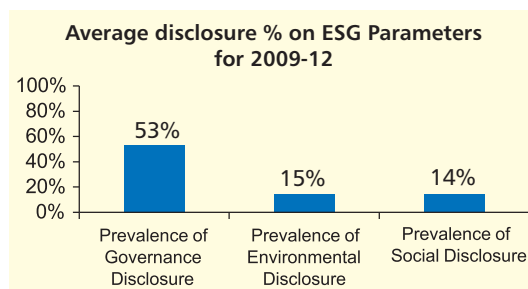
**Areas to track and watch**

In looking at the Sustainability reports, 2 key things stand out:

- a. Quality of disclosure, and the assurance that goes along
- b. Timing of disclosure

**Quality of disclosure:**

An analysis of the disclosure levels of the top 100 listed companies for the years 2009-12, reveals that while disclosure on governance parameters averaged at 53%, the average disclosure on Environmental and Social indicators stood at a dismal 15% and 14% respectively, reflecting that the information on these parameters, especially, is glaringly inadequate. This is an area to watch and track, especially because these can be quite material to a company’s performance.



**Timing of disclosure:**

The time lapse between the fiscal year end and the time when the companies come out with their Sustainability report has been decreasing. For the 3 years that cKinetics tracked the information, the time period has reduced from 332 days to 289 days. As more firms gear up for Sustainability reporting, this number is only going to reduce further.

**Policy is going to accelerate Sustainability Reporting**

Earlier this year, the Securities and Exchange Board of India (SEBI) mandated the 100 largest listed companies (by market capitalization) to provide a Business Responsibility (BR) report which would form part of a company’s annual reports/filings. SEBI has also provided an Annual Business Responsibility Report (ABRR) framework that firms can follow. One can expect that over time more companies will come under this ambit.

For the Public Sector Undertakings (PSUs), the Department of Public Enterprises (DPE) is has made focused efforts to promote sustainable development as also create more disclosure through the mandatory Corporate Social Responsibility Guidelines and Guidelines on Sustainable Development. Under the guidelines for sustainable development, the Memorandum of Understanding (MoU) signed between the DPE and the CPSE factors a 5% mandatory weightage to sustainable development and companies need to identify the projects pertaining to E&S sustainability and provide an annual update.

In addition, the Institute of Chartered Accountants of India (ICAI) has undertaken significant work to define the framework for Sustainability Reporting in India, which will assuage challenges of: (a) assurances; (b) defining a methodology for sustainability accounting; and (c) catalyze the transition toward integrated reporting.

**Stakeholder initiatives that will influence the landscape**

Other stakeholder driven initiatives including those driven by investors are also starting to find increasing relevance in India, owing to: (i) a targeted attempt by investors to use Sustainability information in managing their risk; and (ii) an increasing realization by businesses, especially multinational businesses on the benefits of reporting.

The Global Reporting Initiative (GRI) set up 1 of its 5 global focal points in India in 2010 with an aim to promote and support sustainability reporting by businesses in India. In addition, the focal point engages in capacity building initiatives to develop experts in sustainability reporting in the country. In 2009, a total of 56 companies across 12 industrial sectors produced a sustainability report out of which 35 companies referred to the GRI Guidelines. GRI is finding increasing acceptance in India; this is evident from the fact that India is identified as the country with the most comprehensive use of GRI's Guidelines, in terms of level of disclosure and external assurance - 78% of GRI reports from India boast of maximum standard disclosure and external assurances, as compared to a world average of 24%.

The Carbon Disclosure Project, which represents 551 institutional investors having over USD71 trillion assets under management, collects data on greenhouse gas emissions, water management and climate change strategies for over 3000 organizations. In partnership with Confederation of Indian Industry – ITC Centre of Excellence for Sustainable Development (CII CESD) and World Wildlife Federation (WWF) India, CDP India has been reaching out to 200 companies in India and has seen an 55% increase in reporting since the first effort in 2007.

This trend of having stakeholders actively engage to get companies to proactively report is only going to increase. Many of these stakeholders would be from the financial community that use a lot of this information to pick winners!

*cKinetics is a specialized Sustainability advisory firm working with investors and businesses. Along with GIZ (German Society for International Cooperation) and IIPC (Impact Investing Policy Collaborative), it is convening a working group that will be examining issues around business Sustainability disclosure and investment in selected sectors. To learn more about the data behind this article or to engage with the working group, please contact the authors.*



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# NVGs are the litmus test for Indian businesses' commitment to sustainability



Sustainability Outlook spoke to Bhaskar Chatterjee, Director General & CEO, Indian Institute of Corporate Affairs to understand the current status and next steps of the adoption of the National Voluntary Guidelines on Social, Environmental and Economical Responsibilities of Business (NVG – SEE).

**Most of the large companies now report on their non-financial performance under some of the other reporting guidelines. Do you see any gap in such reporting?**

The essence of reporting and disclosure is the 'will of the corporate' i.e. whether they are truly involved in the process, how willing they are to disclose such information and what parameters they ultimately decide to report on.

Over the recent years, we have had a slew of non-financial business reporting initiatives undertaken by businesses –in fact, releasing a flashy sustainability report has now become the new fashion statement. While most of these reports focus the spotlight on the things achieved by the company, no data is shown on the real shortcomings where challenges were faced by businesses. That is the most crucial gap. There really needs to be a new culture of reporting, where companies do not hesitate in reporting and disclosing both their achievements as well as negative impacts/challenges.

**What are some of the key issues and challenges being faced by the Indian industry regarding reporting and disclosure of non-financial performance?**

There are enormous issues and challenges in the reporting and disclosure landscape in India. The current mandate is for the top 100 companies to report under NVG-SEE; however, it is easier said than done. We know from practical experience that much of this kind of reporting tends to be very routine. Disclosure on real information that is required from the corporates is extremely difficult.

Since the Guidelines are still operating on the principle of 'report or explain' for these companies and since this is the first year, it is quite difficult to estimate the number or the kind of information that would come in. However, the expectation is that once a critical mass of companies comes on board and start disclosing business behavior under NVG-SEE, the 'real value' of this data would come forth. Only then would we know if the guidelines have seriously been taken up, or whether they are still considered as a check-box exercise.

**What trends do you see in the uptake of the National Voluntary Guidelines on Social, Environmental and Economical Responsibilities of Business (NVG – SEE) by the business community in India?**

The National Voluntary Guidelines on Social, Environmental and Economical Responsibilities of Business (NVG – SEE) issued by the Ministry of Corporate Affairs is perhaps the first real comprehensive set of guidelines to encourage responsible business action, issued anywhere in the world by a government body. While we have seen guidelines by OECD (Organization for Economic Co-operation and Development) and others, NVG-SEE is the only truly all encompassing set of guidelines which covers every single aspect of business thinking through all its nine elements.

The NVG-SEE is like a litmus test for corporates to test whether or not they are truly a responsible business entity. If a corporate were to ask itself the question- 'Am I truly a responsible business?' then NVG-SEE would help them evaluate their sustainability strategy through its 9 elements.

“There are enormous issues and challenges in the reporting and disclosure landscape in India”

The NVG-SEE not only provides a common and credible platform but also enables us to bring forth the entire discussion together at one single space, enabling an exchange between multiple stakeholders representing corporates, civil society and academics.

The Ministry has also tried to take this initiative one step further by saying that these are not just guidelines to be kept on the shelf, but rather a tool for the corporates to evaluate their business behavior and also ask the right questions back to the government. The response of the corporates has also been encouraging and exemplified by the fact that the industry played an interactive role in deciding the reporting format.

Especially now, with the NVG-SEE disclosure mandate placed by SEBI on the top 100 companies (by market capitalization), the NVG-SEE is set to gain an increasingly higher prominence for businesses to understand the extent of ‘responsibility’ in their business behavior.

**It is clear that the NVGs are absolutely rooted in the industry need. In what ways do you think businesses benefit from adoption of NVG given that it is still voluntary to a large extent (other than the mandate for the top 100 large companies)?**

While there are multiple benefits, I would focus on two major ones. One major benefit of adhering to the NVGs is enormous public support. Such ‘responsible’ businesses commit that they behave responsibly when it comes to their products, and actions through the value chain, and committing to the NVGs makes this behavior public information. The customers and the public at large hence view that company in a different light due to such positive and encouraging disclosure. This increases the company’s brand recognition, stability and market presence and also helps in gaining customers.

Second major benefit is the good image in front of the investors which have now started showing increasing interest in the non-financial performance of a company while making investment decisions. Responsible business behavior shows the progressiveness of the company and sends a signal to investors showing that they are a well-managed and well governed entity.

**Do you think the guidelines would be voluntarily adopted by mid and small sized companies as well? Do you see any commonalities between the guidelines and the CSR Bill?**

Well, we certainly hope for uptake of the guidelines by the SME sector and we certainly want that to happen. One of the key accomplishments of the NVGs is that the guidelines are costless– in that sense, these are different than the upcoming CSR Bill under the Companies Act. Developing an ethical/responsible business culture need not require any costs. Neither is any cost incurred for believing in human rights as an approach to corporate governance. Some of the nine elements of the Guidelines are actually more by way of values rather than expenditure items, That is a plus point for medium and small companies to adopt NVGs.

The conflict, or rather the difference, between the Companies Bill and the NVGs is simply that much of the NVGs focus on corporate governance which is impossible to measure in numbers. On the other hand, the CSR Bill talks about these aspects in terms of money. One company cannot value its ethics at Rs. 102 and score higher than another companies’ ethics valued at Rs. 98 because values and commitments aren’t measurable. Therefore the NVGs do not commit an organization to any expenditure to show impact made by the company. This is also a key drawback of the NVGs since it gives an opportunity to corporates to bring out a flashy wonderful document showing their top notch ethical behavior which might not be in sync with the ground reality.

That being said, while NVGs have many advantages, it is also clear that just by showing commitment to the NVGs, corporates cannot attain a carved-in-stone good image. However, we need to start with smaller steps. And when it comes to NVGs, it is a giant step in itself.

**Could you give us some information about what the Ministry or the IICA is looking to do to drive disclosure in the next 12 -24 months?**

Part 1 of the approach is generating awareness about the Guidelines since a large majority of the industry still does not know that these Guidelines exist. IICA is working closely with partners like GIZ for this purpose. One way of doing this is conducting series of workshops and widespread dissemination through posters and other communication materials for distribution. There are also plans of creating a virtual network – an online community – where people could log in and interact as needed.

“NVG-SEE is the only truly all encompassing set of guidelines which covers every single aspect of business”

Part 2 is influencing industry behavior through organizations like SEBI which would take further steps to making NVGs mandatory for a larger set of companies. Once a small critical mass gets rolling and starts reporting, it will generate further momentum. Hence, a combination of a nation-wide awareness drive is the next step coupled with persuasive mandates which have been put in place by catalyst organizations.

**Are there also plans for holding industry consultations to address concerns or answer questions regarding NVG reporting?**

Yes, in fact Confederation of Indian Industries (CII) recently held a workshop with the same agenda, where I addressed a large number of representatives from corporates who asked me the hardest questions regarding NVGs. We are also trying to hold similar conclaves of this nature where the industry can highlight their queries about NVGs, proposed CSR Bill, reporting formats etc.

Our goal is to create transparency and increase responsibility in business behavior so that there is one common place where information on the non-financial performance of all companies is available. This data would then be extremely useful for the companies to benchmark themselves against other companies and also make critical analysis and evaluations of the industry on the whole.

*Dr. Bhaskar Chatterjee is presently the Director General and CEO of the Indian Institute of Corporate Affairs, an autonomous organization established by the Indian Ministry of Corporate Affairs, a capacity-building institution and a think-tank for knowledge development/ dissemination and for rendering policy advice to the Government of India on issues relating to Corporate Affairs. He joined the Indian Administrative Service in 1975 and has held many distinguished positions.*

*Dr. Chatterjee is a graduate from Hindu College, Delhi and a Post-graduate in History from St. Stephen's College, Delhi University. Thereafter, he completed his MBA from the All India Management Association. He received his M.Phil from the Indian Institute of Public Administration in 1989-90 and his Doctorate from the Chitkara University in 2011.*



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# GREEN-LEAP NEEDED TO SHAPE GLOBAL LEADERSHIP



Sustainability Outlook spoke to Prof. Stuart Hart, Professor of Management at the Johnson School of Management at Cornell University on the future and development of sustainability paradigm in India.

“There are four very distinct strategies related to the challenge of sustainability”

**Your work on the implications of environment and poverty for business strategy is well known. Could you elaborate on the Sustainable Value Framework that you have developed?**

The core idea behind the development of the Sustainable Value Framework was that it would be especially relevant for corporates and existing enterprises that have an on-going core business. The idea was to provide a road map so that corporations could have a common language, an overall framework for mapping what they are doing and what they would like to do from the stand point of sustainability. Sustainability is such a big idea. There are so many dimensions such that it becomes a confused topic inside corporations - you have different people talking about different aspects, people doing eco-efficiency in factories, break-through technology and innovation, R&D, social initiatives on the ground with communities, so it becomes confusing to know what exactly comes under the ambit of sustainability. The idea behind the framework then was a way to talk about this in an organized way so that they know what their overall level of initiative is. This would then perhaps help identify the areas where they have less initiative. For most companies there's

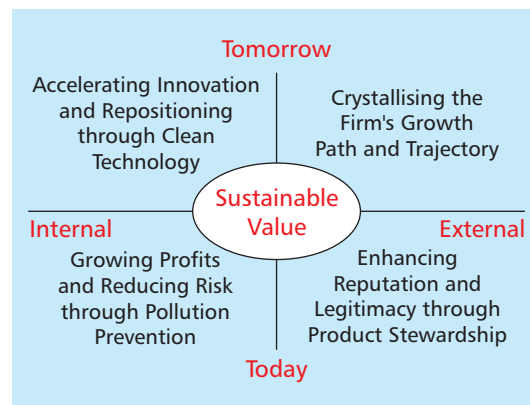
typically a lot of initiative and action in the eco-efficiency area, CSR and stakeholder engagement but this is at the bottom of the sustainable value framework. Most corporates have a lot going on in terms of legitimization of existing policies but there's considerably less effort and investment focus in leap frog, next generation technology and clean-tech. It is here that the sustainable value framework comes in handy as a tool for strategic planning.

**You mention that all businesses have their own definition of sustainability - in some cases it's about CSR, for some the focus is on energy efficiency; if you could give a simple definition of sustainability for businesses, what would it be?**

I actually think that's a trick question, the search for a simple definition- because you can't have one. And it sort of says that in the framework. I can provide a high level definition but it would be operationally meaningless. The idea that a sustainable company is one that prospers while addressing social and environmental problems is again meaningless from an operational point of view. What I try to do in the framework is double click on that very general notion so that it gives more additional strategic and operational guidance to what different strategies look like. So eco-efficiency is different from corporate social responsibility, which is completely different from next generation leap frog, which again is very different from the fourth strategy which is to do with the base of the pyramid. And it is these differences of approach to the same idea that corporates need to understand. Those are four very distinct strategies all related to the challenge of sustainability and it makes sense for every corporate to take all of them into consideration.

**Where do you think Indian industries stand where sustainability is concerned?**

Of course this is a very general question, and I don't have any systematic data to give a



“In India, vast majority of companies are still thinking of sustainability in general eco-efficiency and CSR terms”

factually grounded reply. But the over-all impression, and I repeat this is just my impression, I got in the process of speaking to a lot of companies, is that when it comes to sustainability in India, the vast majority of companies are thinking about it in very general eco-efficiency and CSR terms. There is a strong desire for the typical Indian corporate to not jump ahead fast; to really want to see value demonstrated before they climb on board. This is also true of all big corporations, not just unique to India. But then there are these small companies who are really stepping out in this whole domain. In some ways they have really set the mark.

There are more and more of these kinds of start-ups in the distributive energy space, in the water space, and so on. These entrepreneurial start-up companies are very exciting in terms of sustainability. They are pioneers who will move in and take this game forward. Needless to say, these are much smaller firms as compared to the Tatas, Mahindras and the ITCs.

The situation is not atypical to India but the condition is different because India is such a large country. At the Indian Institute of Sustainable Enterprises our entire focus is on entrepreneurs and corporate intrapreneurs. We are slowly gravitating towards the intrapreneurial corporations.

#### **What are the similarities and differences in the way Indian businesses approach sustainability vis-à-vis global companies?**

Being an academic, I'm about systematic studies and since those are not in place, I can't make any definitive statements. If I were to summarize the similarities and differences, I would say that in many respects India is very similar to any other large global country. You find a large mass of established corporations that are hesitant to jump in with both feet into this whole innovation space and are more interested in reporting, doing eco-efficiency initiatives and community engagement or CSR and that's where most Indian corporates are. I don't think that's especially unique to India, it doesn't surprise me and that's not news, because that's where most corporates are generally – in the US or in China. But having said that there's this subset of Indian entrepreneurial activities and that's what makes it so special – there are way many more initiatives than you find typically in the US. Both in terms of the small companies and in the start-up world, there are many more exciting ventures in India than elsewhere.

#### **Considering India is a developing nation which is trying to get on the low carbon growth path, what do you think are the key issues that India as an emerging market needs to focus on as regards to sustainability?**

At the core I'm a strategy guy. If I look at the lower part of the sustainability value framework, what I call the 'greening agenda' or even around CSR, product stewardship, take-back, reuse, recycling, those are quite highly developed in Europe, USA and Japan. In that sense, it's hard for me to see how Indian corporates could overtake the Europeans, the Japanese and Americans in that space, in their own game of continuous development of existing products. But at the same time that's what most Indian corporates are doing. I don't really see how doing only that produces world class leadership. Instead I think there's an enormous opportunity for Indian corporates, given the challenges that India as a country faces given the inequity in the country. In this sphere then, there's a chance for entrepreneurial and intrapreneurial companies to develop entirely new strategies for the world and become world class in that way. And that is what Indian Institute of Sustainable Enterprises is about.



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“We are trying to create an innovation ecosystem around the green leap space at the institute”

“Future lies in steering Indian corporates in the green leap space”

**Let's talk more about the Institute then. What are your main goals and who are you trying to target and where are you at?**

The goal of the Institute is quite focused - it's very audacious but it's focused. It's not a small goal. The goal is to massively accelerate both the number of new intrapreneurial and entrepreneurial ventures in this space at the intersection of clean-tech and BOP, the 'green-leap' space and dramatically increase the likelihood that they are successful. We are looking to create an innovation eco-system around that goal and that includes an education capability development platform. We have a flagship program that we launched in August which won't be a degree course but a certificate program. The focus is about launching new ventures and not just getting a piece of paper to get a degree, getting trained, getting an MBA and getting a job in existing companies. The focus is to generate new companies, new initiatives, new ideas and entrepreneurial ventures. The flagship program is the end game and the point of the program is to get new ventures launched. So there's the education capability development program but then there is an executive development program as well. There is a new venture fund, a financing vehicle called Papillon. In addition we are looking to create a technology bank- in our view there are a lot of existing shelf technologies in the clean-tech space sitting in universities and corporations. Though many of these are distributive and disruptive technologies, they have not been commercialized. We are looking to bring those technologies into the bank and to allow that technology to collide with intrapreneurial and entrepreneurial ventures so that we can go out on the ground. A lot of the education and capability training is about co-creating and inventing technologies rather than just creating cheap products to sell to the poor. So it's a methodology for co-creating new business models and innovative new enterprises. We are shaping this co-creation framework along with clean technology, new forms of financing and embedding these through social networks. In the social network space, we're looking to build clusters with ventures and NGOs along the lines of generation and distributive ventures of renewable energy, water treatment, etc. These are all different cluster networks that we are building up. The problem is that as an entrepreneur you cannot really work by yourself, you need to be embedded in a bigger eco-system with partners and collaborators. That's what we are trying to do in the Institute, to create an innovation eco-system around the green-leap space.

**You mentioned a financing facility. Tell us more about that.**

The idea is to start with high potential models that are quite well-developed in that space. The Papillon people are looking at 2-3 much larger deals – typically late stage, high profile ventures that the company can help to take to scale and then to focus on early stage companies.

**What would you say is the way forward for Indian companies to be more sustainable?**

There's this sharp focus beyond greening space in the sustainable value framework. So the challenge and the opportunity for Indian corporates is to focus more on that space as opposed to following the more conventional strategy of CSR and eco-efficiency. I know that it can sometimes feel uncomfortable because the Indian corporates wants to wait until the value proposition has been proven before they jump in. But my argument would be if that's your attitude then you're probably going to be on the sidelines permanently. The question is which entrepreneurial ventures and which corporates are going to stake out that territory. There's a growing appetite for launching these kinds of initiatives in the US, in Europe and in Japan because just trying to persist with existing strategies in established markets doesn't have a long term growth future. We're actually getting a lot of uptake on the strategy being evangelized by the Institute from US, European and increasingly Japanese corporations. It's comparatively a difficult proposition to bring in the India corporate sector beyond the small numbers of players that I have been describing. So I would say the big challenge is to steer the next tier of the Indian corporate into this space because that's where the future really lies.

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# RISING FUEL PRICES COMBINED WITH EMISSIONS NORMS WOULD CATALYZE INNOVATIVE MOBILITY SOLUTIONS



Sustainability Outlook spoke to Arvind Goel, President & Business Head at TATA Autocomp Systems Ltd. about the impending compliance requirements in the Auto Industry

## **Is policy compliance always a constraint or can it also be viewed as an opportunity?**

In my view, it is a mindset issue. If viewed openly and positively, it will always be an opportunity. But the real question is whether to work for the policy and regulation compliance or look beyond. There is definitely a first mover advantage with innovative cost effective mobility solutions. The one with the vision will be able to see beyond the horizon and once envisioned, will ensure that he will reach there. For example many aggregates in the current automobile system are underutilized according to me.

There is still a huge potential for weight reduction through usage of engineering plastics, composite materials, waste energy recovery, usage of starter motor and generator as power train boots, reduction of tyre friction, reduction in vehicle resistance generated by air flow.

## **Could you describe some of the initiatives being undertaken by TACO to drive sustainability into mainstream business?**

We at Tata AutoComp have mapped the carbon footprint of each of our operating units and have taken a target to reduce the carbon tonnage added per crore rupee of value-add. We have put in place a mitigation plan and are actively working on the same.

This is being monitored at the central level by our Group CFO. Besides, we encourage creation of green covers – each of our manufacturing facilities have water bodies, actively harvest rain water and also conserve water and natural resources.

While this is on the material resource front, on the human resource side, we look at measures that would help sustain our business. The industry is facing a shortage of skilled manpower. At the same time we have an ironical situation where the unemployment is very high. To harness the human capital available in semi-urban/ rural areas, we have set up skill development centers across our operating units. These would impart skills as well as give on the job experience to the interns and make them employable in the future. We are also engaged with 2 ITIs under the Government of India's PPP initiative.

## **Tata group is a pioneer in many ways. As a senior business leader, do you feel there is a strong case for companies to proactively adopt sustainability related measures such as resource conservation?**

At the Tata Group, we firmly believe that the society is not a mere stakeholder of our business but the very purpose of our existence. It was with this philosophy that our founder Mr. Jamsetji Tata founded the group and this philosophy has been the guiding principle for all Tata Group Companies. Hence, all Tata Group companies proactively adopt sustainability related measures.

We are well aware that the ecological balance needs to be maintained in order to ensure long term availability of natural resources. It is also imperative for us to ensure that we take care of the environment so that our future generations do not inherit a problem, but inherit a world where they can grow and foster. Hence, we at the Tata Group, have been actively involved in resource conservation.

“At the Tata Group, we firmly believe that the society is not a mere stakeholder of our business but the very purpose of our existence”

“The greatest driver for any business to undertake resource conservation is the long term sustainability of the business”

Most Tata Group companies have mapped their carbon footprint and are actively taking measures to reduce this carbon footprint. The measures include turning the offices green as well as conserving power and fuel by optimizing operating efficiencies and looking at alternate technologies.

But we do not stop here. To give some examples where some companies within the Tata Group have intervened one can cite the example of how Tata Chemicals worked on a program to save the Whale-shark. This fish was hunted in large numbers off the shores of Gujarat and commanded a very high price in the international markets. A time came when the Whale-shark was declared as an endangered species. Tata Chemicals conducted road shows and street plays to educate the local fishermen not to hunt this fish and today the Whale-shark is off the endangered list.

Another case in point is the hills of Lonavala. The tribal folk living in the hills of Lonavala were cutting the trees for fire-wood and also to sell the wood for livelihood. Over a period of time the forest cover over the hills of Lonavala (Western Ghats) reduced to an extent that the annual rainfall in this area reduced. Tata Power intervened and conducted many educational programs within the tribal community. The solution was not to prevent the tribals from cutting trees, but in educating them to preserve the eco-system. Tata Power employed horticulturists who educated the tribals on planting fast growing trees, which trees to cut and which to preserve and how to ensure that the green cover is not lost. Today the hills of Lonavala are green again and the annual rainfall is back to normal.

While in the first case, there was no connection whatsoever with business, in the second case it was linked to core business sustainability. Tata Power relies on rain water to generate hydro-power. Drop in rainfall had a long term threat on the power generation potential. Hence this intervention was necessary.

There are many such examples within the group where companies have gone beyond their scope of work to conserve and nurture resources – both natural and human.

#### **What are the drivers for businesses to consciously undertake resource conservation?**

The greatest driver for any business to undertake resource conservation is the long term sustainability of the business.

It is imperative that each business maps its long term sustainability challenges from societal and environmental challenges. This will enable the business to see long term impacts on its sustainability and undertake conservation measures. The example above of Tata Power engaging in conservation and active protection of the Lonavala forests is a result of that. Some of the businesses that have a high dependence on natural resources perhaps realize the need for conserving sooner than others. Each resource, human, capital, social and environmental has an impact on the long term sustainability of the business and the sooner the business realizes this inter-link, it would work towards conserving these resources.

#### **What are the key challenges preventing businesses from adopting such measures?**

Today, businesses are under tremendous pressure to deliver returns to the shareholder. Even the shareholders are looking for quick gains and returns on their investments. Hence the business leaders are more caught-up in transactional issues and have a shorter time horizon in view. The other factor perhaps is that the threats do not seem immediate and hence do not demand immediate attention. Consequently, while there maybe sensitization, the actions are often pushed onto the back burner.

#### **What are the areas of immediate improvement in the auto component industry from a resource efficiency stand point?**

The immediate improvement is happening at two levels viz. the macro or industry level and micro or operational level.

At a broader level the auto-component industry is today investing in advanced technology that would improve the end product which is the automobile. The auto-component industry is constantly striving at weight reduction and miniaturization - either driven by competitive market forces or regulations. This in itself ensures that the automobiles are lighter, more fuel efficient with highest levels of end-of-life recyclability. One of the most effective tool is VAVE – Value Added Value Engineering; fundamentally this entails revisiting everything we have done to see what needs to be re-engineered to remove the NVA.

One Business Unit of TACO, Tata Toyo Radiator achieved a weight reduction in range of 15% to 20 % using this tool. This would mean lowering of the carbon footprint in multiples of the weight reduction.

“Indian auto component industry fares negatively as compared to their counterparts in China, Brazil, Indonesia and Thailand”

At a very micro level, the auto-component companies are improving their overall operational efficiencies to ensure maximum resource utilization. But this is actually input-cost driven. The wafer-thin margins, on which most auto-component manufacturers work, drives the manufacturers to ensure optimum efficiencies in resource utilization – man, machine, material and money. It is becoming more of a survival issue.

In terms of overall effective utilization of assets, Indian auto component industry fares negatively as compared to their counterparts in China, Brazil, Indonesia and Thailand. The levels of rejections and rework are still in double digit and as we move down, the tiers show increasing trend. Addressing these wastages requires a different point of view. They need to be looked upon as aggregate waste in the entire supply chain, rather than a parochial view of being company or unit specific.

Time has come to really go to the depths to understand whether the low cost country advantage is really because of the labour arbitrage or due to misuse of labour policies, especially the contract labour system. The use of ‘cheap’ labour is one of the contributing factors to higher reworks and rejection amongst the lower tier suppliers.

At a micro level, there are also several measures being implemented focused at shaping manufacturing units into water neutral and subsequently water positive facilities.

Other simple initiatives include use of wind driven roof extractors to improve ventilation in shops, use of LED tube lights, transparent polycarbonate roof sheets to improve light ventilation, etc.

#### **How will the impending compliance requirements (especially in context of fuel efficiency standards) impact Indian businesses in the sector?**

Bharat Stage IV norms being followed in the metros and BS III in rest of the country are in many ways aligned to the European Union's emission norms. Presently there is lag of one and two levels respectively with the corresponding European emissions norms, which will increase to a lag of 2 & 3 levels respectively. Time has come to leap frog to overcome this lag and be at par in the next 2 years. With new technologies like bio-fuels, advance emission systems, diesel particulate filters, it is now a fairly achievable task.

The impact and opportunities can be classified as Pre-ignition and Post-ignition for the sake of easy understanding.

On the Pre-Ignition front, the current efforts to meet emission norm are clearly driven towards miniaturization of engines, i.e. a 2 litre diesel internal combustion engine becoming 1.3L and further being reduced to 1000 cc with power levels being maintained with the help of turbochargers/ superchargers. In near future, this would further be enhanced with extensive mild hybridization of power-trans viz. engine start-stop, regenerative braking, starter motor to be used during low speed cruise in congested traffic conditions, exhaust gas regeneration, bio-fuels etc.

On the Post Ignition side, focus needs to be on improvement of quality of exhaust gases from internal combustion engine with use of in-line CATCON, manifolds for cold start, dual muffler for gasoline engines, particulate trap for diesel engine, urea dosing system.

In the longer run, the continuously rising fuel prices combined with stricter emissions norms would see new players emerging with innovative mobility solutions, which would be beyond the conventional definition of an automobile. The threats are clear and persistent and the disruptive forces will get stronger with passing time.

*Arvind Goel joined TACO in 2008. He has 29 years of experience in managing projects, manufacturing, vendor development, materials, marketing, exports etc and has developed diesel engines, gear box, axle and cab for heavy and light commercial vehicles. Prior to joining TACO, Arvind Goel worked for 26 years with Force Motors Ltd as President and COO of Man Force Trucks.*

# FINANCING SUSTAINABLE INFRASTRUCTURE: THE NEED AND CHALLENGES



Cherian Thomas,  
Chief Executive  
Officer, IDFC  
Foundation

“Signing up to the UN Principles for Responsible Investment and the Carbon Disclosure Project, as organizations like IDFC have done, would send the right signals to the market”

The challenges of achieving rapid and continuously high levels of economic growth as a means to poverty reduction include the need to balance development aspirations with minimal environmental impact. Given the global impetus to peg carbon emissions to 2005 levels over the next two to three decades, it is clear that infrastructure creation on a low-carbon trajectory is the only sustainable way forward for India. Infrastructure, due to its capital-intensive and long-gestation nature, would require significantly high levels of long-term financing. With the exception of airports, ports and power projects set up for cross border sales of the power generated, the earnings of most infrastructure projects are denominated entirely in local currencies. The ability of infrastructure to absorb cross-border financing in significant volumes is, therefore, limited, more so, given the lack of standard long term hedging products and little market depth for long-term swaps. Availability of domestic financing of the required magnitude is therefore critical to the development of infrastructure in any location.

Over the last decade and a half, private investment in infrastructure has emerged as a significant component of the total investment in infrastructure in India. The 12th Plan estimates that 50% of the targeted gross capital formation in infrastructure (US\$ 500 billion) would be from private sources. Since around 70% of such financing would be through debt sources, the bulk of it in rupee term loans, commercial banks and financial institutions would continue to have a dominant role to play in the financing of infrastructure. Given the enormous influence that they wield, it is, therefore, critical that banks and financial institutions are appropriately sensitized and alive to the need for creation of sustainable infrastructure, going forward. This would require, first and foremost, attitudinal changes in the leadership and senior management of these entities – recognizing the need for infrastructure development to shift to a low carbon and optimal resource utilization path.

Only then would this translate into appropriate appraisal standards and procedures in the credit delivery processes of these lenders. Signing up to the UN Principles for Responsible Investment and the Carbon Disclosure Project, as organizations like IDFC have done, would send the right signals to the market. Gradually, all large infrastructure financiers could adopt Equator principles or appropriate Indian equivalent standards that would clearly reflect this commitment to financing sustainable infrastructure. Responsible Investment Research Association (RIRA), an initiative set up recently in partnership with IDFC Foundation, could be a useful platform to bring together lenders and financial investors in this effort.

While financing has influence in determining the process of development, it is not the only tool through which sustainable infrastructure could be delivered. In fact, it is through the formulation of appropriate development policies and regulatory frameworks, programme design and the project development process that the course of sustainable infrastructure development can be assured. This calls for greater engagement of lenders, investors, policy makers and other stakeholders in the process of policy formulation and development keeping sustainability in mind, as was done while developing concession frameworks for various infrastructure sectors. It would be useful and perhaps, necessary, to develop a clear hierarchy of preferences for development of infrastructure. This would need to be done both sectorally and cross-sectorally, and sometimes at the cost of short-term profitability or value frameworks of the stakeholders concerned.

For instance, in the transport sector, the order of preference could be non-motorized transport over motorized forms wherever possible. It would be in using coastal shipping and inland waterways, in preference to railways and in turn railways in preference to road transport for the long haul of bulk cargo. For passenger transport, the choice would be public transport

“Much advocacy and consultations would therefore be needed for moving quickly on the low-carbon trajectory in a non-confrontational manner”



over personal forms of transport and within this preference - buses, bus rapid transit systems and urban rail systems in that order. For power generation, it would be using renewable energy from wind, solar and hydel sources and biomass over carbon fuel based projects. Even within thermal generation the preference for gas, liquid fuels and cleaner coal – in that order cannot be over stated. To conserve energy sources intensive plans to improve efficiencies and reduce losses in electricity distribution and active demand side management – in lighting, for instance, would need to be aggressively pursued. In telecom, sharing of both active and passive infrastructure could be the way forward, both from an economic and resource conservation standpoint. Of course, all these choices should be based on credible research undertaken as to the environmental and low-carbon efficacy of each of the options.

For water supply services, the preference could be for decentralized water harvesting and recycling systems and regeneration/ creation of existing/ new tanks and lakes, more so since a bulk of the costs of water supply in most large cities are energy costs incurred for pumping the water over long distances and to substantial heights. It may be necessary to put in place intensive water treatment, recycling and common effluent treatment installations and manage these efficiently through private sector participation to aid water conservation and recycling. Generation of power from solid waste through appropriate technological choices and incentives could make projects viable for commercial financing and deal with the twin challenges of electricity generation and waste treatment. As the country rapidly urbanizes over

the next two decades - local laws for rain water harvesting, waste segregation, solar powered installations, facilitating pedestrian traffic, congestion period pricing, personal vehicle ownership charges and cesses on fuels like diesel could help achieve the vision of creating smart cities.

This would need concerted action - credible research, formulation of appropriate policies and regulations, putting in place transparent frameworks of incentives and penalties and intensive implementation and monitoring regimes. And for all this, we need to see vastly improved standards of governance at the Central, state and local levels – which would require a visible demonstration of political will across the political spectrum. Much advocacy and consultations would therefore be needed for moving quickly on the low-carbon trajectory in a non-confrontational manner. This would be the biggest challenge and necessary to take sustainable infrastructure from the level of inspirational statements to goals and targets that can be achieved and celebrated. Financing is the lesser challenge – it would always chase well-structured projects.

*Note: Views expressed are personal and may not reflect the official position of IDFC/ IDFC Foundation*

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# SUSTAINABLE RETAIL: THE NEW INDUSTRY BUZZWORD



Roselin Dey,  
Senior Associate,  
cKinetics

The sustainability coin has two sides: sustainable production and sustainable consumption. Newer compliance mandates and regulations coupled with increased investor and client demands for responsible business behavior have led to the onset and acceptance of cleaner production practices.

Due to this, sustainable production has increasingly become a reasonably well known and well accepted concept in Indian companies. However, when it comes to promoting sustainable consumer behavior in India, there is still a high hurdle to cross.

Even though consumer surveys show that more and more Indian upper middle class consumers are ready to shell out extra money to buy 'greener products', there is still no denying the fact that this group constitutes only a small minority of the consumer class. One of the key reasons for this limited uptake of responsible consumer behavior is that consumers still cannot relate to the environmental impact caused by the products that are daily used or consumed by them. The only way to overcome this hurdle is for the brands to step forward and help customers understand such aspects of product use, while also providing them a wider range of more sustainable options.

Lately, a few forward thinking brands have come up with innovative and ingenious methods to ensure that they influence consumer behavior while also creating a positive brand image for themselves.

## Environmentally Sustainable Retail – The Puma way

PUMA, leading sports lifestyle brand, made big news in the sustainability circuits last year by releasing the first-of-its kind Environmental Profit and Loss Account (E-P&L) for the company. PUMA's E P&L was the first ever attempt to measure, value and report the environmental externalities caused by a major corporation and

its entire supply chain and set a new benchmark in corporate environmental reporting.

The firm added a new 'green' feather in its cap by opening the first and only sustainable retail space in India. The store in Bangalore is locally developed, sourced out of India, and incorporates a number of revolutionary design elements to ensure that it meets the highest criteria for sustainability. Poised to be the flagship store for PUMA in India, the store is a global first for the brand.

"PUMA is happy to take this pioneering step forward for the retail industry", said Franz Koch, CEO of PUMA. "Establishing a sustainable PUMA Store underlines our commitment to reduce CO2 emissions, energy, water and waste in PUMA offices, stores, warehouses and direct supplier factories."

"Our aim is to incorporate sustainability into every aspect – be it in our design, use of material or packaging", says Rajiv Mehta, Managing Director of PUMA India.

Talking about the recent retail format initiative, Rajiv adds, "We changed our mission statement a year ago to emphasize our commitment to becoming the most desirable and sustainable sports lifestyle brand in the world. We began with Clever Little Bag (a packaging solution), made our headquarters in Germany a sustainable building and then forayed into taking this to our most important and visible touch point – retail."

The store, spread over an area of 5000 sq. ft., has design features focused on enabling energy efficiency, optimal daylight usage, natural cooling features and air insulation through earth air tunnel system. The store is also completely powered by renewable energy through solar PV panels installed on the roof. Even the porotherm blocks used for constructing the building shell have been made using silt from the regional lakes which earlier ended up as waste.

“Sustainability is being economically, socially and environmentally conscious and not just being eco-friendly”

Along with sustainable building design features, the PUMA sustainable store would also be hosting a complete range of organic pesticide free cotton merchandise as well as the PUMA Wilderness collection, a range primarily sourced and produced in Africa using environmentally sustainable materials and certified by the Aid by Trade Foundation (AbTF). Additionally, the PUMA Store would also have an in-store recycling program for footwear, apparel and soft accessories, called 'Bring Me Back' launched in collaboration with global recycler I:CO .

### **Socially Sustainable Retail**

Recently, fashion and lifestyle retailer, Shopper's Stop pioneered the entry of socially sustainable products into large-format retail. The retail brand recently entered into partnership with Shop for Change, an NGO collaborating with farmer groups across 5 Indian states to source environmentally sustainable organic cotton while ensuring better livelihoods for the farmers. Shopper's Stop launched an exclusive range of clothes using this fair trade cotton and also promoted it by organizing special sustainable retails sections within their stores.

While talking about customer feedback, Vinay Bhatia, Senior Vice President, Marketing & Loyalty, Shoppers Stop Ltd. says, "This collection is made entirely from Shop for Change Fair Trade certified cotton. The social implications of using Shop for Change fair trade certified cotton are truly phenomenal. It allows farmers to receive 15% additional income and at the same time makes customers feel good about making

a difference. We are already seeing a great response to the Shop for Change collection from our customers."

Through such initiatives, leading brands as well as retailers are clearly showing that they are ready to take the first step. Rajiv Mehta, Managing Director of PUMA India sums it up nicely "Sustainability is being economically, socially and environmentally conscious and not just being eco-friendly. If companies show commitment to being sustainable then they will soon find that it bring more rewards and gains in the long run."

Clearly long terms benefits are achievable by promoting sustainable consumption and retail behavior as well – the key is to understanding how to best leverage this opportunity.

*Roselin Dey is currently working as a Senior Associate with a sustainability consulting firm, cKinetics. She holds a Masters Degree in Natural Resource Management from TERI and specializes in research, program management and communications in the area of corporate sustainability.*



SXC.XU Photostream

# LOOK FOR THE LABEL: CATALYZING SUSTAINABLE CONSUMER BEHAVIOUR



Seth Petchers,  
CEO, Shop for  
Change Fair Trade

I've sat down at a Mumbai café to write a piece on labels and sustainable consumer behaviour. I should have done this several days ago and now the deadline I've been asked to meet is tomorrow. But there was Lakme Fashion Week, where my NGO Shop for Change Fair Trade brought in a cotton farmer from Akola, Maharashtra to do an on-site video interview on fair trade cotton with actor Parvin Dabas. And then the planning for fair trade Diwali gift hampers that several companies will be giving to their employees this year in place of the typical dried fruits and namkeen boxes. Time got away from me to write something 'authoritative', and in any case I'm not so sure I have the authority to do that. But what I can do is share some experiences and observations from my time promoting fair trade in the US and now in India. Perhaps more than any analysis, these anecdotes about how fair trade certification labels motivate consumers to 'vote for sustainable business with their wallets' show the role that sustainable product certification labels can play in shaping the relationship between consumers, farmers, and brands - both in the West and in India.

## What is a fair trade label?

To set the context, let me provide a quick primer on fair trade labels (with compliments to the people who have contributed to the Wikipedia entry on fair trade).

The concept of fair trade certification was launched by the Dutch NGO Max Havelaar in 1989 as a way to create positive incentives for companies to source farm crops in a way that helped ensure a better deal for farmers. When companies agreed to follow certain voluntary social and environmental sourcing standards, Max Havelaar conferred on them the right to label certified products with a fair trade certification mark that differentiated products on retail shelves. Twenty-plus years later, fair trade certification is a huge success story, both commercially and for the small scale farmers who benefit from the system.

Fair trade certified products, including coffee, chocolate, cotton textiles, tea, wine, sugar, and fruit juices, are offered by major global brands like Starbucks, Wal-Mart, Tesco, and Nestle. In the UK, it is estimated that 70% of shoppers recognise that country's most prominent fair trade label, and in Switzerland more than one out of two bananas purchased have a fair trade label. This success propelled global sales of fair trade labelled products to an estimated \$US 6 billion in 2010. Here in India, Shop for Change Fair Trade, launched India's first home grown fair trade label in 2010.

## The label to educate

Working as an advocate of new opportunities for small and marginal farmers, a fair trade label first and foremost provides a platform to educate consumers about the stories of the farmers behind the food on their breakfast tables or the clothes in their wardrobe. In the US, I worked with colleagues to launch the country's first fair trade label in the late 1990s and early 2000s. The crop we focused on initially was coffee - a timely choice, as prices that coffee farmers were receiving then were the lowest in 30 years (not so unlike my current focus on cotton and the ongoing farmers suicide stories in places like Akola and Amravati in Maharashtra, India). Despite the boom of the café culture, few US consumers had any idea about the struggles facing farmers growing the beans for pricey cappuccinos and lattes. When they found out, a sense of guilt and the inability to make a difference often dampened any interest in learning more. Enter fair trade certified coffee - beans traded in a way that supported farmer groups and ensured that poor farmers got a fairer deal. Those of us promoting better rural livelihoods now had a tool to communicate not only about the challenges facing farmers but a way for an average consumer to make a difference. Consumers listened, and the next time they went for a coffee they asked for one with a fair trade label.



“Choosing fair trade labelled offerings over others, is not just good for farmers and the environment, but also a smart business decision – a true win-win”

### The label to empower

As a basic understanding of the plight of farmers behind everyday products took hold in the US, so too did the recognition by enlightened consumers that they were not just silent observers in the process by which their favourite products were produced. Just as consumers chose to patronise companies with tastier, prettier, and better functioning products, conscious consumers realised that by choosing fair trade labelled offerings over others, they were letting companies know that fair trade wasn't just good for farmers and the environment but also a smart business decision – a true win-win. In the time I spent advocating fair trade in the US, perhaps the most poignant example of consumer empowerment catalysed by the fair trade label was the work by a national student organisation, United Students for Fair Trade (USFT). Recognising the opportunity that they had to signal companies that sustainability was an essential part of a brand's USP, student organisations around the US lobbied their universities to make a fair trade label one of the requirements for companies selling coffee to be served in the mess. One by one and then in rapid succession, universities agreed and began rewarding companies that would provide fair trade. As a result, some major brands in the coffee industry began offering coffee with a fair trade certification label, using it as a differentiator to win contracts.

### The label to ensure

As sustainable coffee became common place in American cafés, grocery stores, and office canteens, consumers increasingly looked to the fair trade label as a mark of trust. A symbol of adherence to a transparent set of social and environmental standards, a fair trade label conferred by an independent certification agency provided convenient assurance to conscious consumers who didn't have the luxury and ability to do the homework required to determine that the farmers growing their beans were really getting a fairer deal. Farmers and reputable NGOs with a presence on the ground publically backed the label and journalists traced the fair trade coffee audit trail back to the communities that benefited. To the mantra 'look for the label', a tag line was added: 'proof that your coffee was grown responsibly.'

### Opportunities for farmers and businesses in India

In the fourteen years since fair trade labelling has become mainstream in the US market, more

than 11,000 fair trade labeled products across 16 product categories are now available in over 1,00,000 American retail outlets. It is often wondered whether this concept will have the same traction among Indian consumers and brands that it has had in the West. The answer: Yes. Why? Research data gathered by firms like Edelman, MasterCard, and IMRB cite findings that the vast majority of Indian consumers surveyed gravitate to brands and products associated with a cause and are even ready to pay more for them. My own belief in the power of labels to promote sustainable consumer behavior lies more in my own experience than in any facts and figures. Typically when consumers learn about the problems and are given a solution as easy as choosing products with a fair trade label they are quick on the uptake. Here in India, a struggling farmer isn't a world away but a train ride away. Mumbaikars, Delhiites, and Kolkatans read about farmer suicides in the paper and every day drive by members of farming families who have flocked to the city because they couldn't earn a living back in their villages. These challenges seem overwhelming. But people do want change, and with a powerful tool like a fair trade label to educate, empower, and ensure, big things are possible in India.

*Seth Petchers is the CEO of Shop for Change Fair Trade, an NGO working to build the market and the movement for fair trade in India. Shop for Change was established by Traidcraft Exchange (UK) and International Resources for Fairer Trade (India) and is funded by the European Union, ICCO, Hivos, and NABARD.*

# SUSTAINABILITY REPORTING: AN ENABLER OF RESPONSIBLE FINANCE FOR SUSTAINABLE DEVELOPMENT



Katherine Miles,  
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Climate Change and  
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Trina Datta, Climate  
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The financial services sector plays a catalytic role in the promotion of sustainable development through deploying finance responsibly. As intermediaries in allocating capital, investors and lenders have the power to influence social and environmental practices and performance of companies dependent on its finance, rewarding those who effectively manage their risks and penalize those who fail to account for their environmental and social impacts<sup>1,2,3</sup>. This is recognized as not only in the interests of the greater good but for the 1071 UN backed Principles for Responsible Investment signatories, with assets of over US\$ 30 trillion, it represents a public commitment to incorporate ESG criteria into their decision-making and ownership practices. But why do so-called responsible investors and banks call for disclosure by entities they invest in or lend to and call for sustainability reporting? Moreover, what role does sustainability reporting play to facilitate the process of responsible finance?

Responsible Finance is a broad umbrella term for strategies employed by financial institutions involving the integration of environmental, social and governance (ESG) criteria and metrics into financial lending and investment decision making. Banks and investors apply ESG criteria both from a risk and opportunity perspective in recognition that these non-financial factors also contribute to long term financial returns and sustainable economic development. This recognition of the relationship between financial and non-financial performance is illustrated by the increasing number of signatories to a plethora of international

commitments and declarations related to responsible finance by both investors and banks.

As of today 73 banks have signed up to the Equator Principles (Eps), a credit risk management framework for determining, assessing and managing environmental and social risk in project finance transactions. Similarly, more than 655 institutional investors representing in excess of US\$78 trillion in assets have signed up to the Carbon Disclosure Project (CDP) endorsing a questionnaire that requests information on greenhouse gas emissions, energy use and the risks and opportunities from climate change from thousands of companies worldwide. In doing so, these financial institutions are highlighting their recognition that water and carbon present risks to companies' financial performance.

Beyond these commitments, financial institutions increasingly translate these commitments into practice by developing policies and screening criteria for their clients or investees. In turn against these policies they apply positive screening strategies, wherein they lend to or invest in companies with good practices; and negative screening strategies, where they seek to screen out companies based on their unethical practices or poor sustainability track records<sup>4</sup>.

To be able to assess a company's performance using responsible finance strategies, the financial sector is dependent on data from companies on their sustainability practices. As such investors and banks routinely call on companies to disclose their sustainability performance through sustainability reporting.

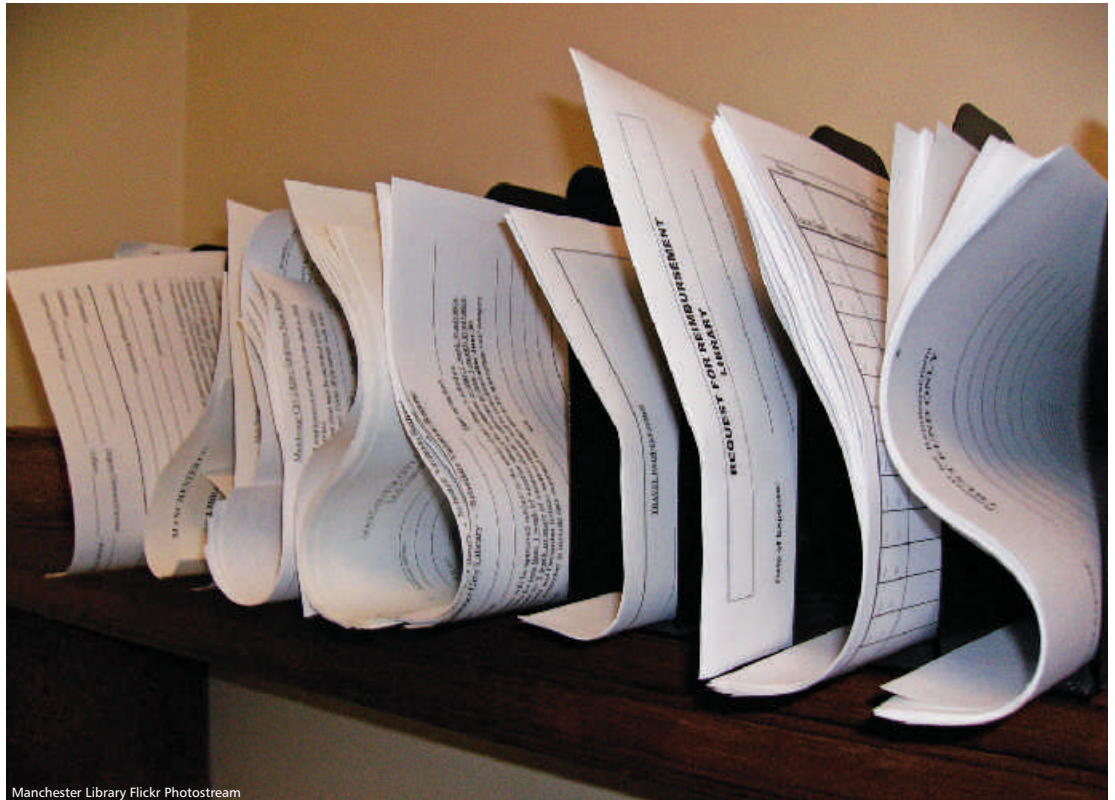
<sup>1</sup>EY, GIZ 2012, *Responsible Finance – A Catalyst for Responsible Business*

<sup>2</sup>IFC 2007, *Banking on Sustainability: Financing Environmental and Social Opportunities in Emerging Markets*

<sup>3</sup>UNEP FI 2006, *Translating ESG into sustainable business value – Key insights for companies and investors*

<sup>4</sup>EY, GIZ, 2012, *Responsible Finance – A Catalyst for Responsible Business*:

“Despite the various efforts to promote responsible finance by a mixture of regulatory and voluntary initiatives taken to expand sustainability reporting, there are a number of operational challenges, especially in the Indian context, which stand in the way of responsible finance”



Manchester Library Flickr Photostream

A recent Ernst and Young study on the international and Indian trends in responsible finance, commissioned by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), shows sustainability reporting is a key trend in the promotion of responsible finance.

This demand for transparency in the sustainability practices of companies is driven not only by financial institutions<sup>5</sup> but also by other stakeholders such as governments and NGOs demanding greater transparency and accountability by companies through disclosure on their contributions towards sustainable development. Furthermore, it is driven by companies themselves who are internally recognizing the benefits it brings<sup>6</sup>. Improved brand reputation and reduced costs are cited as the greatest benefits in addressing sustainability, according to a 2011 survey with 862 respondents undertaken by MIT Sloan Management Review, and the Boston Consulting Group<sup>7</sup>. As a result of these drivers, in 2010 alone, approximately 3,500 sustainability reports were produced globally<sup>8</sup>.

Nevertheless, corporate disclosure is not enough for banks and investors to make informed lending and investment decisions. This information needs to be standardized to facilitate comparability. It is for this reason financial institutions call for reporting in line with the Global Reporting Initiative (GRI), a standardized global framework for sustainability reporting. This framework has been developed using a multi-stakeholder consensus seeking approach including investors. In 2010, a total of 1866 companies published GRI sustainability reports, out of which 24 were Indian<sup>9</sup>.

To further promote sustainability disclosure and obtain corporate sustainability performance data financial institutions are encouraging stock exchanges to include sustainability reporting as criteria in their listing requirements. In January 2011, investor signatories to the UNPRI sent a letter to the top 30 stock exchanges calling on them to encourage firms to adopt integrated reporting, including sustainability information<sup>10</sup>.

<sup>5</sup>EIU, 2010, : *Global Trends in Sustainability Performance Management*. <sup>6</sup>MIT Sloan Management Review & BCG, 2012

<sup>7</sup>EIU 2010, <sup>8</sup>GRI, 2011, *GRI Reports List 1999-2011*. <sup>9</sup>UNPRI, 2011, *Principles for Investors in Inclusive Finance*

<sup>10</sup>Responsible Research, 2011.



# SHAPING INVESTMENT IN SMALL-SCALE DECENTRALIZED RENEWABLE ENERGY PROJECTS



Sustainability Outlook spoke to Andrew Affleck, Managing Partner of Armstrong Asset Management

“Small-scale projects have certain inherent advantages that appeal to investors, such as relatively lower capital intensity, reduced footprint and shorter construction times”

**What has been Armstrong Asset Management's role in the Cleantech space? Could you elaborate on your new fund?**

The Armstrong South East Asia Clean Energy Fund is a US\$150 million private equity fund with a dedicated focus on small-scale renewable energy, typically less than 10MW each, and resource efficiency projects in Southeast Asia's emerging markets, principally Indonesia, Malaysia and Thailand.

Members of the Armstrong team have aggregately been involved over the last ten years in investing and developing more than 50 clean-technology and clean energy infrastructure companies or projects. The Armstrong South East Asia Clean Energy Fund is the first fund by Armstrong Asset Management. It's also the first operational clean energy fund dedicated to Southeast Asia, and it's completely focused on infrastructure development where any technology risk is minimal.

The Armstrong fund seeks to provide a gross investor return of 20% along with significant development impacts. The strategy is driven by the region's high energy demand and strong market fundamentals and further differentiated by its mandate to support early stage projects and take development and construction risks.

With the recent first closing of US\$65m, the fund is aiming to complete 1-2 deals this year. Discussions are underway with developers of solar projects, which is a priority sub-sector along with wind and hydro. Up to US\$12 million in equity from the fund can be invested in each deal.

**Small scale renewable energy is considered to be a challenging sector with unpredictable returns; where do you see the value being created by the new Armstrong fund?**

In the last few years, our target markets have implemented policy initiatives that are supportive of the growth of small-scale renewable energy project development. By example, these include fiscal measures such as feed-in tariffs (FIT) that lead to predictable cash-flows, and the standardization of PPAs that facilitate reduced legal costs. Currently, we see the key opportunities for Southeast Asia being in small-scale solar and mini hydro where individual project returns are in the high teens if executed properly.

The Armstrong fund is in a position to invest equity in the construction of the projects or installation costs, effectively taking on pre-revenue risk which banks are either unwilling or unable to do in early stage within the emerging renewable space, much less for small-scale developments.

One reason often cited for the lower investor enthusiasm for Southeast Asia, particularly when compared with markets like China and India, is the non-uniform nature of the energy market, lack of available operational assets, and generally smaller scale of projects. However, Armstrong's differentiated model addresses these issues precisely by building out and aggregating small scale projects, working with highly capable local teams and strong operational partners, and to create an attractive portfolio of operational assets that meet international standards.

“From our experience, we find that most governments in Southeast Asia are keen to encourage the development of renewable energy, especially where this favorably impacts energy security and reduces expensive fuel imports”

This is a strategy which the Armstrong team members have employed in Europe before and we are bringing this model to Southeast Asia. We envisage the region will become a highly attractive market for small-scale renewable energy projects.

Strategy aside, small-scale projects have certain inherent advantages that appeal to investors, such as relatively lower capital intensity, reduced footprint and shorter construction times.

#### **What are the future plans for growing the Armstrong Clean Energy Fund?**

Following the initial close of US\$65 million, we are aiming for a second close in fourth-quarter this year, then a final close to achieve our target fund size of US\$150 million by July 2013.

European development finance institutions GEEREF and DEG are among the LPs in first close. They recognized the role that the Armstrong fund has in filling critical infrastructure-spending gaps. For a high-growth potential region underpinned by good fundamentals, this would help catalyze investments in private sector clean energy projects and improve energy security and economic prospects.

#### **What are your views on the potential for clean energy investments in India?**

We believe the potential for clean energy in India is substantial. A number of dedicated funds have already been launched that focus on this sector in India, or at least include India. Consequently, we expect competition for deals to be keen.

Given that the Armstrong strategy is to focus on small-scale distributed energy solutions, Southeast Asia is better suited for our first fund. The team has extensive operating experience in Southeast Asia and our strategy is to enter in partnerships with local professional and experienced developers. In fact, we find that our exclusive focus on the region has been a strong draw for LPs. To our knowledge, the Armstrong fund remains the only operational renewable energy fund with available capital that's dedicated to South East Asia.

From our experience, we find that most governments in Southeast Asia are keen to encourage the development of renewable energy, especially where this favorably impacts energy security and reduces expensive fuel imports. Certain challenges they face include implementing effective, transparent frameworks

that are attractive to private investors, providing appropriate funding for FIT programs, and unifying roles and responsibilities across multiple government bodies and departments.

It is imperative that the policy is transparent, cost sustainable and implemented with good governance. Increasingly, non-financial incentives such as standard form off take agreements, standard procedures and processes which help reduce upfront risk and cost are emerging as important factors in attracting investments.

#### **What are your views on Responsible Investing? How is it integrated in Armstrong's strategy?**

As a responsible investor, we believe integrating sustainable, environmentally friendly practices into our day-to-day activities delivers tangible benefits, creates additional opportunities, benefits society and reduces risk. We believe that such an ethical approach leads to follow-on opportunities and improved financial returns, especially when the true costs of increasingly scarce natural resources are considered.

We have a dedicated Social and Environmental management system based on IFC Performance Standards which is integrated within our investment management process, from screening through investment monitoring and ultimately exit planning. A dedicated ESG officer in-house leads the team in this regard. The firm is signatory to the UN Principles for Responsible Investment and Melissa Brown from the UN PRI advisory council also advises the Armstrong team as our external expert panel.

“Potential for clean energy in India is substantial”

*Andrew Affleck is Managing Partner of Armstrong Asset Management. As managing partner, Andrew Affleck leads the investment team. In July this year, the firm launched the US\$150m Armstrong South East Asia Clean Energy Fund, the only operational clean energy fund exclusively focused on the Southeast Asia region. He has also been the CEO of Low Carbon Investors Ltd, a dedicated global clean energy fund management group with over US\$300m under management.*

# SUSTAINABILITY IS A REQUIREMENT FOR COMPETITIVENESS IN THE LONG RUN



Sustainability Outlook spoke to Tuomas Haikka, VP-Sustainability and Environment at Outokumpu Oyj

“To enhance transparency and accountability, Outokumpu strives for a continuous, systematic and open dialogue with key stakeholders”

**Can you tell us something about Outokumpu operations in India? What are the current and prospective focus sectors for the organization in India?**

We have sales offices in New Delhi and Mumbai, and we have recently set-up a representative office in Vadodara. Focus sectors for us are manufacturing industries such as Commercial Catering, Food & Drink and Heavy Transport, as well as project and process industries, such as Energy, Chemical & Pharmaceutical, Building & Construction, Water Treatment and Oil & Gas.

**Every organization has a different definition of sustainability involving different aspects (environmental and social) - how does Outokumpu define sustainability?**

For Outokumpu, sustainable development includes economic, environmental and social aspects and their impacts on the Group's stakeholders. In Outokumpu's view, sustainability is a requirement for competitiveness in the long run. Sustainability means practices that support long term positive performance with regard and respect to social, environmental, and economic aspects.

We look at sustainability from both operational as well as product point of view. Outokumpu's goals on sustainable development are that sustainability is an integral part of all Outokumpu operations, activities and decision making. It has a central role in Outokumpu's strategies and planning, and with continuous improvement we are always aiming at a higher level. Furthermore, we work to ensure that our supply chain, i.e. business partners, subcontractors and suppliers, follow similar standards. To enhance transparency and accountability, Outokumpu strives for a continuous, systematic and open dialogue with key stakeholders.

For us, sustainability is at the core of our business, because the idea of sustainability is embedded in our product : stainless steel - fully recyclable and maintenance free material with excellent life cycle properties enabling sustainable solutions benefitting our customers and the whole society.

In our operations, sustainability stands for safe and healthy workplace and continuous development of our processes to minimize the environmental impact of production. The operations of the Outokumpu Group are guided by its ethical principles of human dignity, corporate responsibility, and good corporate citizenship together with a safe and healthy workplace.

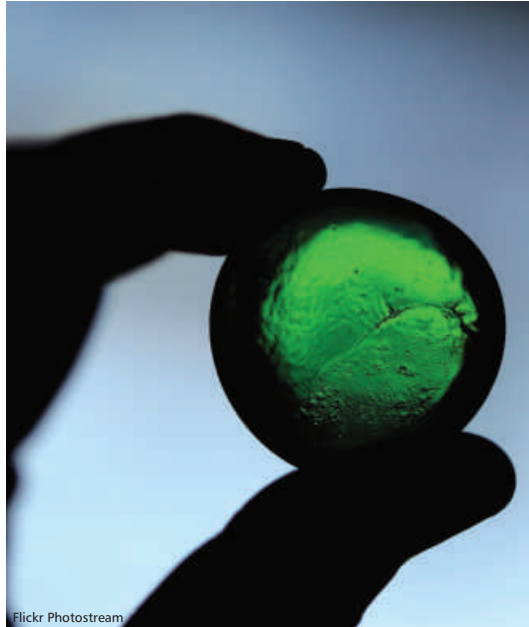
**Outokumpu advocates sustainable material usage to make products more sustainable. Have you seen an adequate uptake by the industry for sustainable materials (both in a global as well as Indian context)?**

Development towards more sustainable material production, sourcing and solutions is a growing trend among industry . In several sectors, such as construction, transports, energy and water, sustainability is becoming a real factor in business decisions and industries are reacting to that. Outokumpu is an industrial leader and differentiates by being able to provide information (product declarations and life cycle data) and by being industry leader in performance.

**How would you define “sustainable stainless steel”? How has Outokumpu used sustainable steel to develop sustainable products - can you give a few examples?**

One could start by arguing that almost all stainless solutions are sustainable solutions. Stainless steel is corrosion resistant, durable, strong, hygienic and recyclable.

“High strength stainless steel can absorb up 60% more collision energy in case of accidents”



These properties make it an ideal choice for a variety of demanding industrial and consumer applications. Several life cycle studies indicate that in many applications the total cost of stainless steel is lower than that of competing materials. Stainless steel's unique properties make it difficult to find substitutes.

The development of new stainless steel grades allows, for example, green building requirements to be reached with the added corrosion resistance that helps to increase the whole structure's lifespan.

Similarly in the transportation sector, high-strength grades enable the use of thinner gauges in a variety of applications such as tanks, pressure vessels and piping, and also in civil and structural engineering solutions. This leads to considerable savings in material costs, application weight and enables more efficient sustainable life cycles with corresponding energy savings and reduced emissions.

Sustainable solutions are more than environmentally friendly. High strength stainless, in addition to its many desirable properties, can also be tailored to increase safety. For example, high strength stainless steel can absorb up 60% more collision energy in case of accidents.

More information and several case studies for each of these application areas is available on our site.

**Outokumpu has been a leader in environmental performance in the industrial sector. What is the business case that**

### **Outokumpu sees in taking up sustainability in their products and operations?**

We see clear business benefits in being the leader in environmental performance. In stainless steel industry, investments that improve our environmental performance such as material and energy efficiency improvements increase our efficiency, and thus competitiveness. Environmental impact reducing activities like minimizing waste also reduce costs. Leadership in environmental performance also helps us to keep our image and brand stainless. Environmentally sound operations make Outokumpu a more attractive investment and reduce financial risks. At the end of the day we always put customer first; and since we see demands for products that are produced in environmentally responsible manner growing it is clear choice for us.

### **Would you like to highlight any sustainability related recent activity of the organization?**

We have publically made available new Environmental Product Declarations (EPD) on our main products. These EPDs are externally assured statements allowing customers and designers to obtain information on life cycle impacts and environmental performance of Outokumpu Stainless Steel. On the operational side of sustainability, we have introduced a long term climate program where we have recently reduced our carbon profile by investing into wind energy and by improving energy efficiency of our operations.

*Tuomas Haikka is VP - Sustainability & Environment at Outokumpu Oyj. He has global responsibility on sustainability related issues including corporate responsibility at Outokumpu. Tuomas has worked with various sustainability and environment issues, such as material and energy efficiency, emissions trading and sustainability reporting. He holds a Masters degree in environmental economics.*



# OFF-GRID SOLAR THERMAL TECHNOLOGIES: SOLVING INDIA'S ENERGY CRISIS



Ashok Paranjape,  
Managing Director,  
Clique Solar (Clique  
Developments  
Limited).

The Earth receives more than enough energy from the sun in an hour to supply the world's energy requirements for the whole year. Unfortunately we harness only a tiny portion of the available solar energy and the world still primarily relies on power plants that burn fossil fuels. Thus, we don't have an energy problem, we have a conversion problem. If we are able to harvest sunlight in efficient and effective ways, then we can prevent the global energy crisis.

Industrial process heat (IPH) applications below 250°C contribute to about 15 to 20% of India's total oil consumption (almost 80%-90% of which is imported). Cooling or air conditioning is another energy-intensive process amongst the various energy-consuming applications.

According to a study by McKinsey, the power deficit in India could be as high as 25% by 2017. Almost 70% of our country's population depends on biomass for its energy needs, consisting of more than 32% of the total primary energy use in the country. Due to the scarcity of fossil fuels, their rising costs, the related pollution problems and the ever increasing power shortage, there is a dire need to make use of renewable sources of energy to meet these demands of IPH and energy for comfort cooling.

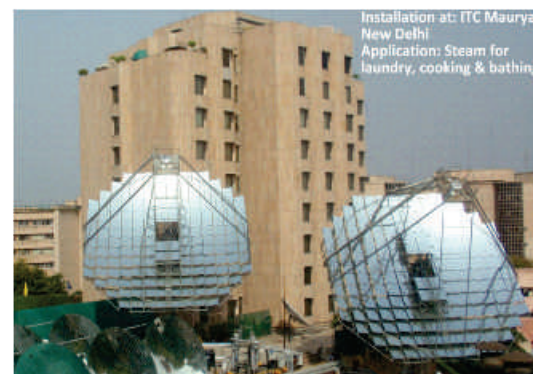
About 5 to 7 kWh/sq.m. of global solar radiation (on non-tracking horizontal surface) is available in India for about 300-330 days a year. Also, many cooling loads have a high coincidence with the availability of solar irradiation. The use of an appropriate solar technology for cooling and IPH applications can have a positive impact on the Indian energy and environmental scenario.

## Solar thermal system applications

Even though several applications are possible by harnessing solar energy, utilizing it to generate steam and hot water is the most economically viable. Not only does it offer a potential solution to the oil security threat confronting India, but also a remedy to the environmental damage caused by conventional fuels.

Industrial sectors such as food processing industries (dairy industry, sea food processing industry, and sugar industry), textile processing industry, pharmaceutical industry, pulp & paper industry, chemical industry, auto component industry etc. have large requirement of thermal energy in their manufacturing plants which can be fully or partly met by harnessing solar energy.

Hotels & hospitals are one of the major sectors consuming large amounts of energy. A part of this energy goes into providing hot water for bathing and washing, steam for cooking and laundry. Use of appropriate solar thermal technologies can effectively and economically replace the use of conventional fuels by boilers.



Installation at: ITC Maurya,  
New Delhi  
Application: Steam for  
laundry, cooking & bathing

“We don’t have an energy problem, we have a conversion problem”

### Comfort cooling applications

Another interesting application is the use of solar energy for cooling purposes. Solar-assisted cooling systems utilize the thermal energy of solar radiations captured through solar concentrators to power thermally driven cooling machines. As many cooling loads, such as air conditioning, have a high coincidence with the availability of solar irradiation, the combination of solar thermal and cooling has a high potential to replace conventional cooling machines based on electricity.

Cooling & air conditioning is one of the most energy-intensive processes amongst the various energy-consuming applications. Some estimates suggest that HVAC (Heating, Ventilation, and Air Conditioning) networks account for over 30% of a building energy usage. Thus, any technology that can help to save energy in the cooling and air-conditioning applications can help reduce India’s power shortage burden to a great extent.

### Applications in mass cooking

Many religious places and schools/colleges across the country provide meals to devotees and students respectively on a daily basis. Many industries, too, run canteens or messes that provide meals to their employees. Many of them have mass cooking facilities which utilize high cost fuels like LPG. Solar energy can be used to substitute the use of these fuels.

### Desalination Application

Water demand for food, industry and people is on the rise. The world's water consumption rate is doubling every 20 years, outpacing by two times the rate of population growth. It is projected that by the year 2025 water demand will exceed supply by 56%, due to persistent regional droughts, shifting of the population to urban coastal cities, and water needed for industrial growth. The supply of fresh water is on the decrease. There will increasingly be a dependence to treat sea water to generate the requisite level of water for our daily use.

Desalination is the process that removes some amount of salt and other minerals from saline sea water, providing reliable fresh water. Solar thermal heat can be harnessed for this too. The heat is required to produce steam, which is further used for multi-effect distillation, a desalination process. Using the ARUN® solar thermal technology, it is estimated that for 169 sq. m. of collector area, 2500 liters of desalinated water can be produced using multi-effect evaporator.

### Cold Storage

In India, due to improper post-harvest management and lack of access to electricity in rural areas, cold storage is falling short of requirement. Every year, millions of tons of fresh produce gets spoiled even before it reaches the consumers.

Cold Storage implies storing of agricultural produce like vegetables and fruits at low temperature ranging from 0 °C to 10 °C. According to an estimate by TERI, cold storages in India consume 30,000 MW of the installed power capacity. Considering that much of the cold storage needs to be in the rural areas where power shortages are high, off-grid solar thermal driven refrigeration system seems to be a good solution. Since solar driven system cannot extend beyond sunny hours, suitable hybridization of the system needs to be explored. Biomass fired gasifier is one alternative that can be researched to integrate with solar driven refrigeration to provide back-up heat and much needed power, since biomass is locally available in rural areas.

### Solar Water Heating

Solar water heating is a technically proven successful application for use of thermal energy. However, the market for the solar water heater is not yet fully developed. Solar water heaters are available in two different technologies known as Flat Plate Collector technology (FPC) and Evacuated Tube Collector technology (ETC). Both FPC and ETC products are commercialized and economically viable in India with payback of investment in less than 3 to 4 years.

Hot water at 60°C of 100-300 liters capacity is suited for residential application. Larger systems can be used in restaurants, canteens, guest houses, hotels, hospitals etc. A 100 liters capacity per day of solar water heating system can replace an electric geyser for residential use and saves 1500 units of electricity annually, which also amounts to 1.5 tonnes of CO2 per year. Currently, total solar water heating system installed in India is around 4 million square meters and per MNRE estimates is expected to grow to around 20 million square meters in 2020.

In India, concentrating solar devices producing higher temperatures (80°C to 250°C) have been deployed successfully at several places. In the concentrating collector type, majority of the solar thermal installations on ground have been of the parabolic dish collector. For various reasons, parabolic troughs have not been successfully deployed in industrial process heating requirement in India.

“Use of an appropriate solar technology for several industrial applications can have a positive impact on the Indian energy and environmental scenario”

In the parabolic dish collector type, two prevalent technologies are ARUN® and Scheffler. Scheffler dishes have been historically installed for cooking applications at religious places, whereas ARUN dish was developed with a focus on industrial process heat & cooling applications.

#### Economic Viability

Since the power source (the sun) is free and solar systems require very little maintenance, the majority of the lifetime cost is made up of the cost of the components and their installation. The basic parameters that should be considered while evaluating the investment in any solar energy system are as follows:

- Cost of the Solar Energy System
- Subsidies
- Financing options
- Value of Energy generated
- Non-finance factors that influence the economics

Other than the standard internal rate of return (IRR), net present value (NPV) and the payback period calculations that are most widely used in evaluating investment opportunities, some sector specific economic indicators that must be considered are as below:

- Cost per kcal of energy delivered over the lifetime.
- Energy per unit area occupied.

At installations where a solar thermal system substitutes petroleum-based fuels such as furnace oil, HSD, LPG, PNG, etc, the payback periods are less than 3-4 years, while the life of these systems is greater than 20-25 years, making the economics very compelling.

#### Impact

The use of an appropriate solar technology for several industrial applications can have a positive impact on the Indian energy and environmental scenario. In urban areas the off-grid solar energy is mainly being used for solar water heating in residential areas. On the other hand, there is a significant impact potential in rural areas emanating from the use of off-grid solar energy in cooking and cold storage purposes.

India is the place where large advances in solar technologies for satisfying the thermal energy needs of industries are taking place. The technology has moved beyond the 'pilot installations' phase and its performance has now been technically and commercially proven on ground. The future for off-grid solar thermal power in India seems bright with the government promoting & creating awareness about the use of solar energy in India, thereby providing financial assistance in the form of subsidiaries and soft loans.

*Ashok Paranjape is the Managing Director at Clique Solar (Clique Developments Limited) and is the co-inventor of the patented Large Solar Thermal Concentrator ARUN®. He holds a B.Tech. in Civil Engineering from IIT- Bombay.*



IntelFreePress Flickr Photostream

# IT AS AN ENABLING TOOL FOR BUSINESS SUSTAINABILITY



Suparna Shankar,  
Senior Research  
Scientist,  
Sustainability  
Business Unit,  
Infosys

*It does not matter how big or small Indian organizations are, they must learn from the recent power grid failure.*

The recent power grid failure in North India exposed the precarious demand-supply imbalance in power and vulnerability of a grid with complex inter-linkages. 610 million<sup>1</sup> people across 21 states were without electricity for hours. Grid failure of such a large magnitude paralyzed the whole nation, disrupting big and small businesses. While the cause of the issue is debatable and a streamlining of the system may avert a recurrence in the future, there is a pressing need for organizations to learn to 'sustain' and lead in such turbulent times.

India still depends on traditional resources like coal and hydro-electric power, which constitutes the lion's share in power generation. These resources are unevenly dispersed and concentrated in a few pockets<sup>2</sup>. Hydro resources are located in the Himalayan foothills and in the North-Eastern Region (NER). Coal reserves are concentrated in Jharkhand, Orissa, West Bengal, Chhattisgarh, parts of Madhya Pradesh and lignite is located in Tamil Nadu and Gujarat. India's unreliable power system has forced businesses to use expensive alternatives like diesel generators<sup>3</sup> using precious natural resources, and causing pollution. Therefore, organizations should plan for better 'Resource Use Intensity' by identifying transformational ways to defuse risks and achieve better outcomes using fewer natural resources. The issues resulting from depletion of natural resources are increasingly evident and businesses can no longer afford to ignore these without peril.

Sustainable development is becoming imperative, moving from 'Good to Have' to a 'Do or Die' situation. It does not matter if they are

big or small, organizations must look for various ways to address these challenges for survival.

The current infrastructure catastrophe provides an opportunity for businesses to discover more about the complex systems and improve their longevity by being resource intensive and achieving far more with far less<sup>4</sup>. Diminishing resources, high input costs, and challenges in scaling up will force organizations to take one of the two choices:

Act defensively to avoid damage and minimize risk;

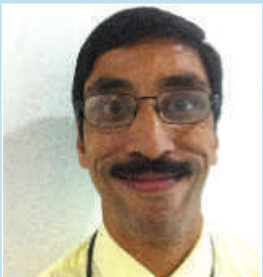
or Create opportunities and capitalize on them.

In the face of accelerated depletion of natural resources, organizations face a very high degree of short term risk, and they look for mitigating risks by incrementally increasing resource efficiencies. However, beyond a point, optimization gets prohibitively expensive. So capitalizing on opportunities will become important. In the last few years, large companies have improved their operations and are now able to drive sustainable behavior. For smaller enterprises the current situation is a wake-up call.

## How IT can play a transformation role for business sustainability

Gartner<sup>5</sup> predicts the Indian Green IT and Sustainability initiatives spend to reach \$70 billion by 2015. This is a very promising trend for India. But won't the IT sector itself add to the energy foot print? Yes, it will.

According to a NASSCOM smart 2020 report<sup>6</sup>, the IT sector will represent 2.8% of the global emissions by 2020; however it will help to remove emissions to the tune of five times its footprint or 15% of global emissions.



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<sup>1</sup>[http://zeenews.india.com/news/nation/power-failure-northern-eastern-grids-restored-partially\\_790904.html](http://zeenews.india.com/news/nation/power-failure-northern-eastern-grids-restored-partially_790904.html)

<sup>2</sup>[http://www.indiaworldenergy.org/pdf/T&D%20Report\\_PGCL.pdf](http://www.indiaworldenergy.org/pdf/T&D%20Report_PGCL.pdf)

<sup>3</sup><http://www.ndtv.com/article/india/power-grid-failure-indian-businesses-weather-blackouts-but-at-a-cost-250227>

<sup>4</sup><http://www.infosys.com/sustainability/Documents/infosys-sustainability-report-2011-12.pdf>

<sup>5</sup>[http://articles.timesofindia.indiatimes.com/2011-09-19/infrastructure/30175423\\_1\\_sustainability-ict-industry-indian-businesses](http://articles.timesofindia.indiatimes.com/2011-09-19/infrastructure/30175423_1_sustainability-ict-industry-indian-businesses)

“ICT has the potential to offer innovations that will capture energy efficient opportunities across industries”

IT has both positive and negative impact on the environment. These impacts can be classified broadly into:

- a. Optimization of business processes through IT (standardization, automation) leads to increase in energy efficiency. For example:
  - 1) Online banking is efficient and reliable,
  - 2) IT embedded solutions in manufacturing increases energy efficiency.
- b. Dematerialization or substitution of physical goods, services and infrastructure with virtual alternatives will reduce resource utilization. For example:
  - 1) Using tele-presence for collaboration reduces travel emissions,
  - 2) Using smart meters in buildings helps in monitoring energy consumption
- c. Induction : IT can change the way business processes are handled and it can influence the demand for other services and products. For example, Internet and mobile technologies create demand for online software and can increase sale of products and goods.
- d. Degradation: Usage of IT and technology products impacts environment negatively. For example:

IT itself adds to energy consumption.

Technology products create e-waste which impacts the environment negatively.

IT should go hand-in-hand with alternative, innovative and environmentally friendly technologies to ensure that its negative repercussions on the environment are minimal. India's challenge lies in achieving economic goals without sacrificing the environment. IT can redefine and improve processes across sectors and functions like logistics, transport, power generation, healthcare, retail, etc., leading to superior business performance.

According to the Co-Founder and Executive Co-Chairman of Infosys Limited, S. Gopalakrishnan (Kris), “ICT has the potential to offer innovations that will capture energy efficient opportunities across industries”<sup>7</sup>.

Smart solutions and analytical insights can help companies navigate the challenges of sustainable growth. In the context of the recent power grid failure, a smart power grid<sup>8</sup> could be used to avert blackouts. Per a recent article in ‘BusinessWorld’, the average national efficiency of power plants in the country is only 76%<sup>9</sup>. More than 20% of the power is wasted due to under capacity. IT can help to improve efficiency enormously.

One such innovative use of IT has been an indigenous device, HameshaOn<sup>10</sup>, a smart grid system, piloted by Reliance Energy-managed NESCO, which tracks and prevents electricity theft. It monitors every junction or overhead electrical line across the power distribution network. The device is Wi-Fi enabled that can pinpoint the quantum and the place where energy is getting leaked in real time. Distribution losses in India were assessed at 35% last fiscal and the challenge for distribution companies is unauthorized power consumption and HameshaOn has the potential to bring down distribution losses by upto 8% at Indian power utilities.

Speaking of power shortages, one area which is strongly affected across the country is the agricultural sector. With the monsoons playing truant regularly, small farmers have become increasingly dependent on electricity for irrigation. India being second in the world agricultural production, is prone to significant threats to agricultural output livelihoods of farmers from the vagaries of nature. IT systems help in predicting the natural disasters directly alerting and warning these farmers through mobile phones, helping them prepare with risk mitigation plans.

Another innovative use is the solar-powered micro grids introduced in Uttar Pradesh by ‘Mera Gao Power’<sup>12</sup>, a company set up by a pair of US-born entrepreneurs (Nikil Jaisinghani and Brian Shaad). The company has created a new model for energy delivery to villages far from the grid – they build and operate solar-powered micro grids to provide low-cost lighting and mobile phone charging option to village houses, giving many rural people access to electricity for the first time.

<sup>6</sup> [http://www.nasscom.in/sites/default/files/researchreports/TERI-NASSCOM\\_Green ICT\\_Executive%20\\_Summary\\_Dec2011.pdf](http://www.nasscom.in/sites/default/files/researchreports/TERI-NASSCOM_Green ICT_Executive%20_Summary_Dec2011.pdf)

<sup>7</sup> <http://southasia.oneworld.net/special-events/dsds-2012/interviews/ict-industry-has-key-role-in-enabling-a-low-carbon-society-kris-gopalakrishnan-of-infosys/>

<sup>8</sup> [http://articles.economictimes.indiatimes.com/2012-08-02/news/33001268\\_1\\_smart-appliances-home-appliances-power-generation](http://articles.economictimes.indiatimes.com/2012-08-02/news/33001268_1_smart-appliances-home-appliances-power-generation).

<sup>9</sup> <http://www.businessworld.in/web/guest/storypage?CategoryID=37491&articleId=445557&version=2.3&journalArticleId=45013>

<sup>10</sup> [http://articles.economictimes.indiatimes.com/2012-08-06/news/33065585\\_1\\_power-distribution-distribution-losses-smart-grid-system](http://articles.economictimes.indiatimes.com/2012-08-06/news/33065585_1_power-distribution-distribution-losses-smart-grid-system)

<sup>11</sup> <http://www.treehugger.com/renewable-energy/solar-powered-micro-grids-light-indian-villages.html>

<sup>12</sup> <http://www.treehugger.com/renewable-energy/solar-powered-micro-grids-light-indian-villages.html>



“Emerging environmental issues are increasingly hampering businesses’ capacity to ramp up quickly, create value for clients, to differentiate among competitors and also make a positive impact on its stakeholders”

Business sustainability these days is increasingly driven by demand and consumption. There is a focus on social and economic inclusiveness. Internet and mobile telephony are helping in improving the purchasing power of rural masses by allowing easy access to safe and secure financial transactions.

Various examples reflected upon in this article indicate that Business sustainability is an emerging mega trend. IT can enable organizations to tackle environmental challenges and tap into immense opportunities innovatively. Every organization can ponder over a thought ‘Why operate defensively, when businesses can capitalize on opportunities.’

#### Conclusion

Emerging environmental issues are increasingly hampering businesses’ capacity to ramp up quickly, create value for clients, to differentiate among competitors and also make a positive impact on its stakeholders. While many organizations around the world are rising to the situation, there are numerous businesses in India and abroad still grappling with ‘Business Sustainability’ as an unprecedented challenge.

There is a shift today in the way sustainability initiatives are being viewed in India. Businesses today need to adopt sustainability as an opportunity for increasing bottom line. One way of doing it is using IT as an enabling tool.

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# ENERGY EFFICIENCY – THE LOW HANGING FRUITS OF SUSTAINABILITY



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Energy Efficiency is the 'low hanging fruit of sustainability' as it opens up myriads of opportunities in resource conservation, primarily by plugging in the wastages in energy distribution, storage and use.

Increased volatility of global energy prices has escalated the need for resource efficiency. Moreover, large increase in construction cost of new power plants and shrinking reserve margins besides concerns about reliability of electricity supply systems have all precipitated a gloomy energy scenario. More recently, increasingly stringent environmental regulations about fossil fuel plants and global warming concerns and greenhouse gas (GHG) accountability has put energy production under closer scrutiny.

India's energy scenario is caught in the din of fossil fuel shortages, allegations of gross mismanagement, spiraling debts incurred by electricity distribution companies (utilities), and aging infrastructure among others. The legacy of near total dependence of the power sector on imported fossil fuels (coal & oil) and resultant fiscal deficits of the nation further weakens the system. With multiple, and sometimes conflicting priorities for financing development, reliable systems are necessary to secure funds, justify investments, and ensure recovery of costs of large energy projects. Power shortage in the country threatens to worsen the current economic slump, while any addition to generating capacity is perpetually falling short of expectation. In the recent past the country has witnessed major civil-society oppositions towards new power plant installations from the fear of environmental disasters. Hence the nation is in desperate need of sustainable remedies to lift the country from the present stalemate, and help us identify long term solutions.

Strategy makers world-wide have taken the energy efficiency agenda to a new height recognizing easier prospects in improving

resource productivity and enhancing energy access by creating business areas with local jobs. UN secretary-general Ban Ki Moon launched the "Sustainable Energy for All" programme for achieving universal energy access by 2030. The programme primarily relies on efficient energy use and renewable energy sources and aims to double the global rate of improvement in energy efficiency. On the same lines, the Millennium Development Goals initiative has improved its energy efficiency objectives in eradicating poverty and Rio+20 emphasized on efficiency reforms.

The Energy Conservation Act of 2001, recognizing the increased power demand to fuel the economic growth in India prioritized the role of energy-use efficiency and led to the establishment of the Bureau of Energy Efficiency (BEE), under the Ministry of Power. BEE is endowed with regulatory powers for developing and enforcing energy conservation strategies and relies on market-based measures; to create businesses and jobs towards achieving its ambitious energy targets. India's energy efficiency markets are worth 10 billion USD, as per WRI in 2009, with 183.5 billion kilowatt-hours saving potential. These measures span across large energy consuming industries, widely-used appliances (such as lighting, refrigerators, water-heaters, pumps and motors), commercial buildings, SMEs, Agriculture, Municipalities, while new business models like Energy Services Companies (ESCOs) are emerging in the country.

The National Action Plan for Climate Change also clearly identifies energy efficiency as an important and critical strategy for combating climate change. To facilitate institutional empowerment in order to meet energy conservation targets, a proper mix of market-based instruments, public policies and regulations becomes a fundamental requisite.



Mridula Saripalli,  
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“Each kilowatt of power saved at the end-use is equivalent to 1.8 kilowatt saved at generation. There are several avenues to achieve greater efficiency in India; lighting and refrigerator efficiency alone has the potential to reduce 10% of the projected power generation need in the country. Dangerous carbon emission reductions are also avoided without any additional cost being incurred”

With a view to mitigate the demand for newer thermal plants nearly by one fourth, electricity utility companies can rely on resource planning strategies like Demand Side Management (DSM). Successful implementation of DSM Programmes necessitates wide stakeholder participation. For instance, DSM programmes often include mass replacement of inefficient appliances requiring competitive and transparent bidding processes for encouraging various vendor groups to engage in the process. A unit appliance could be sold at 50% of the market value to the utility, but the sheer quantity of the product purchased (often in 100,000s) ensures revenues to the vendor body. Opportunities for maintenance and service industries are generated for the continued success of DSM programmes. End-use consumer groups are allowed to make informed choices about their energy purchases. The USA has exemplary DSM success stories where various states now source 1-4% of their annual power requirements from energy saved. To this effect, the state of California spent about 1 billion USD for energy saving measures in 2010. Thus, DSM is a stepping stone to more holistic measures like Smart Grids, which requires superior technologies and infrastructure, but has large potentials for energy conservation.

While India has embarked on an ambitious journey of energy for meeting its sustainable growth objectives, it is necessary to gain consensus from various stakeholders to steer this agenda forward. Large corporates have initiated examining their organizational strategy for sustaining their energy access reliably and many are investing in efficient systems and renewable energy sources. Such large corporate infrastructure also presents the potential to generate excess energy which can be fed back into the grid. Using energy efficiency as competitive resource in wholesale power markets and using it to reduce GHG in regional Cap-and-Trade Systems has been increasingly demonstrated in western nations. These strengthen the case for efficiency itself as a key resource tradable in the energy and power exchange market.

Realizing the importance of resource efficiency and conservation is vital in reducing the nation's fiscal deficit. Active participation and sensitization of the relevant government departments, planning and regulating bodies and other institutions such as banks and financial institutions, is crucial to achieve such a success. India's banking systems are yet to actively participate in the energy efficiency markets. Capacity building of various



stakeholder groups is necessary and manufacturer focused programmes should be conducted towards promoting resource efficiency. Water-energy nexus in agricultural sectors are infamous, where inefficient use of pumps leads to water and energy wastage. India's water footprint is one of the largest while compared to fellow developing Asian countries like Philippines and Indonesia whose agriculture-water footprints are about 1/4th of India's. Similarly, renewable energy markets are strengthened by complementary advances in energy efficiency in end-use appliances and technologies. Frontier technologies in alternative energy become viable and sustainable only if the energy delivery infrastructure also keeps pace.

Resource efficiency is therefore the bedrock of sustainability. The goal of meeting the fundamental needs of energy for survival and for development is secured only through the small, diverse stepping stones of energy efficiency projects and process change in each and every end-uses and applications.

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# CAPTURING ENERGY EFFICIENCY MARKET ADVANTAGES



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## Energy Efficiency Market

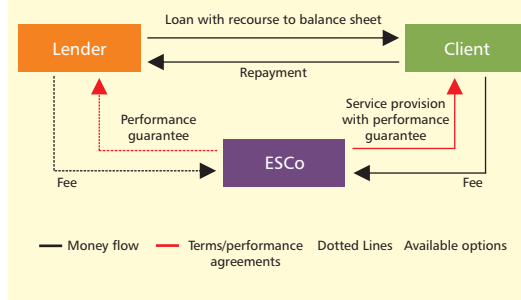
The market for energy efficiency products and services in India has gained momentum in recent years. This is both due to regulatory impetus and commercial incentives for energy savings as the push for green building and industrial process efficiency is being seen in a new light. Energy saving projects in existing buildings and energy intensive industries in India could offer interesting capital investment opportunities. It is estimated that such projects could save up to 49 billion kWh for industries and another 4.5 billion kWh in commercial and municipal buildings per an estimate by the Asian Development Bank in 2008. The eleventh five year plan included an estimate of about 10,000MW of saving through energy efficiency and the combined savings potential in monetary terms as per a World Resource Institute study in 2008 was estimated to be around USD 9.8 billion.

Energy efficiency projects often involve an energy saving performance contract between the facility owner and a service provider, called the Energy Service Company (ESCO). The performance contract contains legal provisions between the two parties and lays out code of best practices, liabilities, default conditions and remedies, indemnification provisions and insurance requirements. The ESCo carries out design and implementation of the project and this can take several forms including retrofits, process design and modification, installation of new equipment as well as control and management systems.

Two primary contracting models are available to consider between the facility owner or the client and the ESCo, such as Guaranteed saving model, where the ESCo guarantees the performance of the saving to the client who finances the project; Shared saving model, where the ESCo undertakes a greater risk by agreeing to a share of saving from the project as its return.

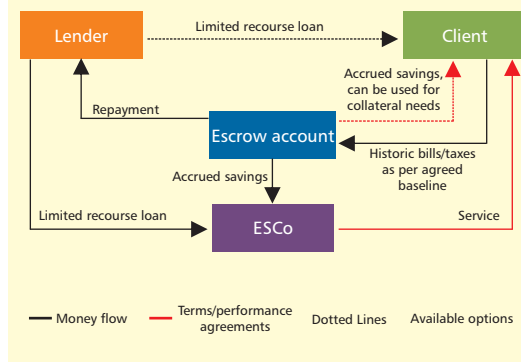
In the first saving model, as graphically illustrated below, the client and ESCo assumes the financial and the performance risk respectively. The capital is raised by the client alone.

**Figure 1: Guaranteed saving model**



In the shared saving model, the ESCo brings the capital and subsequently shares the energy saving from a baseline with the client to realize its return.

**Figure 2: Shared saving model**

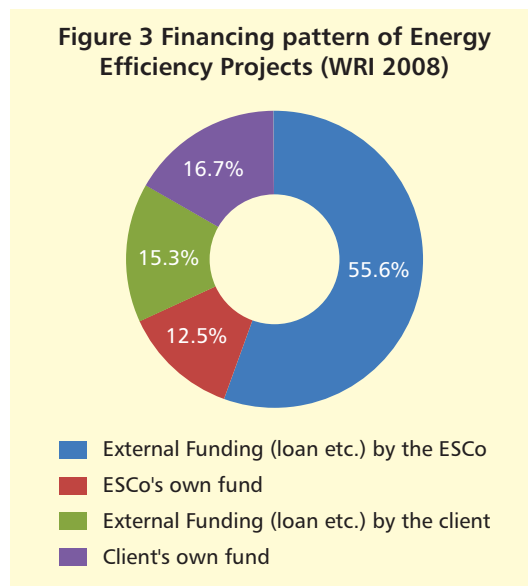


“ESCos need to reflect on shaping holistic energy management solutions so as to differentiate themselves”

In India, the first model of guaranteed savings has been more popular. On most occasions, the client either raises money from the market or receives lines of the credit from financial institutions to fund such projects. Lending institutions often do not differentiate the investment in energy efficiency projects from traditional asset base lending and need to be sensitized to the savings potential of the projects. This indicates the need for information dissemination and capacity building amongst financial institutions for energy efficiency projects and their potential returns.

In situations where the client is unable to finance, larger ESCos, owing to their stronger asset base and balance sheet, may still be willing to consider a shared saving model. It is the smaller ESCos whose options become limited due to the lack of collateral or recourse to produce before the banks for funding.

#### Financial support for EE projects



A survey conducted by the World Resource Institute couple of years back revealed that most of the energy efficiency projects in India were funded by the ESCo themselves through external borrowing thus the credit worthiness of an ESCo is a key criterion for it to raise finance. This is followed by funding from the clients on their own sources and then through external borrowing by them. The least number of projects are being financed through ESCos' own funding. The other aspect is the role of external financial institutions who act as lenders for a vast majority of the projects. There are certain financial barriers that exist currently primarily resulting from lack of information and

awareness among lending institutions not familiar with the specifics of energy efficiency projects. This proves to be a hindrance for the appraisal and management of such projects. Moreover, as noted earlier, there are perceived risks in lending to ESCos who may lack sufficient financial strength.

Financing support for energy efficiency projects is increasingly being made available in form of catalytic financial instruments such as dedicated credit lines and partial credit guarantee programs. In a recent development, the Asian Development Bank (ADB) has collaborated with ICICI Bank (a commercial entity) to create a USD100million credit line for small to medium-sized renewable energy and energy efficiency projects in India. Earlier, the World Bank provided a line of credit of USD 350 million to ICICI Bank for investment into energy efficiency area. The World Bank has also provided the Indian Renewable Energy Development Agency, IREDA, a line of credit and technical assistance which the IREDA has utilized to offer soft loans for ESCo projects.

Partial risk or credit guarantee, on the other hand, is an instrument employed by a public entity, typically a development financial institution or a donor agency, to assume the risk of default in such projects thus covering the private players who may implement such projects. This improves the private sector participation and lending in the sector as debt service default is covered by such guarantee programs. The Bureau of Energy Efficiency, India's regulatory authority on energy efficiency programs, has introduced a partial risk guarantee fund to meet at least 50% of non-repayment of an entity's debt in energy saving projects. The purpose has been to raise the confidence among commercial lending institutions for debt portion of an investment and encourage private participation in such projects.

#### Capturing advantage

The ESCo industry grew by around 95.6% annually during the 10th five year plan and almost at a similar pace in the 11th five year plan period. This perhaps reflects the growing concerns about rising energy bills and conservation efforts among energy intensive facilities. There still appears to be a gap in the technical capacity of ESCOs which have constrained demand for such services and causes lack of confidence about them. The client often requires comprehensive energy management services on its process and operation instead of technical retrofits which

“Catalytic financial instruments are required to incentivize financing of energy efficiency projects”



Flickr Photostream

most ESCos currently offer. Therefore, ESCos need to reflect on shaping holistic energy management solutions so as to differentiate themselves and capture market advantage. To that end, ESCos may also provide advisory as well as enterprise management services to the clients and facilitate access to investors and financial institutions.

Lack of capacity, awareness among financial entities, appraisal and management of risk and development and transaction cost are key areas that need to be addressed to convert this potential into a sustainable advantage. Banks and other financial institutes often prefer collateralized assets instead of future cash-flows in terms of realized savings in energy costs. This indicates a necessity to educate such institutions of unique characteristics of energy efficiency projects and build familiarity of risk and return aspects for such investment. Mature energy efficiency market such as the United States has seen emergence of specialized financing institutions dedicated to energy saving projects. Typically they involve larger project cost and aggregation of implementation projects so that development and transaction cost are minimized. In that light, if more and more financial institutions adopt such an approach, then aggregated financing barriers will be overcome for energy efficiency projects.

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# SUSTAINABILITY AND CHALLENGES TO ITS ADOPTION



Amit Patel, Founder Director, Setu

An organization's commitment towards EHS&S (Environment, Health, Safety and Sustainability) involves managing the responsibility towards stakeholders of their businesses by commitment to employee health & safety, compliance to government regulations, following good labor practices, reducing energy and water consumption, etc.

Pressure from stakeholders, cost implications, and market perception are the factors driving the change towards sustainability. All the Stakeholders perform their assessment or, say, due diligence before favoring an organization in various decisions. Investors calculate the risk an organization faces by not only assessing financial numbers but also by evaluating environmental and operational performance. To facilitate the decision making for stakeholders, new performance assessment frameworks are being developed such as Integrated Reporting format, Dow Jones Sustainability Indexes, GRI reporting, etc. Leading information providers such as Bloomberg news include information about energy consumption, waste generation by companies along with financial data. Organizations have also developed their internal assessment matrices to improve performance.

Embracing sustainability as the core theme for development can be overwhelming for an organization. The research firm Forrester in its "The Evolution of Enterprise Carbon And Energy Management Software" report sights five barriers encountered by companies contemplating corporate sustainability measures:

- Complexity of strategy design and implementation (Most Sighted)
- Lack of executive ownership
- Competing priorities
- Lack of mindset and skills
- No clear business case, no capital available for investments (Least Sighted)

Sustainability covers a wide range of systems ranging from emissions and energy, employee health and safety to labor practices. Understanding each system and improving performance becomes difficult as each domain requires a different management and operational mix. Therefore, the complexity of designing a sustainability strategy is manifold and most organizations are often perplexed in determining the right adoption pathway. Secondly, all the employees involved right from the CEO to the Plant Manager must have faith in sustainability initiatives and should be willing to take responsibility.

In developing countries such as India where local organizations are competing against more established firms from the western world, the immediate focus on financial results becomes a priority. In such a scenario, according the right level of weights to such aspects while evolving business cases becomes difficult.

## The Right Approach

Before initiating a change organizations need preparedness and commitment from top management and the commitment must percolate down to executive level as they would be the ones involved in execution and adoption of the sustainability agenda. The next step is analyzing the current state of organization which involves collecting and comparing historical data and building an insight from it.

A mistake most organizations often make is lacking good insight into the past and current trends and gaps. In the absence of reliable information – analysis of processes, workflows and measuring progress becomes a tough task. Unintended consequences such as technical failure, missed targets and sub-optimal choices can mean that less is achieved than is possible. A November 2009 Aberdeen Research report states that the best performing companies in Carbon Management domain are twice as likely to provide the right data, to the right person at the right time; enabling them to gain an insight

“An organization’s commitment towards EHS&S (Environment, Health, Safety and Sustainability) involves managing the responsibility towards stakeholders of their businesses”

and improve processes to drive sustainability performance.

### Software Systems and its role

Enterprise wide IT systems have become the backbone for operational management. Organizations are using advanced systems to manage supply chain, financial, employees & customer information. Organizations are increasingly deriving business intelligence from this information. These systems have proved to be a very effective tool to improve sales, drive efficiency, retain employees etc.

Gradually, the concept of sustainability has moved into the consciousness of organizations leading to the adoption of enterprise sustainability solution. Software vendors have been quick and effective in understanding the market need and are providing effective solutions. The software systems are evolving and becoming more sophisticated to cater to client requirements. For example, the tools which were initially only developed for data collection are now analyzing data, understanding deviations and identifying errors, bench marking performance, highlighting gap areas and enabling effective decision making.

### Software Adoption and Challenges

Typically the adoption of the system is more reactive and demand driven, emanating from some specific requirement in one of the areas of environment, health, safety, social and governance organizations for short term. This leads to fragmented systems at different levels. These systems fail to provide visibility into the overall setup leading to long term loss of value in various forms.

Secondly, sometimes organizations undertake initiatives and correspondingly deploy enterprise wide software systems without fully understanding the implications in terms of cost, employee involvement, and strategic value addition.

In both cases, the lack of proper data and insight required to improve performance leads to failure of sustainability initiatives.

### Business Benefits

In today’s environment where organizations are implementing sustainability agenda for more efficiency and cost savings, the need for verifiable accurate data is significant. An effective solution would withstand scrutiny from stakeholders including regulators, customers, NGOs, etc. The enterprise solution must provide essential features of data integration from different sources, analysis through trends, report generation for regulatory reporting and internal assessment, KPIs configuration and assessment of gap areas.

To illustrate the need for software system lets consider the case of sustainability reporting framework of GRI. GRI reporting involves disclosing information in key areas of economic, environment, social and governance. As per the latest guidelines an organization needs to report on total of eighty four objective and subjective parameters.

The process of reporting involves identification of the owners of the different parameters within the organization responsible for reporting. The owner would identify the processes and mechanism to collect data and compile it in a reportable format. The process is a long and complex one as it involves identifying the sources of required data, performing complex calculations and presenting it in a comprehensible form. In several cases, by the time an organization completes data collection for a particular year it is already too late for reporting.

The sustainability solutions, if implemented, can streamline sustainability management practices. For example, SMART (Sustainability Management and Reporting Tool) solution from Setu includes GRI reporting suite. The solution seamlessly integrates with heterogeneous systems and collects financial information, consumption data, HR data, etc. Once configured, it enables the organization to collect, monitor and analyze data continuously to assess and improve performance in real time.

Deploying a software solution could result in huge savings in costs, eliminate errors and most of all improve processes.

### Software & Vendor Selection

Vendor selection in enterprise space is a complex process involving multi-parameter criteria such as domain expertise, requirements-offerings match, and cost of solution. Considering the complexity of sustainability domain, the emphasis must be on expertise and experience of the vendor in the domain. With experience, vendors develop tailor made solutions for problems in the domain leading to quick deployment of systems and cost savings. A software platform with proven track record would always increase the success rate of the sustainability agenda.

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# MAKING DIESEL POWER VIABLE: INTEGRATING POWER FACTOR CORRECTION SOLUTIONS IN DIESEL GENERATORS



Harsh Sheth, Senior Associate, cKinetics

“Power Factor (PF) is the ratio between the apparent electrical power provided to an electrical circuit and the actual power consumed by the circuit”

## Backdrop

With the continued erratic state of power supply and the need of industries for uninterrupted throughput of products to sustain economic sustainability, more and more businesses have shifted to relying on Diesel Generators (D.G) as an important secondary source of power and not merely a temporary backup solution. As the usage has increased, so has the need to find ways to improve DG efficiency.

A recent study of large industrial clusters conducted by cKinetics revealed the significant prevalence of DGs working with sub-optimal power factors (PFs) in a vast majority of manufacturing units. The underlying aspects are different from that of the more commonly used Automatic Power Factor Correctors (APFCs) for Utility power and hence a different approach needs to be taken while developing a PF correction solution for DGs.

## Reasons of lower power factor in DG

While the mix of different loads with their unique power factor impacts is the primary reason for the overall reduction in the power factor of an electrical layout, there are other reasons which significantly affect the power factor output of a DG. All these reasons are primarily connected to the fundamental limitations of a diesel generator: A DG is an island source of power with the absence of a network of sources and loads to cross compensate or counter load it, hence has a limited ability to meet sudden and large demands of reactive power. Building on this

limitation, the following reasons can be associated to lower power factors in industrial DG installations:

1. Oversizing- Plant designers usually oversize a DG or limit the loading of DG owing to a much prevalent myth that 0.8 is the ‘Designed’ power factor of diesel gensets. essentially leading to liberally sized diesel guzzlers who do not deliver the full version of their economic capability. The alternator of the DG is no different from that of larger variants connected to utility power turbines with scaled down proportions; it is by design capable of delivering the exact amount of its rated KVA. Hence the ‘0.8’ is not a design variable, it is more of a thumb rule deduced from the fact that the average power factor in an industrial electrical layout with the common set of inductive (PF values .8 to .85), non-linear (PF values .5 to .65) and Linear (Unity PF) is ‘0.80’.
2. Unbalanced phase loading - With most industrial electrical layouts, loads are more liberally connected on different power phase lines simply because physical limitations of the process layouts are easier to visualize as compared to the electrical balancing on each line. This doesn’t prove to be a major problem in the grid connected situations where primary correction of one phase maintains the sync in the rest of them from the utility side owing to the macro effect of a grid. But with the captive DG set, syncing the phases is not even an advanced function built into its power electronics.

“An overall reduction of 5-7% of energy cost from the DG is reduced because of 10-12% improved efficiency as compared to traditional DG systems without correction”

3. Compensation load - From the published reports on effect of various power factors on the DG and identifying safe zones by leading alternator manufacturers and integrators like Cummins, it is evident that close to unity power factors are achievable and safe but poor PF for longer durations has greater negative impact. Hence traditional PF correctors with their switching response rates of 150 milliseconds or more prove to be hazardous to the life of a DG in constantly shuttling loads. For safer and consistent correction of PF in a DG the response should come within a waveform accounting to less than 20 milliseconds.

#### Dealing with PF correction in DG

By taking the above mentioned limitations as system boundaries, various power electronics developers and experts have designed robust power factor correction systems. These systems use the same principles of the conventional APFC but differ greatly from them on aspects such as the control logics and consequently the controller hardware which are more advanced and sophisticated. This corrective mechanism in common language is called reactive power compensation whereby an exact mirror image of the tracked power factor is created to correct it in real-time.

This necessitates the use of three things:

1. Thyristors with Solid state relays - As the name suggests, unlike traditional magnetic induction based relays, these are made of solid state electronics (semiconductors) which helps eliminate transient currents and drastically reduces the time lag between consecutive switch overs of capacitors.
2. Multiple current sensors - For every electrical phase of the layout there should be a current transformer to help virtually balance the load and correct the power factor on each phase line.
3. PLC or Micro-processor based controllers- With the added phase wise data parameters and calculating power for correction determination, micro controller based controllers prove to be sluggish in these applications; hence hardcoded PLCs or faster micro-processors are needed.

#### Impact

Correcting the power factor using these advanced power factor controllers offers some advantages which are most apparent in the following areas:

1. Loading capacity - The most direct impact of better power factor from the DG is that more loading can be done on the same DG hence allowing for better servicing of its capital and operational expenses.
2. Alternator Efficiency - The copper losses associated with the alternators are directly proportional to the square of the current it delivers. Hence the correction of PF leads to lesser current per unit power delivered having an exponential effect in reducing the associated copper loss.
3. Over-heating and voltage fluctuations - Due to reduced currents in the total system, over-heating and voltage fluctuations induced in the windings and transmission network due to shuttling of loads is remarkably reduced which further saves T&D losses.

All the listed impacts directly improve the plant economics for a DG and can lead to both financial and ecological benefits. An overall reduction of 5-7% of energy cost from the DG is achieved as a consequence of 10-12% improved efficiency as compared to traditional DG systems without correction. Depending on total hours of running, a conservative estimate of 6 to 20 months of capital investment breakeven can be achieved easily. Since these are robust electronic systems, minimum risk is involved in downtime from failure and maintenance is minimalistic too.

*Harsh Sheth is a technology analyst at a sustainability consulting firm, cKinetics. He works in various fields related to energy efficiency and renewable technology management like industrial energy monitoring, power plant economics and micro-grid designing. He holds a B.Sc in Information Sciences specializing in system designs and a MBA from the Institute of Management, Nirma University.*

# EXTENDED PRODUCER RESPONSIBILITY MANDATE: CONSUMER ELECTRONICS PREPAREDNESS STATUS

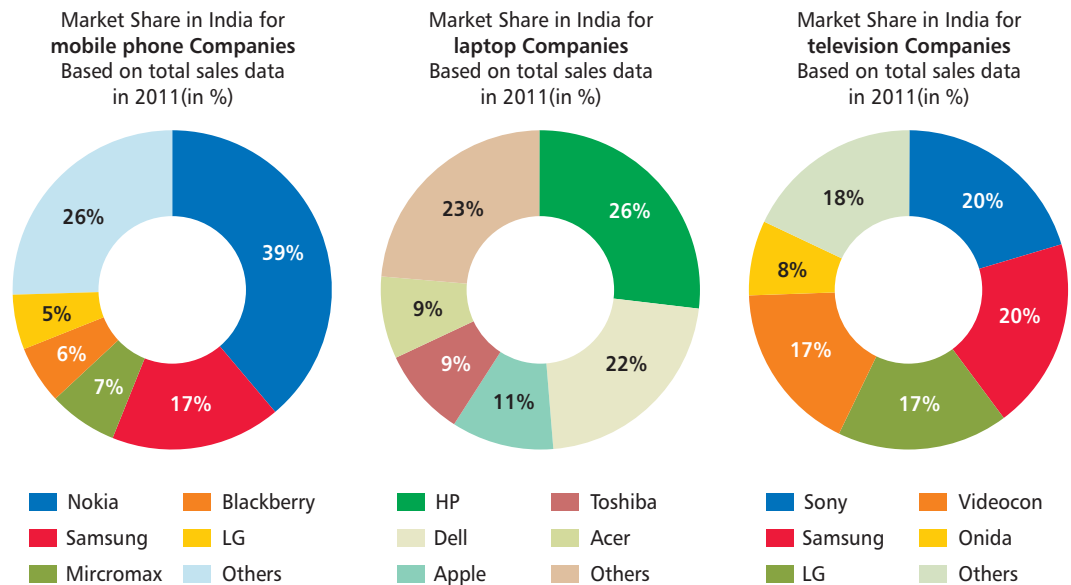
Sustainability Outlook recently conducted a study in an effort to understand the current state of preparedness of consumer electronics companies for effective and policy compliant e-waste collection and management.

The survey covered the dominant market players from representative sub-sets of the top 3 electronics product categories that constitute the bulk of electronic waste generated annually in India.

Based on publicly cited figures, market leaders in the Computer equipment (laptops and PCs), Mobile Phones and Television segments were specifically analyzed for this study. The study analyzed the preparedness of these companies on three parameters:

- a) Company Policy with respect to e-waste take-back and recycling
- b) Models employed for e-waste take back and recycling
- c) Levels of disclosure and consumer engagement for effective e-waste take back and recycling

**Overview of the evaluated companies:** For each of the product categories mentioned above, the top three companies by market share were selected for further analysis (Fig. 1-3).

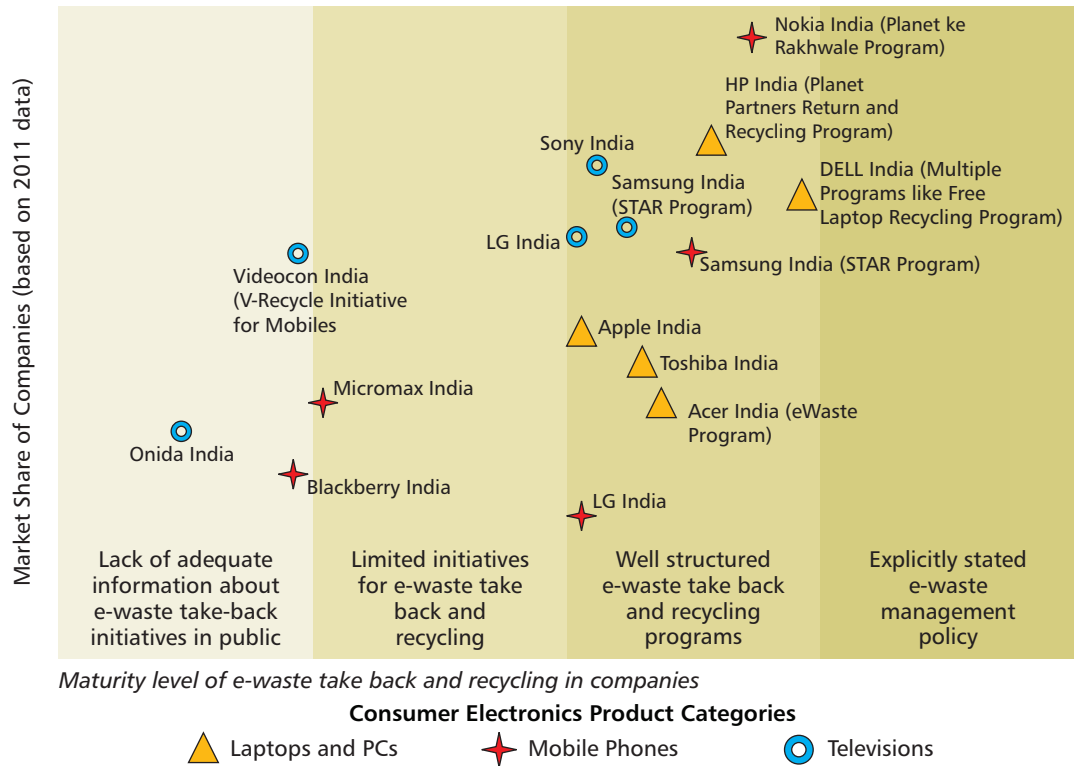


*Data Source: 2011 Annual survey of Indian Telecom industry by CyberMedia group's flagship journal for the telecom industry Voice and Data*

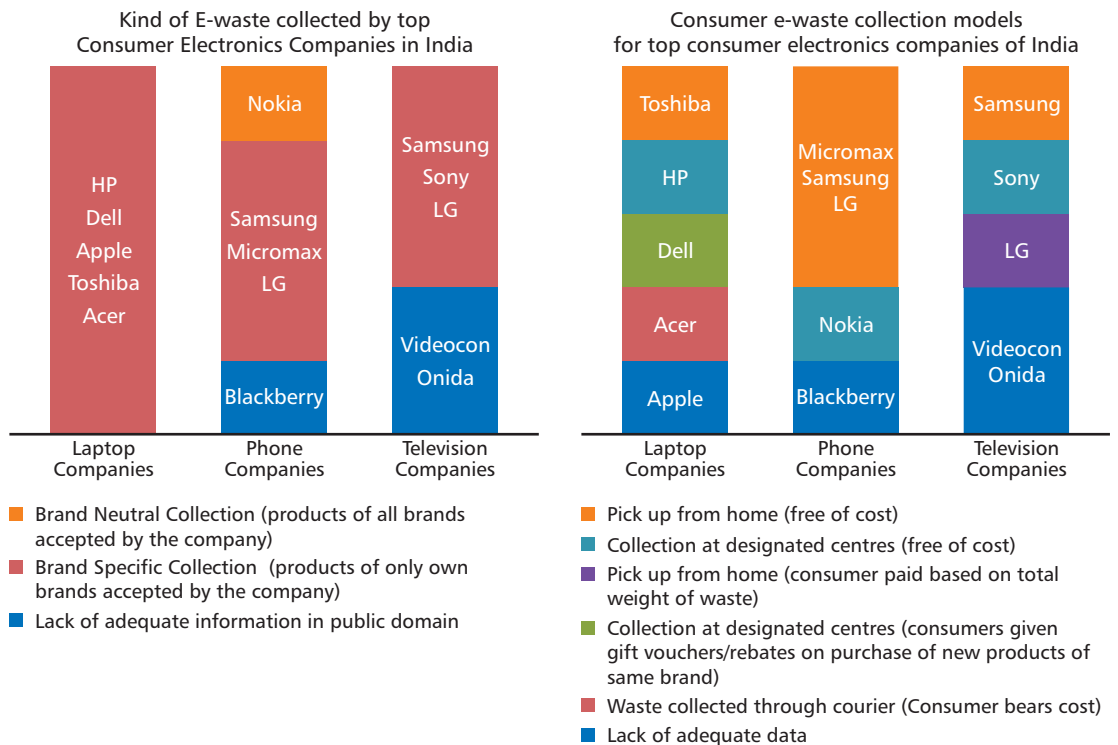


## Findings

### Status of Electronic waste Take Back and Recycling Programs for top consumer electronics companies in India



### Models employed for e-waste take back and recycling



Levels of disclosure and consumer engagement for effective e-waste take back and recycling

Mobile Phone manufacturers

Phone companies	Does the company have consumer/ employee awareness programs on e-waste recycling?	Is there easily available information on e-waste recycling on the company website?	Is the company transparently reporting complete information about the amount of e-waste collected and recycled per year?	Does the company have e-waste collection and recycling targets for each year (publicly disclosed)?	Does the company send its collected e-waste to an authorized recycler?
Nokia India					
Samsung India					
Micromax India					-
Blackberry India					-
LG India					

Very Strong  
 Relatively Strong  
 Weak  
 Extremely Weak  
 Lack of adequate information in public domain

Laptop manufacturers

Laptop companies	Does the company have consumer/ employee awareness programs on e-waste recycling?	Is there easily available information on e-waste recycling on the company website?	Is the company transparently reporting complete information about the amount of e-waste collected and recycled per year?	Does the company have e-waste collection and recycling targets for each year (publicly disclosed)?	Does the company send its collected e-waste to an authorized recycler?
Nokia India					
Samsung India					
Micromax India					
Blackberry India					
LG India					

Very Strong  
 Relatively Strong  
 Weak  
 Extremely Weak  
 Lack of adequate information in public domain

Television manufacturers

Television companies	Does the company have consumer/ employee awareness programs on e-waste recycling?	Is there easily available information on e-waste recycling on the company website?	Is the company transparently reporting complete information about the amount of e-waste collected and recycled per year?	Does the company have e-waste collection and recycling targets for each year (publicly disclosed)?	Does the company send its collected e-waste to an authorized recycler?
Nokia India					
Samsung India					
Micromax India					
Blackberry India					
LG India					

Very Strong  
 Relatively Strong  
 Weak  
 Extremely Weak  
 Lack of adequate information in public domain

# INFUSE

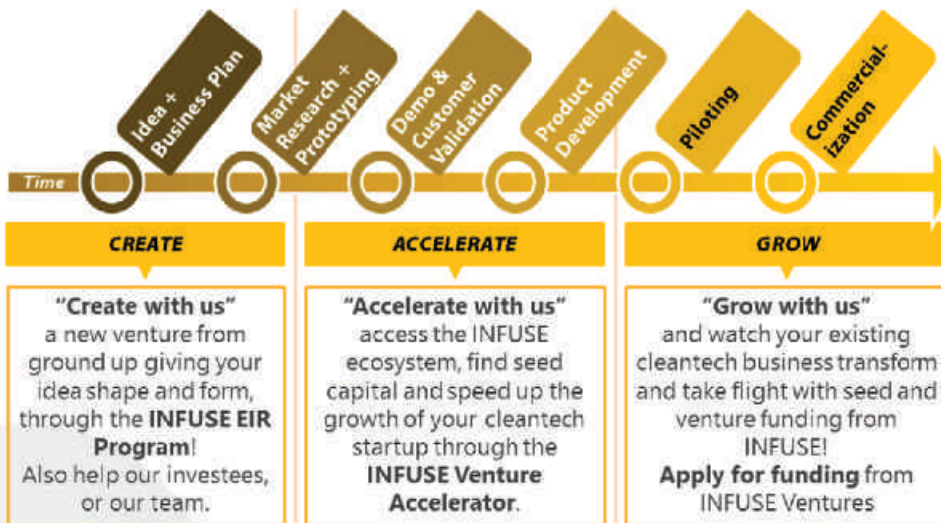
V E N T U R E S

## Who are we?

INFUSE Ventures is a cleantech-focused \$25 million venture fund set up in association with MNRE, BP Ventures, TDB and IFC. In August 2012, we launched India's first accelerator for cleantech start-ups – INFUSE Venture Accelerator.

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Incubation and  
Entrepreneurship

# INDIA INC. SUSTAINABILITY SHOWCASE



## CORPORATE BRANDS LEVERAGING SUSTAINABILITY

ITC Gardenia is the world's largest LEED Platinum certified hotel. In addition to many energy and water conservation efforts, the hotel uses 100% bio-degradable room cleaning products and is close to achieving zero water discharge and zero solid waste management levels.

Nokia is a thought leader in aligning its brand strategy to environmental responsibility. Jointly with several partners, Nokia has launched several projects, such as the School Environment Engagement Project, covering over 3000 schools across India, and the Informal Sector Project on e-waste recycling, to catalyze action on sustainable consumption of resources.



Pratibha Syntex is a thought leader in the textile space recycling 95% waste of the spinning units in fiber and yarn form into recycled fiber resulting in a new recycled product. Additionally the company has shaped a 'Zero Water Balance' dye house process and uses only 8-10% of the global average requirement of water per kilogram of cotton leveraging organic farming practices and micro-drip irrigation.



The Orchid is India's first eco-friendly hotel. The hotel follows several sustainable environment responsibility practices: conversion of wet food waste within the hotel's premises into vermicompost used for gardening purposes; recycling of sewage water for use in gardening and air-conditioning and harnessing of solar energy through solar panels installed on the roof top of the hotel.



## INNOVATION IN SHAPING SUSTAINABILITY IN SUPPLY CHAINS

RLC is shaping reverse supply chain efficiencies in the consumer electronics segment in the Indian marketplace. The company has pioneered branded quality factory seconds backed by a rigorous 50-point quality inspection process to guarantee the quality.



DyStar has made sustainability interventions the cornerstone of its products and services to the textile industry. The company provides services like sustainable color development, ecology testing, environmental and chemical audits to industry partners, brands and retailers to help reduce their environmental impact and make the textile supply chain sustainable.

## EXCELLENCE IN RESOURCE CONSERVATION PRACTICES

### Manufacturing

ABB ensures that sustainability values are implemented, measured and communicated across their value chain. The efforts revolve around energy conservation in production, water conservation, aligning production practices to national & international legislations such as ROHS/ WEE, managing toxic waste & chemicals. The firm has a robust EMS system and a combination of kaizen methods has driven the efforts across factories.



Enriching Lives

Kirloskar Oil has implemented several measures to lower their energy footprint. The firm uses biodiesel for operating DG sets to minimize carbon footprint. In addition, the company has invested in a windmill capacity of 5.6 MW, thus shaping a 35-40 % green energy mix in its total electricity usage.



Lawkim Motors, a Godrej and Boyce division, has successfully executed several resource conservation measures: the facilities have been able to achieve zero water discharge; 70% of the packaging material is recycled and a 27% reduction in the overall hazardous waste generation has been achieved.



Maharaja Shree Umaid Mills has undertaken innovative measures to gainfully utilize the waste water generated through the reverse osmosis process at its manufacturing plants. This not only has led to reduction of the chemical cost of treating effluent but also has helped to recover the larger portion of effluents for re-cycling.



TVS Motors has implemented a zero trade effluent discharge plant. Through a variety of measures, these efforts to implement a 'zero discharge scheme' have led to tangible benefits of 29% reduction in fresh process water intake and effluent recycling of upto 79%.



Initiatives for energy conservation have led to saving of 15740 units of power and 11 MT coal. In addition, water savings to the tune of 403KL/day have been achieved by the firm. The plant also has installed a Bio-Gas Plant to generate biogas from all bio-degradable wastes like Biological Sludge, garden, kitchen & canteen waste. In addition, the firm has succeeded in harvesting approximately 2 billion liters of rain water.

**Biotech, Food and Agro Industries**



Several energy conservation measures have been undertaken by the firm in its food processing plant such as: use of transformers with on-load tap changer (OLTC) thus regulating the voltage coming from the power grid leading to more than 10% energy savings; automatic load management for the DG power consumption and fully automated capacitor panel leading to management of the power factor at 0.9 level etc.



Prathista has adopted first of its kind concept of 'Waste into Wealth' in the business of manufacturing and marketing eco-friendly bio technology products viz., Bulk Drugs, Organic Agri inputs, Bio-fertilizers, Botanical Crop Protectors, Animal Feed supplements and other value added products based on Carbohydrates which are being produced through Industrial Fermentation Process.



SAB Miller has set a demanding target of reducing water use per hectoliter of beer by 25% between 2008 and 2015 both in India and globally. They have initiated numerous projects to conserve water resources in areas where they operate. One of the key projects is the Ground Water Management initiative at Neemrana, Rajasthan. The initiative has the potential to help decrease the groundwater abstraction in the region by approx. 23% and reduce the overall runoff in the region by as much as 40%.



Sresta's inclusive model involves partnering with local NGOs in mobilizing farmers and training them in Organic Agriculture. Sresta provides market linkages within India and outside to small & marginal farmers thereby enabling them to get better prices for their produce.



Unilever's instant tea Unit at Etahhas established a high level of performance in resource conservation: Over the last 4 years, there has been a 41% reduction in water consumption, 29% reduction in Energy, 25% reduction in HSD consumption in spray dryer due to steam air pre heater, 10% reduction in specific steam consumption and 20% reduction in the specific power consumption.

**Infrastructure sector**



Essar is committed to be the most water-efficient steel maker in India and focusses on reducing the water consumption per ton of crude steel. Rain water harvesting is an important aspect of plant operations. Innovations include beneficiation of iron ore at pelletization plants, hot DRI charging in the Electric Arc Furnace, air fuel ratio optimization in combustion and recovery of waste heat for production of electricity.



Edging toward the concept of 'Stainless- Green' and in pursuit of waste reduction, JSL has adopted the principles of Lean Manufacturing leveraging tools like JQI (Juran Quality Initiative), TPM, Quality Circles, 5S and 6 Sigma.



Use of Waste Heat Recovery System leading to generation of 46 MW of waste heat recovery based green power and shaping a reduction in the greenhouse gas levels and the emission levels of particulate matter, SOx and NOx. Additionally, the firm has lowered the water consumption in cement manufacturing and power generation process.

**Sustainable Spaces**



Cognizant's energy efficiency improvement projects using Six Sigma & Lean techniques have resulted in an overall improvement of 40% on per capita basis leading to a savings of INR 1.1 bn. The Six Sigma Green Belt efficiency projects covered key energy consuming equipments such as HVAC-Chillers, HVAC-AHUs, UPS, Lighting and Diesel Generators in addition to initiating measures of energy conservation on the IT infrastructure side.



IndusInd's 'Empower the Powerless' project aims to energize the rural banking outreach through solar powered ATMs. Over 100 ATMs have been solarized so far.



Infosys' building in Hyderabad is the first commercial radiant cooled building in India and has shaped a 50% reduction in energy consumption compared to 2007 levels. This LEED platinum rated building has also seen a 48% reduction in overall water consumption through the use of efficient plumbing fixtures.



Intel has shaped an enterprise-wide strategy linking employee compensation to sustainability goals for all employees and executives. Amongst other successes, a proactive server refresh strategy was designed to increase data center efficiency that led to an increase in the computation capacity by 500% from 2008 base number, while reducing the energy consumption by 12.3%.



PVR uses a water saving technology – a natural alternative that uses microbial technology to clean washrooms and sewerages. This contains micro-organisms and free enzymes that produce an enzymatic activity to degrade organic matter and uric salts thus saving over 10 million liters of water each year.



SunCarrier Omega has commissioned India's first commercial Net-Zero (Site) Energy Building (NZEB). It is an off-grid facility, with its total electricity requirement, including that for air-conditioning, being met by highly efficient on-site sun-tracking solar photovoltaic generators, and large capacity energy storage devices.



The hotel has clocked savings of 24.63% in Electricity, 27.5% in Natural Gas and 17.7% in Water over last year's recorded numbers. 80% of these savings have been achieved through use of variable frequency drive with intelligent programmes being implemented for Chilled & Condenser water pump including cooling tower fans.

**INNOVATORS CATALYZING THE SUSTAINABILITY JUGGERNAUT IN INDIA**

**Catalyzing use of sustainable energy systems in Industries and Communities**



Ankur Scientific is a thought leader in innovative biomass gasification solutions for industrial and community use. These equipment are used to support Process Heat Applications as well as power generation.



Aspiration Energy is an innovative solar energy services company, offering energy as a service to support fuel switching projects in industries as also infrastructure sector uses such as the telecom towers.



Green India Building Systems and Services (GIBSS) has pioneered several cost effective solutions, including geothermal cooling systems, hot water co-generation systems, and lighting and indoor air quality systems, to enable green housing in the urban settings. Their boiler replacement Heat Pump Products for the Hotels industry is 10 times more energy efficient than conventional boilers.



Gram Power provides a flexible, modular, and reliable smart micro-grid system that can create access to 'grid-level' electricity for rural communities. Their technology uses 83% less power, 86% less subsidies, and ~99% less CO2 emissions when compared with power supply on the conventional utility grid.



Greenko is an emerging market leader in the clean energy space in India. The Group is building a de-risked portfolio of wind, hydropower, natural gas and biomass assets within India and intends to reach 1 GW of operational capacity by 2015.

**Catalyzing responsible usage through innovative energy management tools**



Ecolibrium has launched several innovative and low cost wireless energy monitoring and optimization solutions for commercial and industrial customers. The company also has a focused Demand Response Platform targeted to empower the utilities and their consumers for better load management and usage practices.



Micro Technologies' EBB (Electric Black Box) solution enables individual consumers of discoms to undertake effective usage monitoring as also equips the power supply company to maintain a record on the total energy consumption in total units for each of their clients thus preventing misuse and/or limiting the use to a pre-defined limit.



See Beyond's Green Money is an innovative energy conservation and money saving device for ATM centers located across the country. The solution enables centralized power systems configurations as also is equipped to report back on the power utilization, power savings and the status of the devices to the central console.



TCS' 'Power InSight' and 'ECView' tools enable better management of resource footprint in the IT equipment and building segments. While the 'Power InSight' solution provides a real-time view of the power consumption of the IT equipment at an individual server, storage and network switch level, the ECView (Energy – Carbon View) tool empowers enterprises for better management of the supply and demand side energy/carbon footprint of their buildings.



Volvo IT's Commute Greener tool guides individuals and companies towards greener commuting options thus shaping reduction of the your CO2 footprint. The reporting capabilities of the tool can be utilized in annual reports, sustainability reporting and environmental management systems or certifications.



Wifinity's wireless sensor solution enables resource optimization within an enterprise through energy conservation, water management etc. Wifinity's solutions enable enterprises- campuses, buildings, and facilities etc. - to save 20% of their utility bill and 15% on water expenses.

### Catalyzing sustainability through innovative closed loop systems



Damascus has pioneered a unique carbon management solution that entails breaking down the CO<sub>2</sub> into its component atoms, i.e. Carbon nano-structures (CNS) and oxygen, in a cost-effective fashion by pre-processing the CO<sub>2</sub> using their special nano-catalyst thus enabling break down of the molecular bonds with less energy expenditure. DF's technology converts the CO<sub>2</sub> into valuable end products that can be used in other industrial processes (e.g. high-purity CNS is used in hybrid electric vehicles, batteries, solar panels, and semiconductors).



GBES' water scrubbing technology enables cost and energy efficient for biogas purification. The output, in form of Bio CNG, has the potential to replace LPG/CNG in all industrial and domestic applications at a significantly lower cost than commercial LPG thus making it a very potent renewable source of energy.



Hanjer Biotech uses green technology to recycle Mixed Solid Waste into valuable green products. These high quality end products are suitable for commercial and industrial use, thus extending the value chain of Hanjer's environment friendly processes and initiatives.



The company is a pioneer in the recycling of industrial phosphating sludge into an anti-corrosive pigment for use in Industrial Primers / Paints. Use of this Recycled product i.e. Anticorrosive Pigment can replace the usage of Zinc Chromate by 100% and of Zinc Phosphate to the tune of 50-100%.



Vasudha's Ecopure is the world's only biodegradable additive which degrades most of the plastics, from LDPE, PP, PET to ABS. The product has unlimited shelf life and biodegrades in landfill conditions due to microbial action without polluting groundwater or soil.

### Catalyzing Resource Conservation and Augmentation



Aqua Designs provides turnkey engineering solutions for water and wastewater management to Industry, Municipal Authorities, and Commercial & Public properties. Aqua Designs is the leader in the application of Membrane Bio-reactor technology in the country.



The automatic tube cleaning system promoted by Cleantech helps to keep the condenser tubes/ heat exchanger tubes clean. By using this innovative technology in HVAC and power plant applications, 10-25% energy is saved in HVAC and power output in power plant improves by 1-3%.



Green Con's innovative ice thermal storage process enables load shifting and entails storage of air-conditioning energy in the form of ice at night during lower demand and re-circulation of the same during the day during peak loads. This enables a 40% reduction in energy demand due to reduction in usage of chilling equipment and diesel generators as also lowering of the capital cost on chiller equipment to the tune of almost 40%.



NESPAL's Air Water Heater (AWH) absorbs heat from atmosphere even when the ambient temperature is sub-zero (-30 deg. C) and transfers this heat to water at higher temperature, producing cool air as by-product. As compared to any conventional water heating technology, this creates almost 80% energy savings enabling a pay-back of 12-18 months on the original investment.



Rossari, a premier enzyme & specialty chemicals company, offers a chemical solution to enable the bleaching process in the textile segment to work at lower temperature and under milder alkaline conditions. This leads to reduced heat and consequently less electricity, reduced water consumption and reduced fiber damage as compared to conventional bleaching process.





SA Pharmachem has replaced existing starch based products with synthetic size like Copolymer Elvanol PVA. It has also come up with a novel and economically feasible process of size removal and recovery through ultrafiltration. The process is specially designed to promise long life module at low operating costs with guaranteed results.



UEM's Zero Liquid Discharge (ZLD) is a process technology that ensures no effluent or discharge is left over after treatment and is targeted at industrial and municipal organizations. ZLD systems employ the most advanced wastewater treatment technologies to purify and recycle virtually all of the wastewater produced.

## OTHER NOTABLE MENTIONS



Production of organic cotton through contract farming model in order to source shape sustainable cotton supply chain in a socially fair manner.



Innovation in the herbal dyeing process for organic textiles. The sludge is bio-compostable. About 75% of the water used can be recycled. Uses solar energy for entire dyeing process.



CottonConnect works with brands and retailers to build sustainability into product and marketing strategies. Their programs include contamination kits for organic farmers and building capacity with ginner/ spinner for integrity.



A multi-dimensional company with interest in agro-related and bio-fuels; has initiated an ambitious project for production of bio-diesel.



Catalyzing sustainable cotton production leveraging bio technology; Also engages in micro-irrigation and water-shed management to improve yields.



Converting Bio-mass into Green Diesel; the firm's Project 360 links farms, processing units and consumer markets together- aiming for sustainable rural development.



Leading producer of a wide range of organic agriproducts with focus on holistic sustainable development through use of a unique processing method and advanced hydration technology.



Organically developed eco-friendly, natural textiles. All products are bio-degradable. Prints, dyes, consumables and threads are completely free of chemicals.



India's first fair trade label aims to create sustainable market linkages with the objective of boosting farmer incomes.



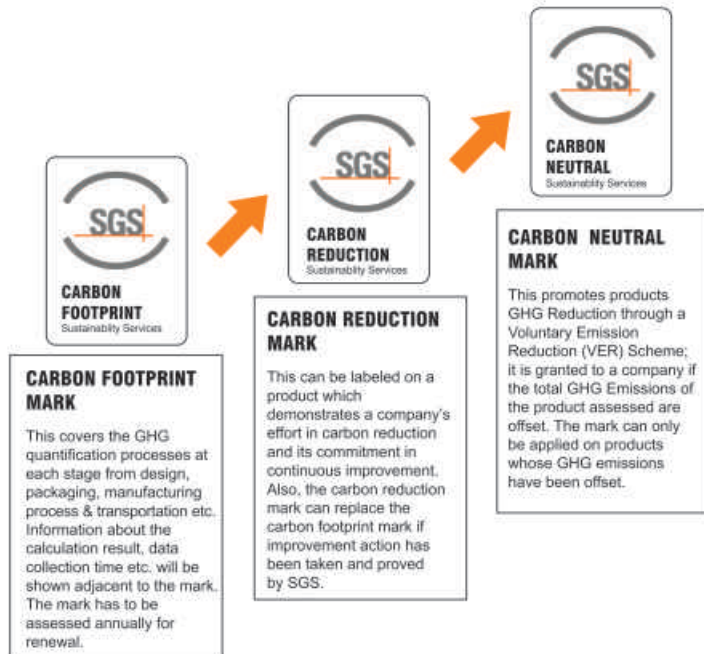
Renewable energy powered mall using a 2.7MW biomass gasification power unit. The mall will not require any power from the grid. The firm intends to grow its own fuels from wastelands.



Innovative business model for safe, drinking water in rural areas using UV light disinfection and multi-stage filtration to remove silt, bad taste and odors.

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