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Sustainable Housing

VBHC is showing how best-of-breed sustainability practices and technologies can be applied in affordable housing

Jaithirth Rao, Chairman, VBHC

The conventional value perception is - low cost gets you low quality. That sustainability products and services are expensive and only the luxury segment can afford it; that the lower middle class and the poor cannot afford to own a decent house in cities; that the real estate business opportunity is in the rich middle class and the premium segment.

The Value and Budget Housing Corporation (www.vbhc.com), promoted by a bunch of professionals led by serial entrepreneur, Jaithirth Rao, is beginning to turn most of these assumptions, if not all, on their head. Started three years ago, VBHC is pioneering a new wave of business opportunity in the real estate sector in India – that of low-cost-high-quality budget homes starting from Rs. 4.5 lakh for a studio to Rs. 20 lakh for a two/three bedroom apartment.

According to consulting firm KPMG, seven major cities in India need 2.1 million homes, which is a Rs. 30,000 crore market catering to the clerks, factory workers, electricians and plumbers of urban India. According to a Tata Housing estimate there is 24 million housing shortage in India with a market size of $200 billion.

Conventional real estate firms, used to their old ways, are beginning to see the opportunity in affordable housing. They also know that this is a different cup of tea requiring greater professionalism, transparency and sustainability focus.

The VBHC's big advantage is that they started this venture on a clean slate without real estate legacy issues. Jaithirth Rao, fondly called Jerry, was **inspired by late Prof. C K Prahalad's 'Fortune at the Bottom of the Pyramid'.** The fundamental premise here is – at a certain price point you can dramatically increase the size of the market without compromising on quality. Mr. Rao put together a pack of professionals and with the backing of HDFC Bank's Deepak Parekh, is working hard to achieve his vision of building one million homes in a decade. Their first project in Anekal, near Bangalore, is at various stages of handing over to customers. The

Inside

experience and learning from this is helping them embark on projects in several Indian cities.

Mr. Rao knew that business model innovation has to play a significant role in the viability of affordable homes business. VBHC's Vaibahava project, near Bangalore, has been able to transform real estate development into a lean industrial process amenable to mass production with the use of 'form' technology for construction. Unlike in the conventional real estate project, which struggles with finance, here the bookings are hundred percent upfront. And for the first time, a professionally-managed company will run a real estate company unlike a builder-led company ensuring higher transparency standards.

Sustainability Strategy

VBHC has four broad principles to guide sustainable development in its projects;

- Managing water resources in a responsible manner
- Managing and creating 'wealth from waste' in the community
- Reducing the overall energy consumption for the development
- Building a community aware of its responsibility towards sustainability.

VBHC promises to adhere to these principles all through the project, from planning to construction and community building. Specific targets in its Vaibahava Project, for example, include:

- Fresh water use in the VBHC community will be 53 percent lower than a typical residential project in India
- Energy used in handling water will be at least 75 percent lower when compared to using municipal water
- Comprehensive plan to handle 100 percent of the waste on site, with very little going to landfills
- Biogas plants to provide a compact, low-maintenance and highly beneficial way of processing wet waste. Organic waste will be used as fuel for the biogas plant, to produce about 110,000 units of electricity in a year to offset part of the power needed for common utilities
- Composite doors (made of eco-friendly wood substitutes) have been used in the homes. These doors have lower embedded energy content, even as they retain all the structural and aesthetic properties of wood based doors
- In addition, 720 tones of landfill can be avoided, thus reducing 420 tones Green House Gas (GHG) emissions each year in one project alone
- Solar hot water system of 54,400 liters capacity will be installed, which is expected to save 400,000 units of power every year when compared to electric heaters
- All street lights will run on LED lamps for long life and reduced power consumption.

It's clear that if conventional housing methods are applied to burgeoning affordable housing segment in India, the impact on the eco-system in India would be severe. Innovation at all levels is the key. VBHC has set a powerful trend making it difficult for the less committed to get in.

The governments need to do a lot more if this segment of housing is to take off including making land available at affordable rates; interest rate subsidy wherever required; easier and transparent registration rules and encouraging genuine entrepreneurs. A well regulated and friendly real estate sector is expected to add more than ten percent to the GDP growth of India. What are we waiting for?

360-degree perspective to any intervention

Chat with
Sasanka Velidandla,
Sustainability Architect, VBHC with
Benedict Paramanand,
Editor of SustainabilityNext

In a large scale low cost housing business how can you follow global sustainability standards?

As an approach we do have to keep the bottom line in mind. Sustainability as a cost, we don't pay much of a premium unless we see a direct tangible benefit. Our definition of sustainability is the project should be self sustaining over a period of time; we should do something tangible to avoid future costs. Right from the stage when we are looking for land we have sustainability interventions going on.

When we are looking for land we do a thorough hydrological analysis to make sure of ensuring that our residents will not run out of water that is sustainability for us. It's basic and at the grass root level. That is our first intervention. Way before we buy land we do satellite studies and using this data we follow it up with deep field

studies, we identify our bore well locations. Only once we have done that and we are happy that there is enough water we buy the land.

You have an ambitious target of 10 lakh houses in 10 years will you be able to follow all these practices?

The way we go about our work, especially the design part, we have standardized our approach to design. The obvious part is standardization of designs, we also have standard processes for how to evaluate land, and so for us it's easy to replicate this over and over. We also have standardized relationships with experts; we call the same experts. Having done all these things it helps to scale up. It was more of a vision statement than a mission statement but we had to re-evaluate our strategy in between to government regulations.

Common man's question – will you be forced to cut corners for that price point, especially from the sustainability angle?

Actually it's the other way around. For example, our doors, we use recycled material door – it is just around Rs. 3,000 but is seven times more impact resistant than a regular flush door. The government requires 4 impacts we provide 30. So there is no need to cut corners, you just have to approach the problem slightly differently.

What's the status of your projects?

The Anekal project (near Bangalore) is our first. It is in its third phase of construction, 392 apartments have been handed over, 180 families are living there. The second phase we have received the occupancy certificate, that is 448 apartments, the third phase construction is in the finishing stage. Anekal project was the flagship project; we have 400 units available for sale out of 1800.

When do you envisage the maturity, the big scale take off?

We have 2 projects in Bangalore, 3 in the pipeline, 1 in Chennai, 2nd in design stage. We have 6 projects in Mumbai - one has started the others are in various stages of approval. NCR region we have 18 acres under development, ready to go with approvals all set in place. Another 23 acres are in the pipeline. We are about 200 acres today that are in various stages of conversion, it's not insignificant either. We have a pan India footprint already. They will qualify for the IFC edge certificate – green building certificate which could get the customer 0.25, 0.5 or 1 percent discount in mortgage interest rates.

Sasanka is an IIM Ahmedabad grad. Has over 8 years of experience in the automotive manufacturing sector in the US. B.Tech degree in Mechanical Engineering from Andhra University and an MS in Industrial Engineering from the University of Cincinnati.

Give me more examples of sustainable practices

Our approach is different, we are against solar street lights because they are expensive, and it has three main components, a battery, light and a solar panel. We knocked off the solar panel and the battery but we upgraded the luminaries to an LED, the consumption of power has come down by 60-70 percent.

In the begining we gave solar water heater as part of the price, now the new policy is we will pass on the price to the customer. We have MV solar which is an export oriented unit. We don't give them a choice of not having solar.

About plumbing, we wanted low flow devices and couldn't find them for a long time. Luckily, our head of plumbing found a German company which makes flow restrictor or aerator. This device goes into every tap reducing the flow significantly.

We are looking how to avoid tiles because tiles have very high embodied energy. We bring a 360-degree perspective to any intervention that we do.

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The one watt project

It's good to see movements started in schools spread and they kindle hopes of a sustainable India. The ambitious project launched across India in April 2012 titled 'Saving Billion Watts' with the support of Godrej Appliances (a division of Godrej and Boyce Private Limited), the campaign is spreading across cities and schools like a wild fire.

The campaign is active across 6 cities, in around 300 schools with 364 civic clubs, and 15,000 odd CMCA members. With the target of conserving one billion watts, children are sensitized on how to save a precious resource like electricity in their homes. Differences in electricity bills obtained before and after implementing the conservation techniques are evaluated to gauge the impact. Initial results are said to be encouraging.

In CMCA schools the One Watt project began in November 2012 with more than 4000 children from 83 Bangalore schools taking part. A 'Bring Bills Down' contest is organized to encourage schoolmates and families to conserve power. Painting competitions are held on the theme 'Save Power for a Greener Earth.'

The urban schools kids are told how the power they save can be used to light up homes in the rural areas where the shortage is acute. They are also told how Indians cannot copy the western lifestyles because if they do, we will need three more planets to supply fuel.

Use long tail concept to solve scale issues of sustainable innovations – Prof. Anil Gupta

Investors have come up with lack of scale as a major hurdle for funding grassroots sustainable innovations. So, hundreds of innovations have still not reached out to users outside local communities. It looked like there were no solutions until the concept of 'Long Tail' was made popular by Chris Anderson in 2004 in his book 'Long Tail'.

The concept means that products that are in low demand or have low sales volume can collectively make up a market share that could rival or exceed the relatively few current bestsellers and blockbusters. Dr. Anil Gupta, founder of Honey Bee Network said at his TED Talk that this concept could solve the scalability challenge of rural innovations. That is, if investors pooled a few inventions together and invested in their manufacturing scale can be achieved.

Prof. Gupta's Honey Bee Network is a metaphor that signifies extraction of knowledge and facilitation of communication for ensuring a proper channel for diffusion of innovations in the informal sector. Prof. Gupta also set up the Society for Research and Initiatives for Sustainable Technologies and Institutions (SRISTI) among others.

Environmental concerns fall globally

Public are starting to tune out because of economic recession and slowdowns, finds a GlobeScan report

Environmental concerns among citizens around the world have been falling since 2009 and have now reached twenty-year lows, according to a multi-country GlobeScan poll.

The findings are drawn from the GlobeScan Radar annual tracking poll of citizens across 22 countries. A total of 22,812 people were interviewed face-to-face or by telephone during the second half of 2012. Twelve of these countries have been regularly polled on environmental issues since 1992.

Asked how serious they consider each of six environmental problems to be—air pollution, water pollution, species loss, automobile emissions, fresh water shortages, and climate change—fewer people now consider them "very serious" than at any time since tracking began twenty years ago.

Climate change is the only exception, where concern was lower from 1998 to 2003 than it is now. Concern about air and water pollution, as well as biodiversity, is significantly below where it was even in the 1990s. Many of the sharpest falls have taken place in the past two years.

The perceived seriousness of climate change has fallen particularly sharply since the unsuccessful UN Climate Summit in Copenhagen in December 2009. Climate concern dropped first in industrialized countries, but this year's figures show that concern has now fallen in major developing economies such as Brazil and China as well.

Still very serious

Despite the steep fall in environmental concern over the past three years, majorities still consider most of these environmental problems to be "very serious," Water pollution is viewed as the most serious environmental problem among those tested, rated by 58 percent as very serious. Climate change is rated second least serious out of the six, with one in two (49%) viewing it as "very serious."

GlobeScan Chairman Doug Miller comments: "Scientists report that evidence of environmental damage is stronger than ever—but our data shows that economic crisis and a lack of political leadership mean that the public are starting to tune out.

Those who care about mobilizing public opinion on the environment need to find new messages in order to reinvigorate a stalled debate."

http://www.globescan.com/commentary-and-analysis/press-releases/press-releases-2013/261-environmental-concerns-at-record-lows-global-poll.html

CEOs still see sustainability as efficiency

John Elkington, the founder of the famous Triple Bottom Line concept of achieving a balance between planet, people and profits, is dismayed at the pace of absorption of the letter and spirit of the sustainability movement. There's still a long way to go if what recent surveys of business leaders indicate. He told The Economic Times during his visit to India that "Many companies use the sustainability language due to peer pressure.

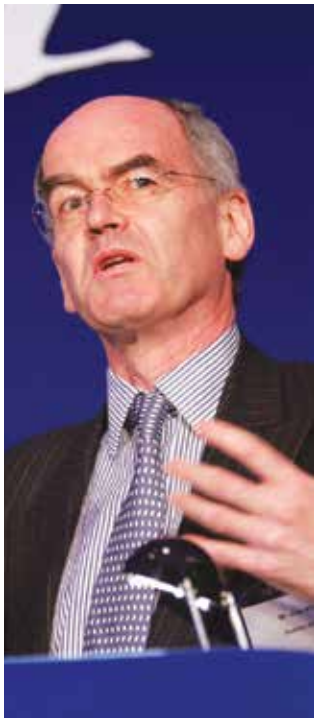
Elkington said the CXOs understood sustainability largely as reporting, having a chief sustainability officer, understanding problems around the supply chain. He's worried that they don't understand the nature and scale of the climate issue, water issue, natural resources issue and the poverty issue. "They are seeing it as efficiency issues and transparency."

"They are doing a lot compared to what companies were doing 25-30 years ago. But still, for most companies we deal with, it is still an incremental change agenda. Another problem is they are trying to address these issues, but they lack skills beyond their core expertise to tackle sustainability."

On Indian CEOs

He said he hasn't worked much with Indian companies except the Tatas and Ford India. "What I have seen is MNCs bringing elements of what they do globally into India. One of the companies I have worked with in Denmark is Novo Nordisk. I hear they have struggled to bring to India all that they do globally because the culture is so different."

Referring to the Tata group he said: "If I look at a company like the Tata (Group), I see an extraordinary corporate history and family values. But I also see, until relatively recently, a very strong skew towards the social agenda and not so much the environmental agenda."



House of bamboo and bottle

Different kinds of plastic can degrade at different times, but the average time for a plastic bottle to completely degrade is at least 450 years. It can even take some bottles 1000 years to biodegrade! That's a long time for even the smallest bottle. 90% of bottles aren't even recycled. Bottles made with Polyethylene Terephthalate (PET or PETE) will never biodegrade.

Wood, grass and food scraps undergo a process known as biodegradation when they're buried, which is a fancy way of saying they're transformed by bacteria in the soil into other useful compounds.

Of course, plastic buried in a landfill rarely sees the light of day. But in the ocean, which is where a lot of discarded grocery bags, soft drink bottles and six-pack rings end up, plastic is bathed in as much light as water. In 2009,

Room in Hyderabad

1) Cost - Rs.75,000
2) Room Size 15 x 15 = 225 sq.ft
3) 4000 bottles
4) Bottles were placed vertically as well as horizontally
5) Bottles were filled with mud for thermal insulation and strength
6) One side of the wall we tried empty vertical bottles, without mud filling
7) House skeleton was made with bamboo, bottles were used for walling as a substitute for bricks
8) Took around a month to complete
9) Roofing done with composite fibre roofing sheets
10) Only 6 bags of cement used
11) We have measured 4 degrees temperature variation - room is extremely cool
12) Minimum life of 30 years
13) Scrap bottles were purchased for Rs.1/-each.

researchers from Nihon University in Chiba, Japan, found that plastic in warm ocean water can degrade in as little as a year. This doesn't sound so bad until you realize those small bits of plastic are toxic chemicals such as bisphenol A (BPA) and PS oligomer. These end up in the guts of animals or wash up on shorelines, where humans are most likely to come into direct contact with the toxins.

Housing shortfall in India stands today at 148 lakhs dwelling units and both these ends can be connected. We tried an experiment by building a house with bamboo and bottles, basic skeleton was built with bamboo, and entire walling was done with vertical and horizontal placement of bottles with mud for thermal insulation and strength and plastering was done with mud + cow dung with final coat of cement plaster.

The experiment was done on 225 sft house of 15 x 15 size and around 4000 bottles were used in the process which were procured from scrap dealers in an around our area, which was a tough task. The entire house was built at a cost of around Rs.75,000/-

Each bottle was purchased at a cost of One Rupee, whereas each cement brick costs around Rs.10/- and each Red brick costs around Rs.5/- apart from high consumption of cement which goes into a brick house and amount of heat bricks generate.

Entire bamboo and bottle house was built with less than 8 bags of cement and we expect it to last a life time not less than 30 years, we wanted to showcase a solution to growing issue of plastic recycle which otherwise is thrown out.

In terms of strength, performance is equal to bricks and may be better too, we have requested IIT Delhi for further testing of this process and we will be shortly sending bottle wall panels for testing to the campus to further refine the process.

Initially people might have apprehension in building bamboo and bottle houses, but we are sure with time this concept will surely catch up with increased environment awareness and on problems caused due to plastic.

Bottle over bricks

Bottles have the following advantages over bricks and other construction materials.

Low cost - You know how much a bottle costs; Non-Brittle - (Unlike bricks); Absorbs abrupt shock loads;- Since they are not brittle, there can take up heavy loads without failure; Bio climatic; Re-usable; Less construction material; Easy to build and green construction.

We are making plans to promote this bottle technology for mass rural housing as raw material would be locally available and labour is cheap, a small of 200-400 sq.ft in a rural area can be constructed at less than Rs.50,000. We are planning to tie up with the local restaurants / bars / food joints from where bottles can be sourced and educate them about not disposing off in ground or throw/ burn.

We have already have started promoting the concept among schools and colleges, so that the next generation thinks beyond bricks and cement.

Portrait of a Sustainability-Driven Innovator

The sustainability story at Greif, the US-based manufacturer of industrial packaging, illustrates the importance of business-model innovation and several other hallmarks of Sustainability-Driven innovators.

Scott Griffin is chief sustainability officer at Greif, a 135-year-old global industrial packaging company with net sales of $4.2 billion in 2011. Griffin says there are four keys to Greif's sustainability agenda. One is top management attention to sustainability. "One reason sustainability works here at Greif is high-level, strong executive commitment," says Griffin. Unlike many chief sustainability officers, Griffin reports directly to the CEO and is a member of the company's executive strategy team.

Another key to Greif's sustainability approach is collaboration. Greif collaborates increasingly with customers and nongovernmental organizations on sustainability-related issues. These collaborations have helped the company not only establish sustainability-related goals, such as reductions in greenhouse gas emissions, but have also provided new opportunities for customer engagement and the development of new corporate capabilities.

Collaboration with customers ties into the third element of Greif's sustainability program: business-model innovation. For instance, Greif worked with customers to analyze the life cycle of several of its products. The collaboration identified new business opportunities connected with reconditioning and extending the life of a major product line, steel and plastic drums. Greif now owns the largest industrial packaging reconditioner, EarthMinded Life Cycle Services.

New internal organizational structures are the fourth key to Greif's sustainability agenda. Greif created a global energy team composed of business unit representatives in charge of achieving multiyear sustainability goals connected with energy reduction goals. In 2011, the global energy team helped cut Greif's greenhouse gas emissions per unit of production by 10% from 2008 levels. Greif now has similar teams for sustainability goals connected with energy, waste and water.

Source – MIT Sloan Management Review

4 keys to agenda

- **Top management attention**
- **Collaboration for sustainability**
- **Collaboration with customers for business model innovation**
- **New internal organizational structures**

Comfortable water backpack

Greif received the Popular Science Magazine's Best of What's New award in 2012 for its innovative water back pack. The back pack is for human transport of water in distressed areas. It's a simple idea with a purposeful design.

Called PackH2O backpack, it takes the painful burden off the wearer's head and neck and places it ergonomically on the back with the weight evenly distributed, making it easier to carry over any terrain, while leaving user's hands free. It is seven times lighter than a plastic can but has the similar 20 liter capacity.

The backpack is made of industrial grade polypropylene fabric. Its roll-top closure protects the water during transport and spillage. The sturdy base allows the water backpacks to stand on its own while being filled or emptied. Usually children too are made to carry water. Keeping this in mind, Greif designed a smaller, 5-liter unit with the same features of the large one.

Driving Sustainability in Medium-sized Town

Impact of dedicated bus service in Tumkur

H.S. Sudhira | www.gubbilabs.in

Urbanization in India has been never as rapid as it is in recent times. As one of the fastest growing economies in the world, India faces stiff challenges in managing this urban growth leading to sprawl and ensuring effective delivery of basic services in these urban areas.

Most interventions with regard to urban transport have focused on large towns notably with the launch of JnNURM (Jawaharlal Nehru Urban Renewal Mission). The ministry of urban development launched the Urban Infrastructure Development Scheme for Small and Medium Towns (UIDSSMT). Despite this scheme in vogue for improving infrastructural services and provision of other basic services by creating public assets in towns and cities, they have not focused on a very important aspect of urban development – the urban transport.

Cost imbalance of public vs. private transport

One of the critical challenges most small towns and medium-sized cities face is the lack of a dedicated city transport service. Since most of the large towns have some form of the public transport, small towns and medium-sized cities are forced to rely on para-transit and personalized modes of transport (2-wheelers). It is not surprising that there are significant 2-wheeler population in most towns and cities, which has resulted in excessive dependency on fossil fuels and the resultant carbon

emissions has led to environmental degradation. The negative externalities on account of all these have indeed made these towns and cities inefficient and unsustainable. Investment made on automobiles (on an average of Rs. 50,000) even a medium town with about 50,000 motor cycles would have incurred an investment of about Rs. 250 Crores!

Further, by the Central Institute of Road Transport (CIRT) standards having 50 buses for every lakh population, with an average investment of about Rs. 20 lakh per bus, would cost only Rs. 10 Crore. If these are the figures for a certain medium-sized city, the implications of these when factored for all towns and cities in the country would amount to a very significant proportion at the macro-level. The larger economic costs of saving fuel and travel kilometers on account of rampant 2-wheeler population in small towns and cities can be minimized in the context of larger common good by exploring the introduction of dedicated city transport services. The savings on personalized transport would certainly increase the personal disposable income for citizens in these towns and cities that can have greater economic benefits.

It is in this context that it was proposed to introduce a dedicated city transport service for a medium-sized town in Karnataka on an experimental basis.

Why Tumkur?

Tumkur city is about 70 km northwest of Bangalore, which makes it the largest city close to Bangalore. Owing to its proximity to Bangalore, the city is witnessing significant growth and development. Tumkur has gained prominence as a key center for education. With a large pool of talent accessible, proximity to Bangalore and availability of other resources, Tumkur is undoubtedly emerging as a key place for the new economy.

While in terms of population it is the 10th largest city in the state, the city ranks in 6th position when the person to 2-wheeler automobile population is concerned. The lack of any effective public transport system has resulted in use of personalized modes of transport or the para-transit like auto-rickshaws (shared auto). The alarming rise of automobiles is a cause of concern which is unsustainable for the city. Considering all this, Tumkur city was the natural choice for introduction of the bus-based city transport in the first phase.

> *KSRTC was able to expand from the initial 4 services to almost 25 reaping daily profits of more than Rs. 40,000 and an average vehicle utilization of about 200 km per bus*

The state-owned Karnataka State Road Transport Corporation (KSRTC) introduced a dedicated bus-based public transport system during February 2011. Within a year of operations, KSRTC was able to expand from the initial 4 services to almost 25 reaping daily profits of more than Rs. 40,000 and an average vehicle utilization of about 200 km per bus. By now, the introduction of city transport service has impacted the citizens in more ways. Apart from easing commuting within the city, the city has also witnessed a gradual appreciation in the real estate markets along the axis of the transport services.

Considering the success of this service, KSRTC introduced a similar service in Hassan that is thriving too. Banking on the success of these, KSRTC has started rolling out similar city transport services in other small and medium towns. Key takeaway messages from the above are:

a. The apparent tragedy of the rise of personal automobiles is being minimized due to the introduction of dedicated city transport services

b. The initial skepticism of breaking even by operating in small and medium towns has been effectively disproved with efforts in Tumkur and Hassan garnering profits

c. The potential and opportunity for intervening in small and medium towns are immense with almost two-thirds of urban population living in these towns

d. Sustainability can be achieved and better demonstrated in these towns than larger metros that takes more concerted effort and coordination

Beroz Guzdar's tale of discovery, drama and rewards

In conversation with **Benedict Paramanand**

You said you stumbled upon your career in sustainability...

I had joined the Mahindras in 2007 for setting up two special economic zones (SEZs); one was the bio-tech SEZ in Thane and the other in Kurla. For some reason, the business case did not work out and for strategic and business reasons we decided not to do it at that point in time. In a manner of speaking, I was at a loose end.

At a board meeting after that our CFO Bharat Purushi received an investment interest from an investor group represented by an international bank. For doing the due diligence, they asked us about our record in following the Triple Bottom Line (TPL) metric (people, planet and profit). CFO was puzzled. Since I had nothing to do, he asked me to look into this request. As they say, the rest is history. I had no clue what TPL was. I had no clue what sustainability was. Like everyone else, I first went to Google 'baba' and started reading. I realized it was kind of big stuff; it rang a bell to my intellect and sensitivity and realized, yes, this is my calling. I sometimes feel it was divine intervention.

I made a short note for my boss and said, 'investors now will start asking for these things. This will be beyond financial accounting and transparency and disclosure in everything we do is the way to go. He sent that note to vice chairman Anand Mahindra. Mr. Mahindra called a group management board meeting and asked me to tell them what it was and how we could go about it. The board thought it was the right thing to do and asked me to take it forward.

Now the question was how to go about it. Fortunately for me there were two youngsters who were working with an IIT professor on a project but were left jobless as the

professor left for some reason. I found them very smart and keen. I, kind of adopted them.

The question facing us now was, should we take time to learn and buy time to do our first sustainability report a year to two or should we take the plunge and present our first full-fledged report in 2008 itself. My next challenge was whether we should include only one or two mature business of Mahindras and include the new businesses later. There was intense debate about this and several senior executives advised us to take one step at a time. However, I felt we should include the whole group right away. I said we have to do it all together otherwise the young will always want to stay young in the company. And then came another tough choice of whether we should target to make the best-in-class report or just manage to

present a basic one the first year. Again, I prevailed. I told my management and my team that from the first report itself we should aspire to present the best possible report. Many senior executives felt I was stubborn and exceeding my capacity.

We roped in a good external assurance expert and got it checked by the Global Reporting Initiative (GRI). There was a point when I felt it was madness but we did it because I knew that if we get A+ rating it will make a world of difference to how we do business. There were about 49 indicators and we reported on all 49.

I believe that the GRI framework really enabled us to understand what sustainability was and help us understand the expectations of external stake holders. If a business has to have an enduring growth we cannot be just looking at profit but also how we are making those profits. We have to make money, the question is, do we make money no matter what or with responsibility. So my definition of sustainable business is to make money with responsibility so your external world will be with you come rain or shine. Finally, your customer is your final boss. Already customers have started asking for green products. The concept has started to sink in.

Once you got the A+ rating it must have been easy to sell the idea internally...

Yes, we just jumped into the ocean but there was a need to have a buy in from people within for the process to become sustainable. We did a business awareness campaign. We dissected the woolly idea of sustainability into definite compartments.

There was resistance but we could not back off. We kept going and hung onto our sense of humour. The awareness process goes on all the time since regulatory standards are also changing all the time, there are new expectations from stake holders, newer fiscal laws, fresh investor expectation keep us on our toes.

We did a lot of customization within at different business levels. If I go to financial services business, which is a very big business for us, our approach and tenor is totally different. It's different for the IT sector. We adopted best practices in sustainability standards in all our interactions with various business groups including auto.

Share the issues and challenges you faced after the first report...

The first report was basically base lining. In the report we took proper targets, we took commitments, and once those things were in the public domain there was pressure on the sustainability group to see that it happens. We did bit of push and cajoling. We branded it as Alternative Thinking because we wanted a common understanding of what sustainability is. It gelled very well with a company which has an engineering kind of a background because innovation was a huge platform for us. Innovation is also alternative thinking and it went well with services as well as manufacturing because you can do alternative thinking in your process and business development.

So the focus was really on awareness and it still continues. The medium has changed. Earlier it was mailers, now people understand. We have started a newsletter and also a sustainability award. Our first award document in 2012 read like a knowledge enhancing document. The award document comes from the GRI framework.

What kind of impact do you see on the group in your five-year journey?

Our 2012 report was rated number two in India after that of Wipro. The Singapore-based analysts ASR (Asian Sustainability Rating) rated us number seven out of the 750 companies in Asia.

With this kind of recognition, we are not surprised when we are invited to thought leadership forums of the government and the industry these days.

Mahindra today is seen as a good brand by consumers and analysts as well.

Tata Human Development Index

The Tatas pioneered the concept of measuring sustainability practices through an index a decade back. **Anant G. Nadkarni,** VP – group corporate sustainability, Tata Council for Community Initiatives, looks at how it evolved and its next challenges

Recently, the Tata Power Delhi Distribution Limited scored 172 points at a systems level; 106 at the people level; and 330 at the program level. The aggregate score of 608 out of 1000 indicates a high level of human achievement through building capacity amongst people they served

Sustainability is more than just a buzz word. It is becoming imperative that business leaders have to seriously consider future consequences of their decisions, projects and long-term investments. Business as a whole has to fit into the triple or multiple contexts – economic, social and environmental.

Similarly, all forms of institutions in the development sector have had to look deeper into how social development work made positive long-term impact. The Human Development Index (HDI) to begin with triggered off several frameworks, guidelines, MDGs, voluntary standards and a plethora of rules and regulations so that businesses and development agencies demonstrated more responsible behavior.

Most of the work done on indices and frameworks at that time was rooted in various movements that sprung from domains like human rights, different streams of cause-related activism and action taken by several governments resulting from accidents or mishaps. The International Standards Organization [ISO] was perhaps more proactive than the others but those agencies and issues were centered on safety, environment and workplace conditions and did not however look at social and human development. The concept of understanding, capturing and measuring impact was either missed out or assumed or confused with results of an intervention.

In India, with ongoing socio-economic reforms, the Tata group forged an innovative partnership with the UNDP in 2001 to combine its business excellence model with human development goals and evolved the Tata Index for Sustainable Human Development. This helped to recognize that business or social development work is not just about providing materials, utility or resources. These are important but just means to eventually bring about positive personal and social changes.

> *Interestingly, some companies like Tata Steel and Tata Chemicals created their own indices; others customized it to meet their requirements*

In a typical utility chain, a product or service results from a concept, the strategy, processes and outcomes. This also carries the inherent potential of making a distant or future impact. For instance, a mobile phone provides utilities to improve communication, which is an outcome. Impact on the other hand is beyond that and it is about human satisfaction or dissatisfaction. Impact is more subjective and stretches over a long span of time. In this case, people have better access to information with enormous flexibility; prices could be affordable with minimum maintenance costs. It includes negative impacts such as managing e-waste, higher consumption resulting from rapidly changing technology, accompanying adaptation to new life-styles and so on.

Hundred questions to initiate a self-enquiry

The Tata Index factors these sensitivities into the various aspects of the business model. It has three levels - systems, people and programs to address this issue. Suggested is a list of nearly hundred questions to initiate a self-enquiry. The scoring comes up with references to at least 19 human development goals which serve as an ultimate purpose of delivering products, services and other outcomes of different programs. For example, if wells are dug in a village, ponds deepened or check dams put up, the ultimate purpose is how people got better access to water; how communities were empowered and they organized and managed water resources and so on.

A team of assessors individually evaluate projects and build a consensus on the state of the approach taken, processes in place and outcomes for each of the detailed questions given. The team throws up areas for improvement so that a positive or negative impact is captured on the lives of individuals, families and people in the communities. Finally, various teams aggregate the scores to 1000 points which is measured on a 5 point maturation scale of the journey towards human excellence.

Major companies in the Tata group experimented with this idea internally for some years. Recently, the Tata Power Delhi Distribution Limited scored 172 points at a systems level; 106 at the people level; and 330 at the program level. The aggregate score of 608 out of 1000 indicates a high level of human achievement through building capacity amongst people they served. There are adequate structures and roles for the people, a routine convention is established wherein people experience a greater sense of Community. They are in a better position to do things for themselves than before.

In these years, besides the learning, at least a few officers have gone through the process. It has generated an enquiry and introspection. In some companies this was discussed periodically by large teams, cross functional heads, level two executives and top management committees. This conversation in the businesses is critical because it generates a circle of influence on different functions, transactions and core proceedings.

Interestingly, some companies like Tata Steel and Tata Chemicals created their own indices; others customized it to meet their requirements. The idea of indexing was embedded. The need to see impact, the way to put a 'human' or 'social' purpose to an activity was more systematically possible. And, we had similar experience with the UNDP India: they sent it out to a large number of their experts for some years now and the Tata Index can move to the next level.

It now opens up some more opportunities to involve 'external assessors' from other user and stakeholder-groups like key suppliers, trade-union representatives, dealers, retailers, bankers, investors and so on. A bottom-up process of democratic consensus can be built and a simple model for governance could emerge when this idea is practiced over time. Gradually it will help communities to proactively level out possible uncommon grounds between the business and themselves and move on to co-create sustainable value for all.

For more please see the link: http://www.tata.com/taxonomy/Tata_Index.pdf

Green – The New Black

Tarun Anand, Co-Founder, Universal Business School, on the immense opportunities for India and how Green education is being imparted in his B-School

I'm convinced that Green is definitely the New Black. I want to take you through our journey of incorporating Green as a fundamental pillar of our institution, Universal Business School, located at Karjat, near Raigad district, Maharashtra.

It is amazing to learn that in some ways India is way ahead of several countries in its green adoption. This is especially true in the building industry where India is the second largest nation of green buildings in the world after United States. However, India still lags behind in adopting green thinking on a wider canvas. This is what led us at Universal Business School to conceptualize and build India's first green business school.

> *India is likely to see about 1 million green jobs created in the next 2 years growing at a rate twice that of all jobs overall*

At Universal we believe that climate change solutions must be found to allow the aspirations of India and other emerging economies for faster economic growth and rising prosperity. We will create responsible business leaders who recognize their duty towards the environment, and the major role they can play in making a more sustainable planet.

As Managing Director of Thomson Reuters, I was tasked with transforming the South Asian operations with the green agenda, but realised that the mindsets of my team towards the green agenda were still old school and needed a massive overhaul. This ignited the green spirit and we made a resolve to impact the young minds of future leaders with green thinking. This direction was strongly endorsed by 60 CEOs from leading Indian and MNCs who are on board of governors of Universal. They felt this would be a valuable contribution to the future of business strategy and thinking.

Inspiration from Apple

We were inspired by the Apple model of great hardware and great software. We ensured that we had a Green and sustainable campus with climate friendly buildings which meant investing in double wall cladding and double jointed glass to reduce heat transmission to get the benefits of the Thermos Effect, which meant reducing the excessive transmission of heat and thereby reducing the air-conditioning needs of the entire academic block

significantly. We employed rainwater harvesting by creating four dams on the campus with the ambition to becoming water self-sufficient. We mandated waste recycling and established a sewage treatment plant. We planted over 5000 trees and restored the green cover which was washed away over the years and restored the flora and fauna. We had a unique idea of making each student plant a tree, so they are connected to their alma mater for life. Currently 40% of the entire campus is completely green with no construction whatsoever.

Once we had worked on the hardware side of our Green philosophy, we focused on the software side of Green. We had to make an innovative Green-focused curriculum to shape the future minds of our students and inculcate Green Thinking – we have introduced Green Finance, Green Marketing, Green Operations & Logistics and Green IT.

For example Green Finance is any market-based investing or lending program that factors environmental impact into risk assessment, or utilizes environmental incentives to drive business decisions. It focuses on financing green enterprises and technologies, creating green financial products and seeking out green investors, and finally creating more efficient emission trading markets. Last year, $2.7 trillion — roughly one of out every nine dollars under professional management in the United States — was invested in companies based on their environmental or social records, according to the Social Investment Forum. Therefore, Green is no longer a fad. Green is definitely the New Black.

Pushing the Green agenda

The challenges of sustainability are also the opportunity,

> *We had to make an innovative Green focused curriculum to shape the future minds of our students and inculcate Green Thinking. Towards this goal, we were pioneers in incorporating innovative subjects like Green Finance, Green Marketing, Green Operations & Logistics and Green IT*

offering a fantastic new set of innovation levers – allowing us to look at the world through new lenses and to think about entirely new ways of doing things. I am confident, there will be a revolution, whereby new industries, new business models, new companies and new financial models will be created in this decade focused on the green agenda.

Companies which do not follow this will certainly perish. On the other hand, Smart companies and visionary innovators are promising a new clean and green technology revolution, which is still in its infancy. Leading companies like Philips, P&G, Unilever, ICI, Toyota, Nissan, ZipCar and GE are setting hard business targets to stimulate sustainable innovation and launch products systematically.

And there is a growing body of evidence that a focus on sustainability can pay off in a variety of ways: increased efficiency and lower costs; new products, services and markets for a low-carbon world; stronger brands and greater public trust; and most importantly a more future-proof business model.

India today is a global powerhouse economy, with its leading companies, now major players on the world stage. But the country still faces major social and environmental challenges – from pollution and poverty, to water depletion and the growing threat of climate change.

India has both the need to tackle such challenges for its own survival – and the opportunity to sustain its economic resurgence by doing so. Across India, entrepreneurs large and small are already beginning to come up with solutions to the needs of the 21st century.

India is likely to see about 1 million green jobs created in next 2 years growing at a rate twice that of all jobs overall.

It is an extremely exciting time and I would encourage you to make the Green pledge, that you will not buy products or services from companies that are not environment friendly. This would make you citizens who are not only conscious of your surroundings, but those who are pushing forward the green agenda in your very own way.

A Frank Conversation about Sustainability

There is NO Middle Ground

Is the sustainability movement getting derailed? If so, what's the new path?

Fatigue seems to be setting in conversations, debates, business policies and books on sustainability. They seemed focused on how to extract benefits and profits by causing less harm now and in the future. The result – the sustainability movement's influence around the world and, definitely in India, is not making much dent into the minds and hearts of people and business.

Fortunately, there's help at hand. A forthcoming book titled 'Flourishing - A Frank Conversation about Sustainability' (Stanford Business Books May 2013) – is a conversation between a teacher, John R. Ehrenfeld, and his former student now Professor Andrew J. Hoffman. If reviewers are to be believed, the book could shake things up, shed fresh light and could take the dialogue to the Next level. Experts are calling it fresh and a daring look at sustainable business strategy. It takes no prisoners and does not try to please—it simply tells the brutal truth.

The authors say without any disclaimer that "There is no middle ground; without a sea change at the most basic level, we will continue to head down a faulty path." Peter M. Senge, MIT, Society for Organizational Learning, Author of The Fifth Discipline, and Co-Author

So what's the new story? This book emphasizes that the new sustainability path should be lead by 'being and caring', as opposed to having and needing

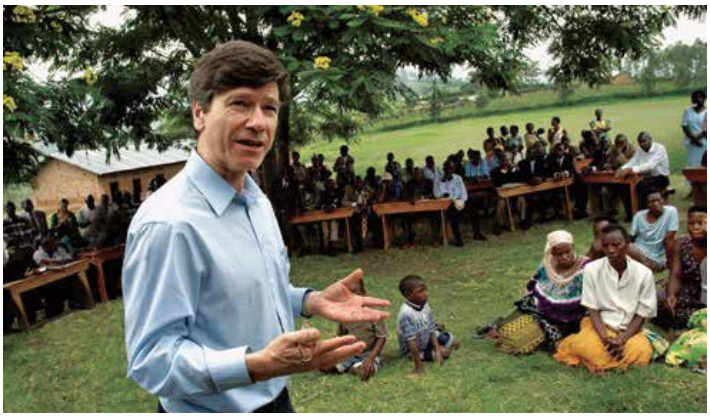
The authors say without any disclaimer that "There is no middle ground; without a sea change at the most basic level, we will continue to head down a faulty path."

of Presence, and The Necessary Revolution, has warned of dire consequences if the current shape and face of sustainability movement is not given a new direction. He warns: "The most a dangerous time for any radical idea is when it becomes popular and people assume that because they embrace the idea they are 'doing it.' The window is closing for consciously altering the trajectory of global industrial expansion. There are no simple answers, but there are core questions and critical actions to take." He said, the new route is "clearly illuminated" by John Ehrenfeld and Andy Hoffman, two of the most experienced and thoughtful leaders in the sustainability movement currently.

Unlike virtually all other books about sustainability, this one goes beyond the typical stories that are told about repairing the environmental damages of human progress.

So what's the new story? This book emphasizes that the new sustainability path should be lead by 'being and caring', as opposed to having and needing. This is possible with "our collective wisdom and lived experiences." The authors sketch out the road to a flourishing future – a change in our consumption and a new approach to understanding and acting.

Indeed, this book is a clarion call to action.



We need to defend the interests of those whom we've never met and never will.

Jeffrey D. Sachs

Western civilization is a loaded gun pointed at the head of this planet.

Terence McKenna

People 'over-produce' pollution because they are not paying for the costs of dealing with it.

Ha-Joon Chang,
23 Things They Don't Tell You About Capitalism

We are such spendthrifts with our lives, the trick of living is to slip on and off the planet with the least fuss you can muster. I'm not running for sainthood. I just happen to think that in life we need to be a little like the farmer, who puts back into the soil what he takes out."

Paul Newman

The fundamental premise of sustainable investing is that there isn't a trade-off between investment returns and sustainability considerations. Sustainability isn't about imposing policy values on fiduciaries; it's about incorporating factors which do, in fact, affect investment outcomes into risk management.

ISTOCKANALYS

Sustainability is a new idea to many people, and many find it hard to understand. But all over the world there are people who have entered into the exercise of imagining and bringing into being a sustainable world. They see it as a world to move toward not reluctantly, but joyfully, not with a sense of sacrifice, but a sense of adventure. A sustainable world could be very much better than the one we live in today.

Donella H. Meadows,
The Limits to Growth: The 30-Year Update

"By 2010 humanity's global ecological footprint reached about 1.4 times the carrying capacity of the earth — we need 1.4 planets to sustain the current population and economy. That deficit is financed by unsustainable depletion of natural capital. Like a fiscal deficit, the party cannot go on forever. Unlike a financial crisis, nature does not do bailouts."

John Sterman

Consume less; share better - **Hervé Kempf**

Business and Community:

The Story of Corporate Social Responsibility in India

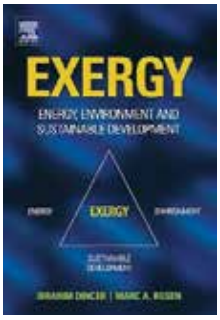
By **Pushpa Sundar**
Sage, 2013

Business and Community is a historical narrative which also highlights emerging critical issues and the achievements as well as deficits of Indian CSR. Its objectives are threefold:

- To enhance public knowledge, understanding and appreciation of what Indian business has contributed to society
- To enthuse the business community as a whole, especially the younger generation, by highlighting exemplary individual companies in the history of Indian CSR
- To identify the factors which inhibit or encourage CSR so as to enable business and government to take appropriate action

Written in a simple, non-jargonistic language, it is easy to understand without being simplistic. Its extensive bibliography will be useful for further research.

As Ms Sundar correctly notes, business is selling itself short when it is irresponsible, venal and short sighted. The more visionary among businessmen have always been clear that the creation of wealth is most sustained when it is ethical and fair with all stakeholders- the state, community, suppliers, employees and customers. Being socially responsible is not divisible; you cannot be fair with some stake holders and unfair with others. As the author notes: the rhetoric is always about “doing CSR” rather than “being” socially responsible.’



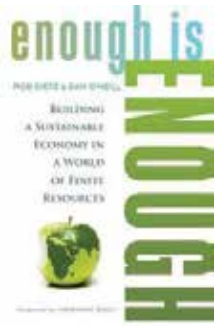
EXERGY

Energy, Environment and Sustainable Development (Second Edition)

By **Ibrahim Dincer, Marc A. Rosen**
Elsevier Science, 2012

This book deals with exergy and its applications to various energy systems and applications as a potential tool for design, analysis and optimization, and its role in minimizing and/or eliminating environmental impacts and providing sustainable development. In this regard, several key topics ranging from the basics of the thermodynamic concepts to advanced exergy analysis techniques in a wide range of applications are covered as outlined in the contents. Offers comprehensive coverage of exergy and its applications, along with the most up-to-date information in the area with recent developments

Connects exergy with three essential areas in terms of energy, environment and sustainable development. Provides a number of illustrative examples, practical applications, and case studies



Enough Is Enough:
Building a Sustainable Economy in a World of Finite Resources

By **Rob Dietz , Dan O'NEIL, Herman Daly**
Berrett-Koehler Publishers, 2013

It's time for a new kind of economy.

We're overusing the earth's finite resources, and yet excessive consumption is failing to improve our lives. In Enough Is Enough, Rob Dietz and Dan O'Neill lay out a visionary but realistic alternative to the perpetual pursuit of economic growth—an economy where the goal is not more but enough. They explore specific strategies to conserve natural resources, stabilize population, reduce inequality, fix the financial system, create jobs, and more—all with the aim of maximizing long-term well-being instead of short-term profits. Filled with fresh ideas and surprising optimism, Enough Is Enough is the primer for achieving genuine prosperity and a hopeful future for all.

Sustainable Urbanism and Beyond:
Rethinking Cities for the Future

By **Tigran Haas**
Rizzoli, 2012

The city in the twenty-first century faces major challenges, including social and economic stratification, wasteful consumption of resources, transportation congestion, and environmental degradation. More than half of the world's population lives in cities and major metropolitan areas, and in the next two decades the number of city dwellers is estimated to reach five billion. This puts enormous pressures on transportation systems, housing stock, and infrastructure such as energy, waste, and water, which directly influences the emissions of greenhouse gases. As the long emergency awaits us, urgent questions remain: How will our cities survive? How can we combat and reconcile urban growth with sustainable use of resources for future generations to thrive? Where and how urbanism comes into the picture and what "sustainable" urban forms can do in light of these events is some of the issues Sustainable Urbanism and Beyond explores.

Environmental Ethics
An Introduction and Learning Guide

By **Rainer Paslack, Kees Vromans, Gamze Yuecel Isildar**
Green leaf, 2012

As the destructive consequences of environmental problems such as global warming, water scarcity and resource and biodiversity destruction have been felt ever more heavily, people are becoming more aware of the importance of and their responsibilities towards environmental protection. The need to harmonize environmental knowledge with ethical behavior and thus achieve behavioral change and the internalization of environmentally ethical values has never been more urgent. This book, developed as part of an EU program to diffuse the application of environmental ethics to decision-making on pollution control, is a response to the need for a restatement of environmental ethics and for a code of behavior and set of values that can be internalized and adopted to guide the actions by individuals at the sharp end of protecting the environment.

March 2013

India

30th NATIONAL CONFERNCE ON GREEN ENERGY CHENNAI,India

30th GLBT Studies TEST New Delhi,India

30th NATIONAL CONFERENCE ON ENVIRONMENTAL SUSTAINABILITY AND SOCIETY THE GROWING PARADIGM SHIFT (ESS - 2013) Guna

International

19th AGRION Energy & Sustainability Summit New York,United States of America

25th Green Growth London,United Kingdom

26th Sustainable Development Infrastructure Challenges and Solutions Edinburgh,United Kingdom

April 2013

India

26th Hydro Power Market In India New Delhi,India

International

5th International Research Conference on Business, Management and Social Sciences (IRCBMSS) Bangkok,Thailand

5th World Forests Summit Stockholm,Sweden

5th International Research Conference on Environmental Issues and Waste Management (IRCEIWM) Bangkok,Thailand

9th 6th PSPC - Poverty Alleviation and Social Protection Conference 2013 Bangkok,Thailand

29th 1st International Conference on Chemical, Nano & Sustainable Engineering (ICCNSE-2013) Kuala Lumpur,Malaysia

May 2013

India

7th Solar Market in India-2013 New Delhi,India

International

9th Corporate Responsibility & Sustainable Development Guangzhou,China

16th 3rd Ensact European Conference Social Action in Europe Towards Inclusive Policies &Practice Istanbul,Turkey

17th 7th European Conference on Sustainable Cities and Towns, Geneva,Switzerland

19th 2nd International Conference on Emerging Markets and Issues in Management

19th International Conference on Sustainable Development 19-20 April 2013 Tirana,Albania

June 2013

India

4th IEEE International Conference on Microelectronics, Communications and Renewable Energy (AICERA 2013- ICMiCR) Kanjirapally,India

8th National conference on recent advances in Renewable energy and environment sciences 2013 NCRAREES-2013 Solan,India

7th INTERNATIONAL CONFERENCE ON MANAGEMENT, BUSINESS & ECONOMICS - 2013 (ICMBE - 2013) VIJAYAWADA,India

International

3rd Educational environment Seeking sustainable solutions Saint-Petersburg,Russian Federation

6th SIBR 2013 Bangkok Conference on Interdisciplinary Business & Economics Research Advancing Knowledge from Interdisciplinary Perspectives Bangkok,Thailand

6th ACSEE 2013 - The Third Asian Conference on Sustainability, Energy and the Environment Osaka,Japan

14th 19th INTERNATIONAL INTERDISCIPLINARY CONFERENCE ON THE ENVIRONMENT Portland,United States of America

17th Deutsche Welle Global Media Forum "The Future of Growth - Economic Values an

July 2013

India

4th INTERNATIONAL CONFERENCE ON IMPACT OF CLIMATE CHANGE ON FOOD, ENERGY AND ENVIRONMENT (ICCFEE-2013) Chennai,India

International

1st Beyond Austerity vs Growth The Future of the European Political Economy Sheffield,United Kingdom

August 2013

India

22nd International Symposium on Security in Computing and Communications (SSCCâ€™13) Mysore,India

International

19th 6th International Colloquium on Tourism & Leisure Bangkok,Thailand

19th 5th International Conference on Business & Management Education Bangkok,Thailand

19th 6th International Colloquium on Business & Management Bangkok,Thailand

September 2013

10th 1st Inter-Regional Conference on Land and Water Challenges "Water, Environment and Agriculture Challenges for Sustainable Development Bari,Italy

20th 3° International Conference on Human and Social Sciences ICHSS 2013 Rome-Italy Rome,Italy

22nd The 8th Conference on Sustainable Development of Energy, Water and Environment Systems – SDEWES Conference Dubrovnik,Croatia (Hrvatska)

October 2013

2nd 2013 Summer Global Business Conference Opatija,Croatia (Hrvatska)

15th Third International Conference on Food Studies Austin,United States of America

November 2013

22nd Fourth International Conference on Urban and ExtraUrban Studies Spaces and Flows Amsterdam,Netherlands

December 2013

India

12th iIEEE INTERNATIONAL CONFERNCE ON GREEN COMPUTING ,COMMUNICATION AND CONSERVATION OF ENERGY CHENNAI ,India

International

8th Eighth Knowledge Globalization Conference 2013 Istanbul,Turkey

16th ASSURE 2013 ASSURING SUSTAINABILITY via University with REsearch 2013 Songkhla,Thailand

20th American Canadian Conference for Academic Disciplines (Toronto 2013) Toronto,Canada

23rd The Macrotheme Conference on Business and Social Science IBIZA 2013 Ibiza,Spain

27th ShoppingScapes´13 Lisbon,Portugal

29th 9th SEE Congress & Exhibition on Energy Efficiency & Renewable Energy (EE & RE) Sofia,Bulgaria

3rd Sustainable City 2013 Putrajaya,Malaysia

M.Sc. in Sustainable Development (Distance Learning)
The Global Open University
http://nagaland.net.in/

Post-Graduate in Sustainability Management
Silver Bright Institute of Management
http://www.htcampus.com/college/silver-bright-institute-management-sbim

M.Sc. in Environmental Science
Dr. Babasaheb Ambedkar Marathawada University
http://www.bamu.net/dept/environment

Advanced Diploma in Energy
Vidya Prasarak Mandals Polytechnic
http://www.vpmthane.org/polywebnew/courses.html

MBA and MA in Sustainability Management
TERI University
http://www.teriuniversity.ac.in

M.Tech in Environmental Engineering
The National Institute Of Technology, Tiruchirappalli
http://www.nitt.edu/home

Master of Architecture (Sustainable Architecture)
Bharati Vidyapeeth Deemed University
http://www.bharatividyapeeth.edu/Campuses/Pune/default.aspx

MA in Environmental Economics (Distance Learning)
Annamalai University
http://www.annamalaiuniversity.ac.in

M.Tech, M.Sc. Environmental Science
Thapar University
http://www.thapar.edu

PhD in Environmental Science
Gauhati University
http://www.gauhati.ac.in

Post-Graduate Certificate in Sustainable Enterprise
Indian Institute for Sustainable Enterprise
http://theiise.net/pgcertinse.html

Post-Graduate Diploma in Sustainability (Distance learning)
Chhattisgarh University
http://www.cguniversity.com

B.Sc. in Environmental Science
University of Calicut
http://www.universityofcalicut.info

PhD in Environmental Science
Panjab University
http://puchd.ac.in

M.Sc. in Environmental Science
Bharathiar University
http://www.b-u.ac.in

MBA in Environmental Science
School of Management and Infrastructure & Development Studies
http://www.minds-india.org

Advanced Diploma in Bio Degradable & Solid Waste
Vellalar College for Women
http://www.vellalar.com/Arts/carrer-oriented-programmes.php

MBA in Energy & Environmental Science
Symbiosis Institute of International Business
http://www.siib.ac.in/programmes.aspx

PhD in Environmental Bio-Technology & Solid Waste Management
School of Environmental Sciences
Jawaharlal Nehru University
http://www.jnu.ac.in/main.asp?sendval=SchoolOfEnvironmentalSciences

ADMISSION ANNOUNCEMENT 2013-15

Excellence with Values

BIMTECH
BIRLA INSTITUTE OF MANAGEMENT TECHNOLOGY

Post Graduate Diploma in Management
Sustainable Development Practices
(PGDM - SDP)

Approved & Recognised by AICTE, Ministry of HRD, Govt. of India
In partnership with MDP Global Network, The Earth Institute, Columbia University.

The programme is robustly designed to address current and the potential future needs of corporate and the development sector. The programme offers highly focused courses in health economics, environment science, energy management, social science consulting & business modelling, project management, corporate social responsibility, sustainability measurement tools, and green supply chain management.

Programme Highlights

Global Classroom: The Global Network of 22 world's leading universities offer Web class room to share knowledge, and the best practices.

Immersion Programme: The 10 days field exposure cum class room training to understand the complex issues and challenges of sustainable development.

Grameen Creative Lab: In collaboration with 'Grameen Creative Lab' (founded by Nobel Laureate Prof. Mohammed Yunus), the programme promotes the idea of social business.

Students' Exchange Programme: The institute is having strong tie-up with around 50 international Universities across the continents to encourage students for exchange programme and internships.

Eligibility criteria and selection procedure

Selection Procedure: CAT/MAT/XAT/GMAT and other prominent national / international level management exams, GD+PI+Write-up

Eligibility Criteria: Any Graduate with 50% marks, professionals from development area will get an additional consideration

Equivalence with MBA by AIU

Alliance with B-schools of USA,Europe & Asia

100% Placement Assistance in Indian & Multinational Companies

Founded by B.K. Birla Group

Landscaped Green Residential Wi-Fi Campus

All India **7th Rank** Among Top Private B-Schools

Source: CNBC-TV18 Cfore B-School Survey 2012

PGDM- SDP Final Placement and Internship Companies and Organisations:

For admission related queries, please contact to:
Mr. Anshuman Srivastava, Program Manager, PGDM (SDP)
Email: anshuman.srivastava@bimtech.ac.in
Contact: +91-0-9873788681, 0120- 3243638
For programme information: www.bimtech.ac.in/pgdm-Sustainable-Development-Practices.html