sustainabilitynext
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vol. 4 issue 11 November 2016 ₹50 sustainabilitynext.in

Greening Indian Films

Steel, coal and auto industries have been taking the maximum flak for their negative impact on the environment. When data on the film industry came out recently, not many were willing to believe how it was nearly equal to the others in spewing carbon into the atmosphere.

Siddharth Nakai is leading the film industry's green movement in India. He launched GAME, a first-of-its kind consulting body to influence the shift to responsible film industry. Edited excerpts of his journey which he shared with SustainabilityNext

Filmmaking was always very close to my heart. During my graduation I had enrolled for film production. During one of the class projects we ventured into the forest close to our campus to shoot a short film. Our professor had narrated an incident, which stayed with me for a long time. He said while he was shooting in a forest he saw a cinematographer setting up the shot. He also saw the director viewing the frame through the view-finder. He instructed the assistant to cut the branch which was taking a certain portion of the desired frame he had in mind. I wondered how someone could be so insensitive. This triggered a spark in me. I had an innate curiosity to study the environmental impact film production had on the environment and how we could minimize its negative impact.

During my internship, I experienced something very similar. I felt this is something that needs to be spoken about. There was hardly any literature available on this subject especially in and on India.

Purpose: To excite Indian businesses, SMEs, executives and students about the immense business opportunity in not only adopting Sustainability as Strategy in their companies but also inspire them to the possibilities of a big market for innovative sustainability products and services.

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Information in this publication is drawn from a variety of sources, including published reports, interviews with practicing managers, academia and consultants. While doing so utmost importance is given to authenticity.

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UCLA Study on Motion Picture Industry

I came across this fascinating research undertaken by UCLA's Institute of the Environment titled 'Sustainability of the motion picture industry' in 2006. It was an intensive two- year long study. The objective of the study was to identify existing environmental best practices within the industry, based on interviews and case studies and develop a "green production guide" based on those practices. It showed the need to organize forums for disseminate findings to the motion picture industry. The focus was on the production side of the industry, not on distribution or on content. The "motion picture industry" includes film and television production.

The study used an input-output life cycle assessment in the southern California. It tried to compare the carbon emissions from motion picture industry vis-à-vis other industries like petroleum, semi-conductor, apparel, hotels, aerospace and automobile.

By the sheer size of its operations, the motion picture industry emerged as a significant contributor to air pollution, greenhouse gas emissions, and energy consumption in the Los Angeles Area.

An important take-away from this study was that it broke the myth that motion picture industry is non-polluting.

We have to look at all sectors holistically. Film making is like manufacturing activity. It results in a lot of fuel use, electricity consumption, manpower; raw materials (camera, film processing machines) and gives us tangible output in the form of a movie.

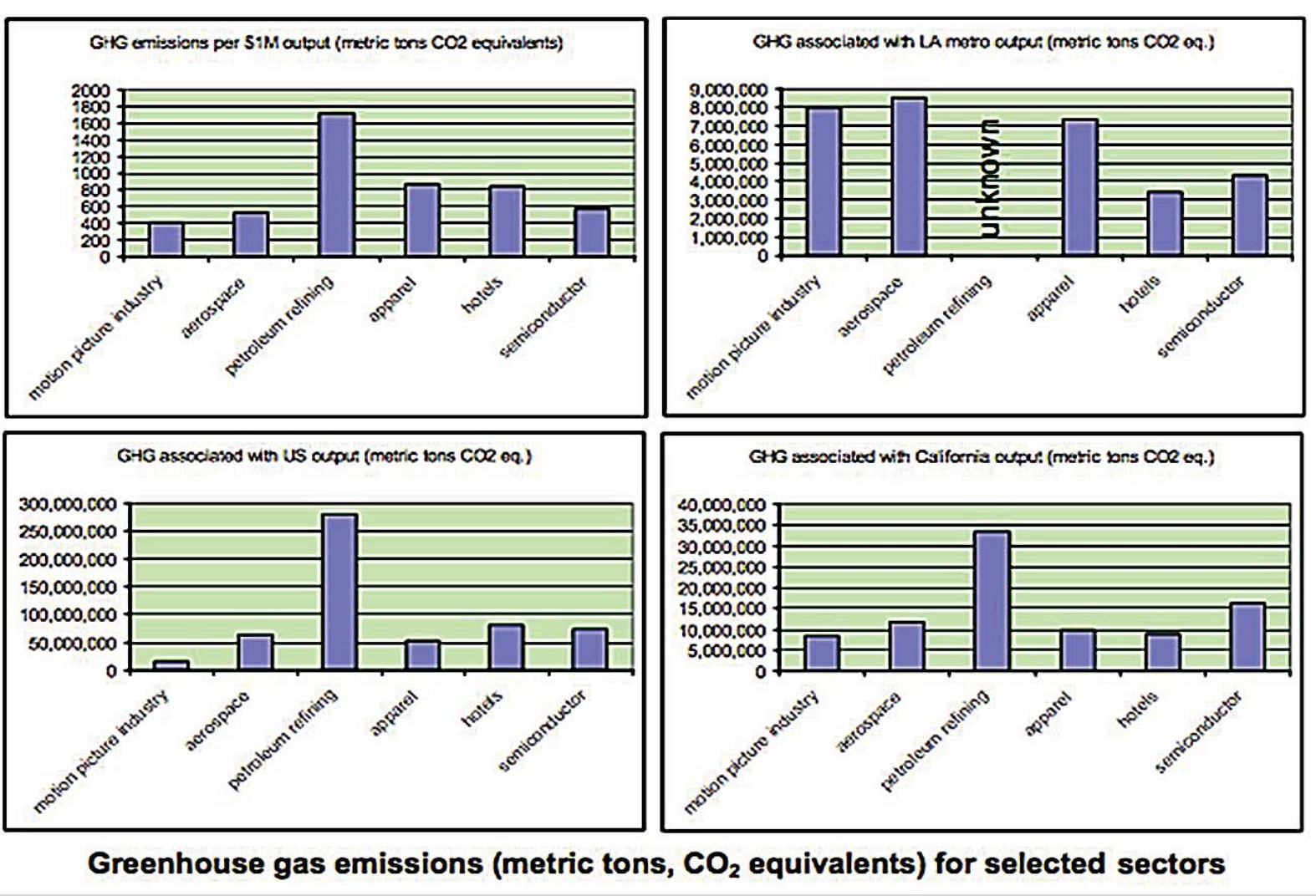
This piece of research encouraged me to undertake a similar study in India but on a smaller scale. I visited various production sets and measured their carbon emissions per day of shoot using carbon calculators.

Study About the Indian Film Sector

By now, I had my facts. With emotional and academic motivation I decided to pursue this and get to the bottom of the matter. I realized that there were hardly any rules, regulations pertaining to entertainment industry in India, especially the film industry. In fact, the Indian motion picture industry got the industry status only in 2001.

I visited three production sets, one a feature film, a soap opera and a corporate /ad film, where in I tried to measure emissions every day.

The major reason for emissions from television production being higher than the rest as in this particular case was its duration as the shoot lasted for almost twelve-fourteen hours while the other productions were wrapped up within eight hours.



Greenhouse gas emissions (metric tons, CO_2 equivalents) for selected sectors

Usually the location for a soap opera remains more or less confined to a studio. But with motion pictures there are many outdoor shoots which require a lot of travelling. A lot of parameters like hotels and housing were also not taken into account.

Following table shows the CO_2 emissions per day of shoot

Production Category	CO_2 Emissions in tons
Soap Opera	1.7
Mainstream Feature Film	1.6
Corporate film / Ad film	0.4

An entire day's shoot within the confines of a studio could emit 144 metric tons of CO_2 based on a pilot study. This excludes emissions from transportation and hotels and housing. This figure does not take into account the carbon footprint of the entire film, as it excludes pre- production, post production, marketing and distribution.

In 2012, the total films certified by the censor board was 1602.If you count all of them we have 2,30,688 metric tons of CO_2. India also produces films in many regional dialects. If we take into account the number of commercials that are shot by brands and also the event industry that is growing exponentially, then we are talking of big numbers.

Future Forests

Future Forests, now known as Carbon Neutral, is a consulting firm, offsets the CO2 emissions of companies and individuals, by planting forests or enough for them to become completely carbon neutral, or by investing in climate-friendly technology. It estimated that for the making of **'The Day After Tomorrow,' the film generated 10,000 tons of CO_2. One major reason for such large emissions is due to large-scale use of special effects.** It also gives us an idea that the Hollywood's massive carbon footprint.

The Indian Industry professionals through their interviews acknowledged the fact that film Industry is producing a lot of waste and consequently harming the environment in one form or the other. **Everyone pointed out to the fact that unless there is laws regulations and incentives from the government the situation would be hard to correct.**

Zee Entertainment Enterprises decided to take the lead. It is currently working as a sustainability consultant to greening different shows of ZEE across India.

Our study provided a comprehensive framework for implementation of eco-friendly film production practices in India. This study was widely acclaimed at three international conferences.

- 'FILM AND MEDIA 2011' held at Institute of Education, University of London.
- ICCFMS 2011 held at Paris, organized by World Academy of Science Engineering and Technology.
- The Changing face of Indian Cinema: Held at University of Westminster, London.
- Member of Sustainable Event Alliance

Siddharth Nakai is an entrepreneur, film enthusiast and a crusader for environment. Is currently a Sustainability Consultant to Zee Entertainment Enterprises Limited. He was invited and trained by Former US Vice-President and Climate Activist Al Gore for the Climate Reality Project. He is also an Indian Green Building Council Accredited Professional (IGBC AP).

https://www.facebook.com/BeTheGAME
http://www.gameinitiative.org/

Will Trump Renege on US' Climate Deal?

The jubilation lasted only 5 days before turning nightmarish. On November 4, 2016, most countries ratified the Paris Climate Change Agreement signed in December, last year, including the US. But when Donald Trump won an unexpected win on November 9 as the 45th American President, the Greens have gone into a tizzy. The Republican Party and Trump are vocal climate change deniers. What will happen to the agreement Barak Obama signed?

Even as the first meeting of the Paris Agreement's governing body, known as the CMA, takes place in the week of November 15 in Morocco, the world is watching Trump closely. The good news is, most other large countries have stamped their approval and don't seem to be influenced on what the US does.

Will Trump mellow down and realize the enormity of the challenge? He will be compelled to note the gigantic efforts of leaders of all countries including China and India in arriving at an agreement that seemed unreal even two years ago.

Trump's victory has crashed stock values of clean-tech, green-tech shares in the US. This will have a spiraling effect on these companies all over the world as most VCs and angels are backing off. **For Trump it's a severe test of rhetoric vs. reality.**

The World Meteorological Organization has now confirmed that the average global concentration in the atmosphere of the main greenhouse gas, carbon dioxide, reached the symbolic and significant milestone of 400 parts per million for the first time in 2015 and broke new records in 2016.

This means that the world will find it harder to meet the Paris Agreement's primary goal to limit global warming well below 2°C and as close to 1.5°C as possible to prevent dangerous climate tipping points, beyond which we may lose the ability to control the outcome.

World leaders expect the Marrakech COP 22 conference to accelerate work on the rule book and a definable pathway for developed countries to materialize the flow of USD $100 billion per year by 2020 in support of climate action by developing ones.

Very large-scale reallocations of investment are necessary. UN estimates show that achieving sustainable development will require USD $5-7 trillion a year, a large slice of which must fund the transition to a low-carbon, resilient world economy. To fulfill these investment needs, we will need to look at creative funding options, beyond the traditional ones and in which both public and private sector flows are aligned and scaled-up.

Azim Premji Foundation announces

Fellowship Programme 2017

We invite you to join the Azim Premji Foundation Fellowship Programme (2016–18).

Azim Premji Foundation is a not-for-profit organization working to improve quality and equity of school education in India. Our vision is to significantly contribute to a just, equitable, humane and sustainable society.

The Fellowship is a 2-year full-time programme beginning March 2017, during which you will get to understand and experience the realities of rural Government schools.

It has 24 months of work in the field based at any of the blocks under our Field Institutes and will include a long stint of guided classroom teaching.

You should have between 3 and 10 years of experience, with a postgraduate or a professional degree in any discipline.

We welcome people from a variety of backgrounds. What is important is your willingness to explore the social sector and the desire to contribute.

Last date to apply: November 30, 2016

The Fellowship carries a monthly stipend of Rs 28,800 (inclusive of all benefits)

For more information and to apply online, please log on to
www.azimpremjifoundation.org/fellowship
Or call (Toll Free):1800 274 0101 Mon-Fri, 9:00am-6:00pm
Or write to us at fellowship@azimpremjifoundation.org

Azim Premji Foundation

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Indian Green-tech Start-ups Need Capital

M R Rangaswami, co-founder of Sand Hill Group was one of the senior organizers at the recent annual Nasscom Product Council conference in Bengaluru. Apart from mentoring and funding several tech start-ups, he runs a vibrant forum called the Corporate Eco Forum in the United States (corporateecoforum.com). It is dedicated to improving the effectiveness of eco-strategies at Global 500 companies Its annual sustainability award for corporates is much sought after by CEOs.

Excerpts of his chat with Benedict Paramanand, Editor of SustainabilityNext on the sidelines of the NPC conference

Challenge for Green startups

Unfortunately, the sustainability of green tech and clean-tech companies seems to boil down to cost of oil. Since the oil crash three years ago, funding to these companies has disappeared. Many start-ups have gone out of business. The way they have to get back is reformulate their strategies and base their assumptions on $40 or $50 dollar a barrel.

Scaling issues for clean-tech

It's relatively easer for tech companies to scale but is very hard for green-tech or a clean-tech company. A tech company needs around $ 250 million dollars or so while the other two need at least a billion dollar to scale. Also, founders can give up, say 30% stake in a tech company to fund growth, while that percentage is as high as 90% for green-tech and clean-tech companies if they want to take them to to profitability. So, the economics are different and challenging.

Give me a sense of Indian start-ups scene in the green space

They are few and far between. Most are still bootstrapping. They essentially lack sufficient funding. I know of a Rs. 50 crore organic juice company, if the founder had sufficient funding he could easily be a Rs. 500 crore company today. I see slow growth because of lack of access to capital. The whole sector is somewhat rudderless.

We hope COP21 (Paris Climate Agreement December 2015) would put fire into this sector and the government steps up its act big time.

Future drivers

Most of the time we react only when crisis is today! No one is planning 20 years ahead. We are now forced to do so since the crisis is at our doorstep.

The Indian government is making the right noises about COP 21. The key is to ensure that that several of the protocols are in the implementation stage in the next two years and we are not just talking.

Indian Start-up Ecosystem 'Maturing'

The promise of the Indian start-up ecosystem is still holding, says Nasscom, India's prominent body for promoting information technology. With 1400 new start-ups expected to register in 2016, 8 to 10% higher than in 2015, it appears the eco-system for start-ups is maturing. During the same period, Chinese start-ups grew by 25% while Israeli start-up number grew by 14%.


Ravi Gururaj
Chairman, NASSCOM Product Council

The Indian number is expected to grow by 2.2x to reach more than 10,500 start-ups by 2020. Nasscom report states that 650 start-ups have so far received $ 4 billion in funding.

Ravi Gururaj, Chairman of NASSCOM Product Council, said: "The start-up landscape is undergoing great churn with fast-paced changes happening across the board. Owing to focused funding and a growing need of scaling up capabilities, Indian entrepreneurs will continue to attract global attention due to a perfect mix of talent, traction and transactions. With Indian start-ups now churning out critical services and solutions for large MNCs, riding on the digital revolution which is encompassing the world, the situation for Indian start-ups is only going to get better."

Image Source: Yourstory.com

- 100,000 employed in start-ups
- 350 plus active angels
- 2x growth in core technology start-ups – Internet of things, Machine Learning, Artificial Intelligence, Robotics
- 140 accelerators in 2016
- 1400 new start-ups in 2016

Challenges Aplenty

Software and tech start-ups have relatively easier ride in moving from idea to launch phase. The situation for hardware start-ups is quite a different story. India's dismal 'ease of doing business' ranking of 130 hurts them the most.

"We need to step up as a country, R Chandrashekhar, President of Nasscom said addressing the media during this year's Nasscom Product Conclave held in Bengaluru in October 2016. The culture of entrepreneurship is still raw and needs a lot of improvement. The biggest challenge still is aligning academia and research.

Lack of sufficient funding is still a big drag. It's even more difficult for the green-tech and clean-tech start-ups in India. Even if they are able to start, scaling is turning out to be more difficult largely due to poor access to cheap capital. The cost of capital is between 10 and 14% in India, extremely high compared to other economies. Not to talk of the higher transaction and infrastructure cost.

Picture Source – Mahindra SSG

Message on a Shell

The humble coconut is one of Nature's biggest wonders. It has now found a new use – as a pot to grow plants in the used tender coconut shell. The shell is even getting painted to make it look attractive. That's what Manish Advani discovered when his wife Gauri asked him to add coconut shell along with other waste for composting. It stuck him that since coconut shells were hard to compost why not fill the whole shell with manure and grow a plant instead?

He shared this brainwave with his boss at Mahindra SSG. His boss's positive response helped Manish put on his marketing hat. Today it is one of the most innovative and effective client and community engagement strategies. It is encouraging students to grow plants in coconut shells and paint them colourfully thereby spread the larger idea of sustainability creatively at the school level. Manish is thinking big – he has roped in Jason Lewis, first man to circumnavigate the Planet Earth, to be the ambassador to promote this concept worldwide.

Excerpts from SustainabilityNext's chat with Manish Advani, head, marketing and PR, Mahindra SSG, a Mumbai-headquartered corporate security risk consulting firm

Tell us about how the idea hit you

In January 2016, there was a massive fire in Deonar impacted Mumbai hugely. When everyone was criticizing the municipal

corporation we decided to be the change we wanted to see in the city. We started with composting our waste. I was fairly new to this. Some time back, my wife Gauri gave me an empty coconut shell and asked me to put it in the compost pit. I realized it was too bulky so wondered why I can't grow a plant in it instead. That was my Eureka moment. To my pleasant surprise, the plant grew very well.

I realized this idea could have massive potential – How an apparent waste can be turned into something of incredible value. I shared this thought with Mr. Dinesh Pillai, CEO Mahindra SSG. He seemed very excited by the potential of using this as an innovative corporate gifting concept. For a start, we gifted 2,500 plants grown in tender coconut shells to our clients and a few senior citizens. We did this on the World Environment Day on June 5, 2016.

Now, this idea became bigger when one of the students from the three colleges - Lala College, Somaiya College and Aditya College – suggested how we could paint the coconut shell to make it look good. One day I casually wrote to one Rajesh Kejriwal , founder of Design Yatra by Kyoorius, if he could be open to the idea of allowing us to showcase the concept of painted coconut shells. He was excited.

How much has been done so far

What started as a simple home improvement thought has now been turned into a fully-blown campaign involving thousands of students in Mumbai and beyond. We launched our drive this September at the Kyoorius Design Yatra in Jaipur where over 300 people participated. We also launched our Coco Painting and Planting Drive for 35 organizations such as Johnson & Johnson, ICICI, Bombay Scottish School, Visa, HDFC, Blue Dart, Asia Society, Idea Cellular, Raw Pressery, J M Financial Services, Future Generali, Mahindra Insurance Brokers.

We also delivered plants to a few senior citizens who wrote to us after reading about our initiative in *Chitralekha*. We were supported by Brihan Mumbai Municipal Corporation and NGO Stree Mukti Sangathan. More than 2,500 people have so far participated in the Coco Painting initiative.

We are partnering with Rotary School of Bombay to involve 740 kids in 10 municipal schools. We are asking mainstream school students to volunteer in teaching municipal school students. We are also asking paint companies to supply paints and brushes for free.

Beyond Painting

We are also working to promote the idea of how coconut shells could be used for mulching by farmers. This idea is being built based on the work Pepsico has under taken in Brazil. http://www.pepsico.com/live/story/waste-not-how-pepsico-brazil-is-putting-coconut-husks-to-work

Since we want this message to go across the world we roped in Jason Lewis, first man to circumnavigate the Planet Earth, as our brand ambassador.

For so long people in cities never thought what they could actually do after enjoying the coconut water. The usual tendency is to throw it in the garbage and they become breeding places for mosquito related diseases.

If this campaign picks up it will have multiple and profound benefits – Mahindra SSG will have a great idea to promote it as part of its sustainability initiative; it can promote the concept of growing plants at home easily; engage students in a creative way which is closer to nature. It could also promote the concept of green gifting in a big way.

The bigger moral here is – listen to your wife and if required, improve on her ideas, not junk it and invite trouble. It helps to work on nutty ideas sometimes!

ShanSa Wins Azim Premji Social Enterprise Award

ShanSa, a Mumbai-based social enterprise that brings about eco-friendly and commercially viable solutions for toxic bio-medical waste disposal won the 2016 First Social Enterprise 'Idea' Challenge. The award is instituted by the Azim Premji University. The company works towards transforming this unorganized field into an organized sector.

The unique award, meant for university and college students across India, is to encourage and provide the students a platform to exhibit their 'innovative ideas for social change'. The contest witnessed more than 100 teams broadly in the domains of education, livelihood, health, sustainability and governance. Following rigorous rounds of evaluation, **Shashanka Sekhar from K.J.S.I.M.S.R, Mumbai** bagged the first prize for his unique idea on "ShanSa". Receiving the award he said his next step is to implement and scale the idea.

Anurag Behar, CEO, Azim Premji Foundation & Vice Chancellor, Azim Premji University said: "Ideas are the beginning of change, but I believe they are not enough; most importantly you need action, execution and people for social change".

Anil Kumar Reddy and Sandeep Sharma from N.I.T. Nagpur won the second prize for their idea on **"Donatekart"**. It has been conceived as a crowd-sourcing platform for social organizations where they can run campaigns listing down the products that they are in need of, and donors can donate these products online. This will be an e-commerce platform where instead of delivering products to people deliver to NGOs.

According to the team, "this is going to be a first of its kind platform which primarily focuses on product donation, thus building the trust and transparency in donations made to charities. Donatekart delivers the products to the organization and donor gets frequent updates on the product utilization. As no money is getting involved and new products being delivered by Donatekart makes this platform unique".

Divyang Panchal, Vrundavan Bhatt, Sudeep Patel from IRMA, Anand and the joint idea of **Nitish from Montfort College, Bangalore** and **Sherlie Priyanka Stephen from Christ University, Bangalore** shared the third prize for the competition. IRMA's idea named **'Hastkala'** is on producing and marketing hand-made invitation and greeting cards with the help of the poor. Montfort College and Christ University's idea is around public health, named as RISE. The basic idea is to create a platform that consists of database of counsellors across Bangalore and making their service accessible to the general public. The winning teams were provided certificates and cash prizes worth Rs.50,000.

The jury consisted of **Rajiv Kuchhal,** an active angel investor and mentor to multiple startups in social enterprise and technology space. **Aruna Rao,** a social innovation professional, coach, educator and network builder. She is the Bangalore, India-based program director at Acara, an impact entrepreneurship program at the University of Minnesota. **Ram is the co-founder and CEO of Rang De**, a game-changing effort to lower the cost of credit.

Apparel Sector Gets New Higg Materials Index

The Sustainable Apparel Coalition (SAC), a global industry coalition that is standardizing social and environmental sustainability performance measurement, launched a new and improved version of its Higg Materials Sustainability Index (Higg MSI) early November 2016. The Higg MSI is a ground-breaking cradle-to-gate material scoring tool that measures and communicates the environmental performance of thousands of materials used in creating apparel, footwear and home textile products.

The publicly available tool allows design teams and global supply chain participants to select more sustainable materials during product design and development.

"The new materials database/MSI represents a leap forward in standardizing the way apparel companies profile materials, sustainable or otherwise," said Barruch Ben-Zekry, VF Corporation's Director of Sustainable Products and Materials. "This provides the type of certainty in interpretation that will help guide our industry toward better materials choices. At VF, we've already begun to integrate the MSI into our internal systems of product impact measurement and we will continue to advocate that others do the same."

The benefits of the updated Higg MSI include:

- Contributing to the world's knowledge about materials and their impacts through a centralized database accessible to the public
- **Creating a common baseline for material performance against which textile manufacturers can work to improve their performance and differentiate their capabilities with their customers**
- Providing information in a user-centric way that empowers product designers and developers to iterate on designs while considering sustainability during the product creation process
- Reducing data requests of manufacturers, thus saving time and money
- Growing the spectrum of known environmental impacts against which material impacts are evaluated including climate change, eutrophication, abiotic resource depletion (fossil fuels), water scarcity and usage, and chemistry

"The updated Higg MSI paves the way for deeper material transparency and awareness of environmental impacts," said Jason Kibbey, CEO of the Sustainable Apparel Coalition. "It is a vital addition to the Higg Index allowing us to do brand, facility, and product level assessment."

The original version of the Higg MSI was developed by Nike and later adopted by the SAC in 2012 and incorporated into the SAC's Higg Index. Since then, SAC has updated the methodology, technology, and datasets to create an unparalleled tool for evaluating the environmental impacts produced by materials from extraction through manufacturing.

Frost & Sullivan & TERI Institute New Award for Industries

To recognize excellence in sustainable development across industries Frost & Sullivan and TERI have instituted a joint award. The award will be presented on May 26, 2017 at Hyatt Regency, Mumbai. Nominations for the awards are open till December 05, 2016.

Nitin Kalothia, Director, Sustainability Initiatives Practice, Frost & Sullivan said: "Enterprises today are dealing with a complex and unconventional trend of environmental, social, and governance risks. These require a sophisticated and robust sustainability-based management model. There is a paradigm shift in the perception of CXOs that in the past were reluctant to place sustainability at the core of their business strategy, but now have identified that pursuing sustainability has substantial financial benefits. In fact, a growing number of companies adopting sustainability practices has evidenced positive impact both on the top- and bottom-line performance and also leveraged onto added business opportunities".

Sustainability 4.0 Awards are designed to accelerate adoption of sustainable development practices through a benchmarking and recognition process. The Award process involves a rigorous assessment of systems and practices by the team of experts and professionals from Frost & Sullivan, TERI and industry experts. Based on the assessment, the participating companies will be given a scorecard highlighting strengths and opportunities for improvements. Besides the assessment report, the participating organizations would also be provided with peer comparison along with the roadmap for improvement.

This year, the application is open to companies across Manufacturing, Logistics, Hotels, IT andITES, KPO, BPO, Banking, Financial Services andInsurance, Construction, Telecommunications and Healthcare in India and Middle East (covering the Kingdom of Saudi Arabia, the United Arab Emirates, Bahrain, Oman, Kuwait, Qatar, Lebanon and Egypt).

This event is supported by SustainabilityNext. **www.frost.com/sustainability or www.teriin.org**
Srinidhi S. Rao sustainability@frost.com

2016 Top Fuel Efficient Cars

The US Environment Protection Agency **(EPA)** released a ranking of the most fuel-efficient cars in 2016 based on miles per gallon of petrol/diesel). Vehicles with the **highest combined fuel economies** by category included the following:

- Two-seaters: **Smart for two electric drive convertible/coupe** (107 mpg)
- Minicompacts: **Fiat 500e** (112 mpg)
- Subcompacts: **BMW i3 BEV** (124 mpg)
- Compacts: **Volkswagen e-Golf** (116 mpg)
- Midsize: **Nissan Leaf** (114 mpg)
- Large: **Tesla Model S AWD - 60D** (104 mpg)
- Small Station Wagons: **Kia Soul Electric** (105 mpg)
- Midsize Station Wagons: **Toyota Prius v** (42 mpg)

Smog in Delhi

Yale Report Ranks India 141 in EPI

A July 2016 Yale University, US, report has ranked India 141st among 180 countries worldwide in Environmental Performance Index (EPI), worse than all the "competing" BRICS countries. The report ranks Brazil 46th, Russia 32nd, China 109th, and South Africa 81st.

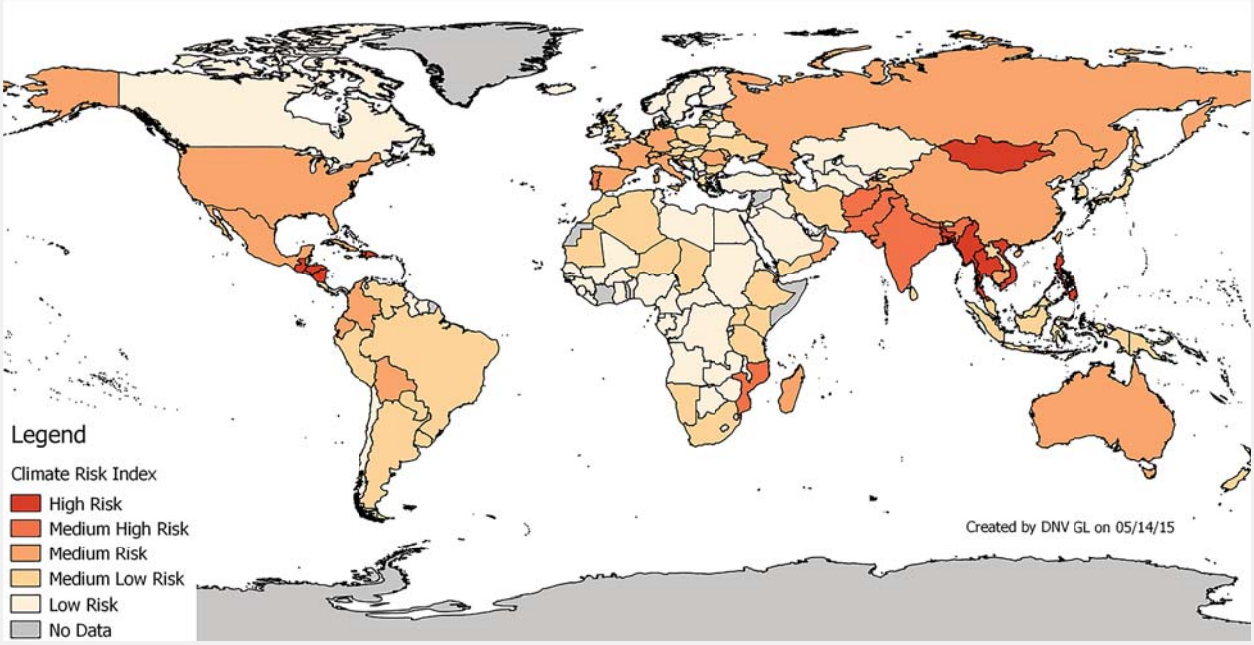
The ten best performers in EPI are Finland, Iceland, Sweden, Denmark, Slovenia, Spain, Portugal, Estonia, Malta, and France. United Kingdom ranks 12th and the United States ranks 26th.

The report stresses, there is **no relationship between countries' EPI performance and economic development.** "For instance, countries located in Europe tend to have higher EPI scores in relation to their Gross Domestic Product (GDP) per capita", while "China and India both have "high GDP per capita but receive low scores on the overall EPI."

The only consolation for India is, it ranks better than three of the immediate neighbors – Pakistan, which ranks 144th, Bangladesh, ranking 173rd, and Nepal, ranking 149th. Sri Lanka ranks 108th and Bhutan 110th. While India has improved its performance by 14 points ever since the last report was released (it ranked 155th in 2014), there is little reason to cheer: It ranked 123rd in 2010 and 125th in 2012.

Poor on all Fronts

Titled "Global Metrics for the Environment", the report has been prepared with the active support, among



http://blogs.dnvgl.com/energy/wp-content/uploads/2015/05/Figure-2-cc.png

others, of the World Economic Forum (WEF), the top Switzerland based body working for "improving" industrial climate by engaging business, political, academic and other leaders.

Referring to unsafe water, unsafe sanitation, ambient particulate matter pollution, household air pollution from solid fuels, and ambient ozone pollution, the report states, **"Some countries, like India, perform poorly across all five environmental risk factors".**

EPI ranks countries' performance on high-priority environmental issues in two areas, protection of human health and protection of ecosystems, but factors taken into consideration also include tree cover and reduction in carbon intensity.

Pointing out that air pollution is a growing global problem, especially in rapidly developing economies like China and India, the report says, "More than 3.5 billion people, or half of the world's population, live in nations where average exposure to fine particulate matter exceeds levels the World Health Organization (WHO) considers safe (10 micrograms/m3)."

The report adds, "One-third (1.3 billion) of these people live in the East Asia and Pacific region, where in China and South Korea more than 50 percent of their populations are exposed to unsafe levels of fine particulate matter. **In India and Nepal, the percentage is nearly 75 percent."**

Air Pollution Worse

Refusing to give credit to the government for recent improvements in air quality in India, the report states, "Responding to pressure from civil society and media, India has created an Air Quality Index (AQI) to measure and track air pollution in the country's largest cities."

The report praises the Aam Aadmi Party's December 2015 odd-even day driving restriction program in Delhi as "an emergency measure to reduce pollutant loads, marking an important step forward in combating the air pollution that has plagued the rapidly industrializing country for several decades."

At the same time, the report states, "India's air pollution index has received extensive media attention", yet, "despite its expansion to more than 60 cities, the AQI's exact data collection method remains unclear", as there was "absence of a public health advisory system for cities receiving poor AQI scores."

Innovation Centre for Green Pathways, TERI, Yes Bank, ITC Join Hands

The National Green Highways Mission (NGHM), responsible for planning, implementing and monitoring the plantation of trees, will set up a Centre for Innovations in Green Pathways in order to enhance research and innovations in this field by involving various international organizations, research institutes and World Bank, The Energy and Resources Institute (Teri) and Yes Bank among others.

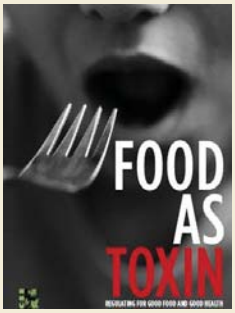
For this purpose, three memoranda of understanding (MoUs) were signed between the NGHM and three organizations—ITC Ltd, Yes Bank Ltd and TERI.

The government had launched NGHM last year as part of its green highways policy for plantation, transplantation, beautification and maintenance along the national highways.

In July, this year, the Union road transport and highways minister Nitin Gadkari kick-starting the initial plantation drive along 1,500km of national highways at a cost of about Rs.300 crore. The mission aims to provide a green canopy along 100,000km of highways and create jobs for 1 million youth.

The government plans to spend an estimated Rs.5,000 crore, which is 1% of the road construction cost of Rs 5 trillion till 2019, on the mission and link it with the National Rural Employment Guarantee Act (NREGA) to boost the rural economy.

BOOKSHELF



Food As Toxin

Sunita Narain, Chandra Bhushan, Savvy Soumya Misra, 2016, Centre for Science & Environment

"All substances are poisons; the right dose differentiates a poison and a remedy." Modern food regulation is about determining what is that right dose in our daily diet.

How is food safety defined? What are the global systems that regulate food safety? What does 'Acceptable Daily Intake' (ADI) mean? Why do we have to accept pesticides in our food?

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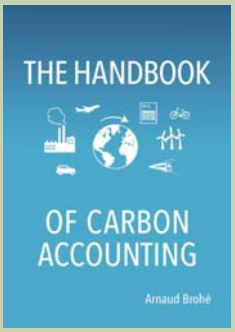

The Handbook of Carbon Accounting

By Arnaud Brohé, October 2016, Greenleaf Publishing

Carbon Accounting is a vital tool in enabling organisations to measure and report on their greenhouse gas emissions. As the need to respond to the causes and impacts of climate change becomes increasingly urgent, emissions calculations and inventories are a vital first step towards mastering climatic risk.

- **A comprehensive yet accessible guide to carbon accounting**
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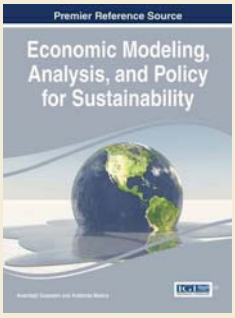
- **Includes tools to help organizations identify appropriate measurement approach**

The book concludes with a very practical guide to calculate, reduce, offset and disclose your carbon footprint. **ARNAUD BROHÉ** is a Project Director at CO2logic, a leading carbon advisory and carbon offsetting firm based in Brussels. He holds a PhD in Environmental Studies from the Free University of Brussels.

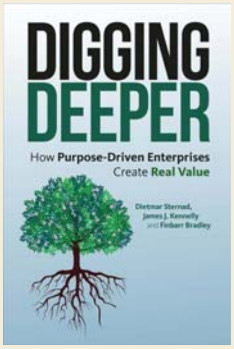


Economic Modeling, Analysis, and Policy for Sustainability

Goswami A, Mishra A (ed) , 2016

Economic Modeling, Analysis, and Policy for Sustainability (pp. 1-323). Hershey, PA: IGI Global. doi:10.4018/978-1-5225-0094-0

As the global economy continues to grow and change, issues concerning sustainability practices have become more prevalent. The implementation of efficient sustainability procedures offers significant assistance in the development of modern economies. Economic Modeling, Analysis, and Policy for Sustainability focuses on interdisciplinary perspectives concerning the social, environmental, and economic spheres of sustainability science. Emphasizing economic models, as well as mitigation policies and practices from various regions of the world, this book is a pivotal reference source for researchers, policy makers, government officials, and corporate leaders.



Digging Deeper : How Purpose-Driven Enterprises Create Reale Value

By Dietmar Sternad, James J. Kennelly and Finbarr Bradley, November 2016, Greenleaf Publishing

"Digging Deeper will challenge your assumptions, lift your spirits, and leave you wondering why purpose-driven enterprises are not the subject of greater praise- and emulation . . . Any scholarly book can be judged by the extent to which it elicits more ideas, conjecture, and debates than it puts to rest. I am happy to report that based on this criteria, Digging Deeper is an outstanding book!"

Michael V. Russo, Professor of Sustainble Management, University of Oregon

The book full of inspiring stories that illustrate that there is an alternative to a myopic and narrow capitalism that trades in inequalities, exploitation, collective burnout and negative consequences for our shared natural environment. Remarkable examples from all over the world vividly demonstrate how enterprises can create real value through focusing on what the authors call the 6 Ls: long-term orientation, lasting relationships, local roots, limits recognition, developing a learning community and taking leadership responsibility seriously in its very best sense.

Digging Deeper liberates the term "value" from the tight chains in which the global financial community has bound it and demonstrates that businesses can contribute to a better life for all - if their leaders can go beyond viewing enterprises as single-purpose money-making machines and develop purpose-driven enterprises that create real value for all.

Emission Factors for Continuous Fixed Chimney Bull Trench Brick Kiln (FCBTK) in India

Suresh R, Kumar Sachin, Mahtta Richa, Sharma Sumit, 2016

International Journal of Advanced Engineering, Management and Science (IJAEMS), Vol 2 (6):662-670p.

Uncertainty in emissions from brick manufacturing is a major concern and more primary monitoring based datasets are required. This study presents latest emission factors for continuous fixed chimney bull trench brick kilns (FCBTK), which is the main technology used for brick production in India. Stack monitoring of kilns in a typical brick manufacturing cluster in India is carried out to monitor emissions of pollutants like PM, SO_2 and CO. Average concentrations of PM, SO_2 and CO in the stacks are measured to be 172±76, 114±47 and 484±198 mg/Nm3, respectively. Monitored stack concentrations are used to compute emission factors based on brick production and fuel consumption activities in the cluster.

The computed emission factors across different kilns ranged between 0.81-1.18, 0.57-0.71 and 2.07-2.80g/kg of fired bricks for PM, SO_2 and CO, respectively. Corresponding emission factors per unit of coal used in brick kilns are found to be in the range of 13-29, 9-15, 40-56 g /kg for PM, SO_2 and CO, respectively. The differences in emission factors are mainly due to variations in the quality of coal used by different kilns. Good correlations were observed between changing calorific values, ash and sulphur content of coal and emissions monitored in the kilns. These new factors can be used for improvement in emission inventories and thereafter modelling results for the region.

Framing green consumer behaviour research: opportunities and challenges

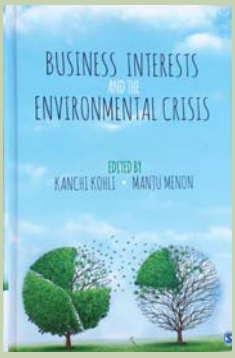
Narula Sapna A, Desore Anupriya, 2016

Social Responsibility Journal, Vol. 12(1):pp.

This review article investigates existing research in green marketing with special reference to consumer behaviour and identifies challenges both in practice and research offering valuable insights for both the communities. While reviewing the existing literature in the paper, the authors define the scope of green marketing as a standalone discipline and discuss all aspects of green consumer behaviour and present opportunities for researchers.

A thorough literature search in leading academic journals related to the scope of this paper was conducted through leading databases.An analysis of literature review comprising 140 relevant articles has been carried out and presented in the paper. We find significant gaps despite the growing body of research in the area. We stress that research is needed in relation to addressing gaps between consumer perceptions & designing green products; identification of green segments and positioning green products and also inclusion of stakeholders in the green marketing process.

Green consumer behavior is one area which is well researched but studies are generic in nature. More insights into how much consumers are willing to pay need to be worked out. In spite of plenty of reviews available in green marketing, there is no review which solely covers the consumer behavior aspects of green marketing. Consumer being the most important stakeholder in green marketing domain deserves special attention from researchers' perspective. The review is unique in providing all aspects of green consumer behaviour research."



Business Interests and the Environmental Crisis

Edited by: Kanchi Kohli, Manju Menon, Sage, 2016

A major contribution to understand how the environmental crisis is viewed globally and responded to by policy. This book highlights the manner in which key aspects in policy discourse—commodity, pricing, ownership, and regulation—have borrowed economic and trade principles to address the environmental crisis and to what effect. The book addresses a fundamental issue in environment: if nature is no longer available as a limitless resource, how has the policy discourse on the environmental crisis come to view it, value it, and live with it?

Analysing policy instruments across sectors that respond to local ecological conflicts and challenges, the book offers a conceptual understanding of how natural elements are transformed into mobile, tradable commodities through the use of market-based instruments.

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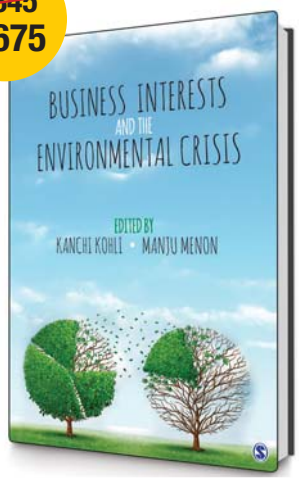

This book highlights the manner in which key aspects in policy discourse—commodity, pricing, ownership, and regulation—have borrowed economic and trade principles to address the environmental crisis and to what effect. It addresses a fundamental issue in environment: if nature is no longer available as a limitless resource, how has the policy discourse on the environmental crisis come to view it, value it, and live with it?

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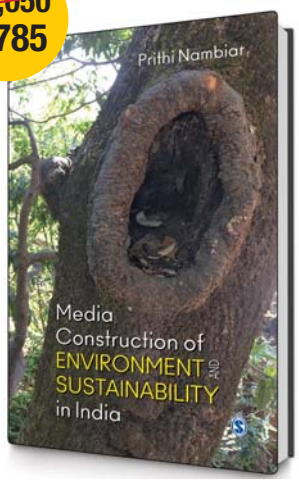

The book presents a theoretical framework against which the role of media and communication in enabling this meaning negotiation is explored and illustrated through textual analysis and examination of interview data. The uniquely theoretical and practical perspective on the discursive construction of these concepts will be of immense value for policy makers, development and media practitioners, scholars, and students of media and communication.

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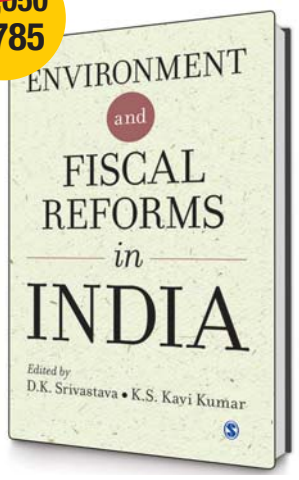

The current structure of taxation in India, the book underlines, is characterized by inadequacies such as cascading, multiple tax rates and inter-state sales tax, fragmenting the all-India market. The book argues in favour of integrating environmental considerations in the GST regime. It emphasizes the importance of eco-taxes on polluting inputs and outputs.

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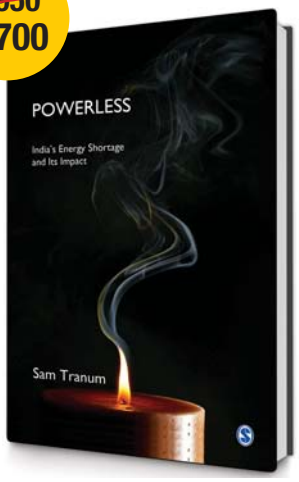

Explains India's energy shortage, how much coal, oil, gas, uranium, and power the country uses, and for what purposes. It discusses how the shortages and resulting imports affect the country's economy, businesses, and residents. It also looks at the environmental and health effects of India's growing energy use and how efforts to mitigate these are likely to affect demand for coal, oil, gas, and uranium.

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