Third Anniversary Issue

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Volume 3 Issue 1

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10 - Point Wish List For A Greener India in 2015

- Start translating 'Clean India' campaign into concrete actions with quarterly goals
- Make sustainability reporting mandatory for all companies with more than Rs. 100 crore annual turnover. And voluntary reporting for all SMEs with incentives for compliance. In the spirit of PM Narendra Modi's 'Trust Your Citizens', make the disclosure self-attested – similar to 2 percent CSR initiative and list reasons as to why it could not be achieved
- Align Smart City plans with higher green cover and waste management. Smart is not just about technology
- Set cleaner air quality targets for all cities and towns. For example – move Delhi from hazardous to healthy category in one year
- Make disposal of industrial and municipal waste into rivers and lakes a non-bailable offense with stringent punishment by fast track Green courts
- Initiate the dialogue from 'Economic growth is not possible without negative impact on ecology' to 'Enhance quality of ecology along with economic growth.' There are models of excellence in India that show this is possible
- Switch 10% of irrigation pumps from diesel to solar in 2015
- Encourage setting up of polytechnics for green skills in a big way
- Major encouragement for use of technologies for cutting wastage of agri, vegetable and fruits by 25% by end of 2015
- A massive program for revival of lakes and ponds which will result in improving water table and improve diversity
- Massive incentives and campaign for green and affordable homes

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₹15,000 cr Opportunity 2

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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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Toilet4all special

₹ 15,000 cr Opportunity

If simply washing hands regularly, particularly before eating, can keep several ailments away, imagine an India where every citizen has access to clean toilet and clean drinking water? What could this do to the wellbeing of the people and its impact on productivity of the economy?

SustainabilityNext has put together a list of options for choosing toilets in rural and urban slums which are cost effective, easier to use and manage. The objective of this effort is to help readers appreciate the innovations and efforts that have gone into it and become part of the revolution to make India a cleaner and a healthier country.

In keeping with the mandate of this magazine – 'Doing well by doing good', the 'Toilet for All' movement is a big business opportunity for new and established entrepreneurs. Here are some numbers that could be exciting:

Fifty percent of the six lakh villages that is 3, 00, 000 villages in India are without toilets and tens and thousands of slums and schools are without toilets as well. A good number of the existing ones need replacement too.

Estimated Demand - 10,00,000 (10 lakh toilets)
Average cost of a toilet - Rs. 15,000 per toilet
Total market potential - Rs. 15,000 crores

Undoubtedly, cleanliness and sustainability are connected in many ways. This special issue brings this out clearly. **And for businesses, cleanliness can be, or should be, part of their sustainability strategy as well.**

With the Prime Minister Narendra Modi declaring that he wants to make sure every home in the country has a toilet of its own by 2019, this job has to start from early 2015 itself.

While leadership and drive and purpose are all good, this goal cannot be achieved without making 'Toilet for All' a community-led sanitation movement. **Bangladesh is reported to have reduced open defecation from 19% in 2000 to 3% in 2012.**

There's a lot India can learn from its neighbors.

Benedict Paramanand
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Smart Cities India 2015

Exhibition and Conference

20-22 May 2015
Pragati Maidan, New Delhi

Some elements identified for Smart Cities:

- USD 1 trillion to be spent on infrastructure between 2012-17; half of which to come from the private sector
- India to emerge as the world's 3rd largest construction market by 2020
- The Government of India has allocated US$ 6.1 billion to build 8,500 KMs of new roads in FY 2014-15
- India plans to build 200 low-cost airports in the next 20 years to connect tier-II and tier-III cities
- The Ministry of Human Resource Development plans 1,000 private universities for producing trained manpower to meet the services and industry requirements

843 million

people will be living in Indian cities by 2050

100 new cities

will be developed by Government of India, with plans to transform satellite towns and existing cities

USD 1.2 billion

allocated by the government during FY 2014-15 for smart cities to improve the quality of life for Indian citizens

We invite you to exhibit, sponsor, speak at the expo. Focus areas are:

Smart governance | Smart education | Smart energy | Smart environment | Smart health
Smart transportation | Smart IT & communications | Smart buildings

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Sulabh Shows the Way

Toilet special

Dr. Bindeshwar Pathak, founder of Sulabh Sanitation and Social Reform Movement, is India's foremost sociologist and social activist. He believes the toilet is a tool for social change. He has received a great deal of national and international recognition for his work, including the Stockholm Water Prize in 2009. Here's an edited excerpts from an e-mail interview by Samarth Pathak, program officer, Ananta Aspen Center.

Swachh Bharat Abhiyan: How to make it work?

The framework of achieving the target was provided by the Prime Minister Narendra Modi himself, who launched Swachh Bharat Abhiyan on 2nd October 2014. It's target is to provide toilets for all 130,955,209 households in 6, 40, 867 villages, 5,924 blocks/taluks/ tehsils and 690 districts by 2019. To achieve this goal the following steps are required:

Dr. Bindeshwar Pathak
founder of Sulabh Sanitation

Technology

Two pits pour flush compost toilet technology which I invented in 1968-69 and popularized in the name of Sulabh Shauchalaya is a feasible solution. **Sewerage and septic tank technologies are costly in construction and maintenance. Therefore, implementation of these technologies is not viable.** The Sulabh technology of two pit pour flush compost toilet is eco-friendly, appropriate, affordable, indigenous and culturally acceptable. With this technology, human waste is recycled and converted into bio fertilizers to be used in fields and gardening and only a liter of water is required to flush.

We have so far installed **1.3 million individual toilets throughout the country** and 8000 public toilets on "pay & use" basis at public places which are functioning very well in different regions of India. Sulabh has also constructed and maintained toilets in Kabul, Afghanistan and Bhutan.

Financing

The cost of a functional toilet is around Rs. 20,000. Financing can be done by availing of subsidy from the government added to which would be beneficiaries' own contributions which they can arrange by taking loans from banks or micro financing institutions.

Manpower

To achieve the goal 50,000 motivators and 1.5 lakh masons will need to be trained to implement, maintain, and follow up the construction of toilets. Motivators will also go house to house, make people aware, educate and help the beneficiaries obtain loans from banks and subsidy from the government.

India's Key Sanitation Challenges

The most important challenge that is faced by an

average Indian is lack of awareness and realization of the importance of having the facility of a household toilet. The absence of a toilet necessitates open defecation in rural areas and in outlying and neglected urban areas.

The lack of finance is a challenge faced by only the poorest of the poor and in urban areas by the slum dwellers. It has been noted that even where finance is available, construction of a toilet is not a priority for many because of poor awareness. Further an average Indian seeks expenditure in cash for construction of a toilet but does not like t spend his own money on it. **Here, the government can step in by way of implementation of the loan-cum subsidy scheme for construction of toilets.**

But financing is not always forthcoming because of procedural delays and lack of priority. The other issues of concern are the unrealistic estimates worked out or shortage of funds with the government. Due to this, intended beneficiaries either do not find the scheme attractive enough or avail finance but fail to utilize it fruitfully. This results in construction of poor quality or incomplete toilet facilities.

Cleaning India: An Imperative

Cleaning India is necessary because as far as toilet related sanitation is concerned, the lack of facilities has led to the obnoxious practice of open defecation. Poor cleanliness also spreads diseases like diarrhea, worm infestation that in turn adversely affect economic productivity. **A cleaner India is bound to be healthy and a healthy India will be prosperous due to the creation of a disciplined and productive work force.** Moreover expenditure over health will also be substantially reduced.

Mobilizing Community Support

What is required is to boost health education on observance of elementary hygiene. Inculcating habits of cleanliness amongst children automatically puts pressure on parents to observe cleanliness in their homes. **Forming school sanitation clubs causes peer pressure for hygiene which is readily accepted by children.** Also it is in these clubs that elder boys sensitize the younger ones and motivate them by observing habits of cleanliness.

Self-cleaning Hi-tech Toilets

Toilet special

Alarmed that more than 600 million Indians defecate in the open and more than 1,000 children die due to a preventable disease like diarrhea every day Eram Scientific Solutions (ESS), a Kerala based R&D Social Enterprise, promoted by Dr. Siddeek Ahmed, Chairman & Managing Director, forayed into highly nascent and neglected Indian public sanitation sector six years ago.

Dr. Siddeek Ahmed
Chairman & Managing Director,
Eram Scientific Solutions

Eram Scientific's eToilet (Patent Pending) addresses the concerns of structural integrity, ensuring cleanliness and hygiene and a dedicated maintenance plan through its product and service methodology in schools. Minimal technology intervention in its cleaning system has made significant improvements in providing clean and hygienic enclosures for students and moreover eliminates manual support.

Product Description

eToilet is a revenue-generating sanitation model with a unique ambience and is an innovatively-designed and engineered public sanitation model to suit Indian urban locations. This innovation involves unmanned operations and thus ensures easy and continual operation of the toilets while minimizing unnecessary maintenance costs.

eToilets are built of stainless steel or mild steel enclosures and have electronic systems for enhancing user experience and for tracking the health status of eToilets. **eToilets have automated access control systems, sensor enabled water minimization, self-washing and floor wash mechanisms.** The well-lit interiors with LED lights glow only when a person enters and has ample natural ventilation as well as offers privacy and safety.

The eToilet has a facility of pre-flushing before entering, automatic flushing once usage is done, in-built water tanks, sensors for water and electricity conservation, automatic platform cleaning and **power back-up with coin operated entry.** Keeping in mind individual needs, these toilets are programmed to flush 1.5 litres of water after three minutes of usage or 4.5 litres if usage is longer. The performance status of the units can also be monitored via web using GPRS connectivity of the units.

Full-cycle approach

The eToilets incorporate a full-cycle approach in sustainable sanitation by integrating electrical, mechanical and web-mobile technologies. eToilets have multiple revenue options which ensure sustainability of operations. Besides offering a menu of most modern technology options, the eToilet also offers custom-sized Stainless Steel enclosures that are extremely durable, corrosion-resistant and are unswerving in the long run.

Having geared up to respond to a demand-led approach in sanitation to meet the basic sanitary needs of the common man, a range of interventions in the form of various product variants such as eToilet General Public Model, Civic/School Model, e-Lite 14 for schools and She Toilet has been introduced for the benefit of the communities, at large.

In addition to these, Eram Scientific has also introduced **world's most economically priced solar powered, self-cleaning eToilet,** with inbuilt solar panel and metallic platform for schools. This model is aimed at buyers in the private sectors, NGOs, CSR, Foundations.

Hence we have created a paradigm change in public sanitation through eToilet. Environment friendly onsite waste treatment systems are coupled with the robust technology interface and sturdy structure of eToilet.

A newly coined term of “Connected eToilet Infrastructure” has been conceived to bring in transparency and accountability in public infrastructure.

Sanitation Champion

Apart from this, in an effort to build a sustainable sanitation network in Kerala, Eram has also developed a unique entrepreneurial model for ensuring sustainable sanitation using convergent technologies. The model involves empowering the last mile entrepreneur from the base of the pyramid with a livelihood opportunity along with managing the eToilet, thereby developing him as the Sanitation Champion of the particular region. We have launched eShop Model in Kozhikode Corporation in association with Kudumbasree, a Kerala based SHG. A total of 6 eShops are operational in Kozhikode and another 10 will soon be added. In this regard, we have also facilitated major tie-ups with leading brands such as Cadbury, Britannia, Idea, Café Coffee Day, Parle, etc. **Eram Scientific having forayed into public sanitation in 2010 with its flagship product eToilet has now crossed 600+ installations spreading over more than 13 states in India covering whole of Kerala, Tamil Nadu, Karnataka, New Delhi, Himachal Pradesh, Nagpur, Haryana.**

International Collaborations

ESS has established collaborations with the world’s leading players in the sanitation and waste treatment sector with grants from Bill and Melinda Gates Foundation (BMGF), and is collaborating with California Institute of Technology (Caltech), University of South Florida, Duke University, IDEO.org and others.

Eram has so far won 34 national and international awards. It was also awarded the World’s Most Innovative Companies - India List 2014 by US-based Fast Company’s Annual Most Innovative Companies issue.

Our long term vision envisages build in a sustainable and well-maintained toilet and public infrastructure network across the Country that is affordable and accessible to the common man. We plan to conduct further research into eToilet to make it 100% touch less for use. **Our ultimate vision is to develop eToilets which are self-sustainable, creating its own energy and water for its functioning and also powering the external environment.**

Eram Scientific is all set to go global with its line of products that will redefine the public amenities sector.

There are multiple revenue models, including outright purchase by local bodies, a sponsored model involving CSR funding by corporates, and an entrepreneurship model where the operator can have a parallel revenue stream by getting advertisements on the exteriors of the eToilet. The installation cost and other related expenses can easily be recovered through the daily collection.

The agency or local body can recoup its investment in the e-sanitation facility through the coin collection and advertisement revenue within a short period of time.

Funding source

The eToilet installations in Kerala are made possible through various funding sources such as MP Local Area Development Funds, Local Self Governments and CSR Funds. We work on service-level agreements and performance-based contracts with the respective local body as way to ensure the delivery of sustainable sanitation services that are equitable and provide both private (user) and public (health/environment) benefits.

Don't Waste Waste

Toilet special

Our concept is to provide safe on-site sanitation especially in areas where water tables are too high for flush toilets to operate as well as in areas of water-scarcity or rocky impervious areas. However , the approach is applicable to all areas and in fact if applied on a large scale, urban and rural, it can save huge quantities of water, produce significant quantities of safe fertilizer and protect vast quantities of ground water and surface water.

The resulting impact on public health and well-being is enormous. Not only are there huge benefits to water supply and agriculture but also there are ultimately big opportunities for business and services.

- **Technology: The 'Dry Compost Toilet'**
- **Current cost per unit: ₹10,000 to ₹30,000**

Business model

a. Funding Source: Various, governments, NGOs, charitable bodies, customers
b. Do the users pay, how much? Varies, some fully paid by user, some projects user pays 20 to 35%.
c. Rough subsidy element: Zero to 65%
- Rural and Urban: We do both.

Future Plans: Continue to propagate sound ecological and sustainable approaches to challenges that humans create.

Inspirational quote: 'Seeing, and not smelling, is believing' • 'Don't waste 'waste', because waste isn't waste it's a resource!'

History: We designed and developed the urine diverting composting toilet in 1994 in Kerala in response to the need for sanitation in high water table coastal villages. We improved and propagated it across S Asia including designing and producing the original Ecopan.

By Paul Calvert

Knowledge has been disseminated through books, projects, workshops, demonstrations, conferences and seminars. Many Indian and international NGOs and many grassroots organizations have now learnt this technology and are also propagating it today, but the work all stems from the simple beginnings that we made in 1994. We have built several thousand of these toilets in rural and urban contexts since then.

By diverting urine, and thereby being able to collect it uncontaminated by faeces, it can be used as a liquid fertilizer.

The faeces can be composted or dehydrated and sanitized and later reused as a soil improver. Anal wash water is also kept separate and applied subsoil to irrigate plants. Nothing is wasted, nothing is polluted and health is protected.

When we began, people, especially those in authority, would find it so hard to believe that such a toilet would work and that it would not smell. I would have to drag them to see the toilets saying; 'Seeing, and not smelling, is believing' (see 'Waterlines Jan 1997). **Often their fear and imagination would get the better of them and they would escape the visit to our toilets.**

But whenever we succeeded (and it took many invitations and cajoling) the result was always the same: 'I can't believe it, it's fantastic, it doesn't smell at all!'

And at presentations I would also exhort people 'Don't waste 'waste', because waste isn't waste it's a resource!'

I hope many of your readers will be inspired to help in the campaign for an open-defecation-free India.

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Waste to Resource in 24 Hours

Toilet special

Stone India, belonging to Duncan Goenka group, got into aerobic biological toilets and is already making a big impact. It has 1500 installations around India and hopes to increase that number multifold soon.

Aerobic biological toilets convert human waste into neutral water through multi strain aerobic bacteria culture in a multi chamber bio digester tank. The project is funded and approved by Ministry of Science and Technology, and featured on the websites of Ministry of Drinking Water and Sanitation and Ministry of Urban Development and CII for SWACG BHARAT ABHIYAN, especially for schools, community toilets and slums.

It does not need any of site processing nor needs to dump any waste and does not infiltrate adjacent soil.

- Odor control measures: Bio deodizer is used if required
- Capital cost: $650 to $1950 depending on the type of model
- Life expectancy: 20-25 years
- Daily user cost: $0.003/user/day
- Energy required: nothing
- https://www.youtube.com/watch?v=u9yxKiQydIM

The biological toilet eliminates septic tanks, sewage lines and need for any periodic sludge removal. The toilet system decomposes the waste completely and converts it into water by the bacterial digestion within 24 hours. The toilet system is simple to operate and requires zero maintenance, is totally odorless and safe for users.

New-age Toilets From Japan

Toilet special

Japan is known for its high-tech toilets and **obsession with the bathroom.** Now Japanese designer **Daigo Ishii + Future-scape Architects** have teamed up to create 'The House of Toilet,' a public restroom in Ibuki-shima, Japan, that aims to celebrate the distinct character of the community and region.

Toilet Bike Neo

Made with polycarbonate sheeting and burnt wood siding (called shou-sugi-ban, the Japanese practice of seasoning wood to make it pest- and fire-resistant), the angular scheme looks like some modernist exercise in randomness. But the design is actually divided into six different sections, each of which is cut in an angled fashion. The design is conceived of as an architectural compass, with each of these cuts aligning to a major urban center on each continent, save Antarctica -- thus anchoring this remote island's public restroom to the rest of the planet.

Biogas Bike

Never dreamed poop could get you blazing down the asphalt? Well, now it all comes true as Japan's biggest toilet maker, **TOTO**, takes the toilet on the road with its launch of the Toilet Bike Neo, a bike that's powered entirely by human waste. The bike runs on biogas converted from feces that is harvested directly from the driver -- who sits on the bike's toilet-styled seat. It gives a new twist to "poop as you go," but that's not the only quirky innovation that this bike will feature. According to **Spoon & Tamago:**

Toilet Bike Neo is also equipped with some other cool functions. It uses residual light imagery to write messages in the air as it zooms. It can also play music to entertain spectators. Finally, the toilet actually talks. This is a technology that TOTO has been equipping many of their new toilets with.

It's not clear, though, whether the bike's driver will defecate in private or not in order to provide fuel. Nevertheless, keep your eyes peeled: as an alternative source of fuel, the energy offered by human waste is great enough that it's **been called the "new coal."**

http://www.treehugger.com/culture/the-hot-poop-on-alternative-toilets.html

Think Beyond Building Toilets

Building a toilet is only the beginning. CStep has developed a tool that helps in complete life-cycle management

by Sujaya Rathi

Did you know that urban India has to collect, treat and dispose about 38,000 million litres of human waste and waste water per day? Additionally, the waste from on-site sanitation systems (faecal sludge) is not adequately treated in most Indian cities, thus polluting our environment and exposing the population to adverse health impacts. Estimates show that in the next 20 years, an additional 200 million urban dwellers will have to be serviced. It is indeed a complex and daunting challenge that India will need to respond to much faster than the developed countries did in the past.

Percentage of households having				
Piped sewer system	Septic Tank	Public Latrine	Open	Other systems (improper pits)
32.7	38.2	6	12.6	10.5

Source: Census 2011

The current level of sanitation service in the country is dismal, with over 40 million urban dwellers who regularly defecate in the open. That is why the government's efforts today are concentrated on building toilets to eliminate open defecation. However, this is just "a stepping stone" - **the solution does not lie in only building toilets, for toilets without proper disposal and treatment of the waste don't really serve the purpose of effective sanitation solution.** The issues involved in effective sanitation solutions are twofold: 1) Access to toilets 2) Treatment of waste, before reuse and safe disposal. The challenge is to address the performance of the entire sanitation value chain (containment, emptying, transportation, treatment, and disposal/reuse), which requires a paradigm shift in the way sanitation planning is done in urban India.

The New Paradigm

Urban Local Bodies (ULBs) in India need to deploy all sanitation options available to provide sanitation to all its citizens in the given time frame. The types of sanitation systems for a particular city are dependent on locally specific factors like population density, water usage and availability, soil type, water table level, and the priorities of the city, such as coverage, environmental and health benefits, elimination of open defecation. All these factors can vary significantly within a city, thereby influencing the sanitation requirements and priorities in various parts of the city.

For example, the population density of New Delhi ranges from 15000/sq km to 45000 /sq. km. In such a situation, sewer-based systems may be the optimal solution for high density core areas, whereas it may not be the ideal solution for areas with unpredictable population growth and fast changing sanitation needs. On the other hand, sewer-based systems may not be the most suitable option for fast growing peripheral areas in Bangalore with low water availability because such systems require high capital investments, and large amounts of resources like water and energy for effective operation. On-site/decentralised and lower cost solutions like septic tanks with proper septage management (treatment and disposal) may be more suitable in these areas.

The Portfolio Approach

In order to address the current and future sanitation needs of cities, the sanitation research community recognises the need for a 'portfolio approach', emphasising the importance for decision makers to think beyond networked sewer systems to non-

networked decentralised/on-site solutions. There is further a need for innovative solutions that are cost-effective and flexible enough to adapt to the changing dynamics of Indian cities. It is important to understand that only technical options do not solve the whole puzzle. Effective solutions are those that also consider non-technical considerations as well, such as the accompanying business models, awareness and information, and stakeholder involvement.

The Knowledge Gap

This approach offers a nuanced look at sanitation where there is a need to have an integrated look at the performance of a sanitation system (impacts on cost, health, environment). However, information and knowledge to understand the performance of different on-site/decentralised sanitation systems are rarely available for decision makers. Common systems might address issues like open defecation, but they do not address septage management and/or safe disposal. It is thus imperative to develop a broad resource base which will enable decision makers to choose from a range of technologies to serve the needs of a city.

A decision support platform, combing both approaches, is the need of the hour to assist policy makers and ULBs in addressing India's sanitation woes.

A Decision Support Platform

A good decision support platform for integrated sanitation investment planning would allow the user to compare different types of sanitation systems from financial, social, resource, and logistics perspectives. The platform should allow for regular updates on data or technologies. It should enable:

1. Performance assessment of sanitation systems (beyond toilets)
2. Assessment of the impact of various alternative technologies (beyond networked solutions only)
3. Collaboration and consultation with partners, stakeholders and decision-makers within this sector
4. Comparison of the cost/benefits of various sanitation system options and assessment of trade-offs.

Aided by the Bill and Melinda Gates Foundation, CSTEP is currently developing a decision support platform in the form of a visual interactive tool to assist the integrated assessment of alternative sanitation systems (composed of different sanitation technologies). The primary objective is to provide policy makers with appropriate sanitation system options that are suited to local circumstances, including poor and/or informal settlements, which must be rapidly expanded to fill current gaps and accommodate urban growth in India.

The tool provides and allows for:

- A GIS enabled user interactive interface for sanitation system planning for a city

- Examination of its impact on the performance of the actions for decision makers(based on inputs provided)
- Assessment of the impact of various technology options in sanitation
- Comparison of a portfolio of technology choices to improve sanitation coverage in the cities for decision makers
- Facilitation for the collaboration and consultation with partners, stakeholders and decision makers within this sector

In Indian cities, award is an administrative unit of a city region/city area. A city consists of many wards. Hence, the approach adopted in developing the tool is based on an understanding of different possible contexts:

1. Ward context (any spatial unit): This determines the information on the ward-the socio-economic, demographic, and geographic characteristics, sanitation systems present, resource availability and any other relevant information needed for choice of sanitation systems.
2. System context: This determines the sanitation systems that are present and relevant for the city with its parameters and respective values.
3. Scenario context: An understanding of the impacts of groups of sanitation systems at ward and city levels through the use of scenarios using ward and city level indicators.

This evaluation approach is an evolving methodology that aims to enhance the conventional urban sanitation investment planning process.

Its focus is on alternative technology options to determine the best possible sanitation solutions, keeping in mind not only the feasibility of a project but also the context in which the project is to be implemented. This approach will be relevant to decision-makers influencing sanitation infrastructure decisions, by being exposed to a range of sanitation systems available and at the same time see the impact of their decision on various indicators like accessibility, coverage, cost, environment and health. Other stakeholders such as technology developers and practitioners can get an overview of the broad choices available and can also refer to this approach to highlight the benefits of their technologies (as a system/or part of a system), through their choice of indicators.

Warangal to choose sanitation system for Faecal Sludge Management using Decision Support Tool

A meeting was held on 12th November at the Warangal Municipal Commissioner's office, attended by Mr. Panda Das, Warangal Municipal Commissioner, ASCI team, Sujaya Rathi from CSTEP along with Mr. Ambrish, Consultant, WMC, Mr. Dhanraj, Medical Health Officer, WMC and Mr. Vijay Singh, local private operator of faecal sludge to discuss potential solutions and overall sanitation improvement of the city.

Ms Sujaya Rathi gave a detailed presentation on Decision Support Tool and its relevance for Warangal and Prof. Chary, ASCI reinforced the relevance of this tool and approach in the context of FSM work being initiated by WMC in partnership with ASCI. The Commissioner expressed interest in testing the using this tool to inform the choice of sanitation system(s) for Warangal. Two wards - 14 and 40 – have been chosen as pilot zones.

Sujaya Rathi is a Principal Research Scientist at the Center for Study of Science, Technology and Policy (CSTEP), Bangalore.

The tool was developed by Smita K. Dolly, Senior Research Engineer and Subhrajit Debnath, Research Engineer at CSTEP.

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Toilet special

6 Indians to Reinvent Toilet With Melinda Gates Funding

Six Indian innovators were selected to contribute to the development of sanitation solutions as part of the Reinvent the Toilet Challenge: India. From a pool of 108 applications, these projects were chosen following an extensive, rigorous selection process by an expert committee.

This challenge is a collaborative effort of the Department of Biotechnology (DBT), Ministry of Science and Technology, Government of India; Biotechnology Industry Research Assistance Council (BIRAC), a Government of India Enterprise; and the Bill & Melinda Gates Foundation to fund Indian researchers to develop innovative, safe and affordable sanitation technologies.

This program is an India-specific program modeled on the Gates Foundation's global Reinvent the Toilet Challenge. The DBT and the Gates Foundation invested a combined US$2 million, equally split, to support Indian investigators to drive research, development, and production of next-generation toilets.

Eram Scientific Solutions Pvt. Ltd., Kerala in collaboration with University of South Florida: A field trial grant to test off-grid, self-sustained, modular, electronic toilet for houses and **communities with solar energy for Indian weather, integrated with mixed waste processing unit.** The project will couple a modern, public toilet with an advanced onsite, biological treatment system. It will be housed in a standalone unit that will be initially field tested in a suburban slum.

Amrita School of Biotechnology, Kerala: A proof of concept grants to **use viral agents to target and kill pathogens and odor-producing bacteria in fecal waste** and also develop for a way to integrate this into waste treatment systems. This is a proof of concept grant.

Bill Gates looks curiously at a design

Pradin Technologies Pvt. Ltd., Bangalore: The project will test the concept of using ultra-sound to reduce water use in a toilet. It will also test the ability to enhance the settling of fecal particles in a storage tank using ultra-sound. This is a proof of concept grant.

Indian Institute of Technology, Roorkee in collaboration with Fresh Rooms Life Sciences: The project will develop a single household container that will cultivate **Black Soldier Fly larvae, using human faeces,** which can be processed into valuable products. The project will also demonstrate the market potential for these products. This is a proof of concept grant.

Institute of Chemical Technology, Mumbai: The project will evaluate the concept of using fine **sand-like material and an air blower** to create a water-free toilet interface that is free from odor and flies.

BITS Pilani K. K. Birla Goa Campus in collaboration with Ghent University and Sustainable Biosolutions

LLP: The project will demonstrate a **novel septic tank design that integrates electrochemistry** to reduce organic pollutants and improve the quality of effluent discharged. The system will be demonstrated at a single household and society/gated community. This is a proof of concept grant.

The Reinvent the Toilet Fair: India hosted approximately 700 attendees—exhibiting teams represented 15 nations and general participants represented 42 nations. For a full list of exhibitors visit,http://www.gatesfoundation.org/What-We-Do/Global-Development/Reinvent-the-Toilet-Challenge.

World's First Solar-powered Toilet Set for India launch

A revolutionary waterless toilet powered by the sun, developed to help some of the 2.5 billion people lacking safe and sustainable sanitation around the world, will be unveiled in India shortly.

Designed and built using a $7,77,000 grant from the Bill & Melinda Gates Foundation, the **self-contained, waterless toilet with its innovative technology converts human waste to biochar, a highly porous charcoal.**

It aims to provide an eco-friendly solution to help some of the 2.5 billion people around the world lacking safe and sustainable sanitation.

The toilet has the capability of heating human waste to a high enough temperature to sterilize it and create biochar, a highly porous charcoal, said Karl Linden, project principal investigator and professor at the University of Colorado.

The biochar has a one-two punch in that it can be used to both increase crop yields and sequester carbon dioxide, a greenhouse gas.

The project is part of the Gates Foundation's "Reinvent the Toilet Challenge," an effort to develop a next-generation toilet that can be used to disinfect liquid and solid waste while generating useful end products, both in developing and developed nations, said Linden.

Biochar is a valuable material," said Linden. "It has good water holding capacity and it can be used in agricultural areas to hold in nutrients and bring more stability to the soils. A soil mixture containing 10 per cent biochar can hold up to 50 per cent more water and increase the availability of plant nutrients. It can also be burned as charcoal and provides energy comparable to that of commercial charcoal.

While the current toilet has been created to serve four to six people a day, a larger facility that could serve several households simultaneously is under design with the target of meeting a cost level of five cents a day per user set by the Gates Foundation.

Centre Increases Subsidy for Toilet Construction and Sanitation

The Union Minister for Rural Development, Drinking Water and Sanitation has increased subsidies from Rs. 10,000 to Rs. 15,000 for building individual household toilets, from Rs. 35,000 to Rs. 54,000 for school toilets, from Rs. 2 lakh to Rs. 6 lakh for community sanitary complex, and from Rs. 8,000 to Rs. 20,000 for anganwadi toilets. The Sanitation Mission will be delinked from the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA).

UNICEF Offers Microcredit to Build Toilets in Erode

UNICEF has funded members of self-help groups in Erode, in Tamil Nadu, to build toilets in their homes. MYRADA, an NGO, has supported the formation of federations that use the fund from UNICEF not as a grant but as a revolving fund for constructing toilets in the houses of the federation members.

This is a unique model because; the revolving fund is neither managed by UNICEF nor the NGO. The revolving fund concept believes that change in behavior does not happen simply with one toilet but existence of several facilities.

http://www.indiawaterportal.org/articles/microcredit-sanitation-quiet-revolution

Interesting links

http://blogs.wsj.com/indiarealtime/2014/10/08/why-many-indians-cant-stand-to-use-the-toilet/

http://www.economist.com/news/asia/21607837-fixing-dreadful-sanitation-india-requires-not-just-building-lavatories-also-changing

http://www.downtoearth.org.in/content/world-toilet-day-india-now-aims-build-one-toilet-every-two-seconds

http://www.downtoearth.org.in/content/lack-toilets-how-much-does-it-cost-india

http://www.downtoearth.org.in/content/interactive-map-monitor-gaps-sanitation-launched

NGOs Supporting Toilet Movement

Arghyam

Arghyam grants funds to organisations, which implement and manage groundwater and sanitation projects in India. Arghyam has made grants to recipients in 22 states of India since 2005, the year of its founding.

http://arghyam.org/

Weldynamics

Works in both rural and urban areas for providing bio digester based toilets and changing rooms for women. For corporates, it offers environmental services which are covered under clause 135, of companies act, 2013. These include toilets with and without bio digester, bio gas plant for kitchen waste, toilets for schools, public toilets and community toilets.

http://weldynamics.com/offerings

Paryavaran Solutions

Is engaged in manufacturing and supplying an extensive range of portable toilets. It uses hard-wearing materials for fabricating these products, which is transformed by high-tech production systems. These systems are combined with an engineering project, which aims to reduce toilet maintenance, increase safety and generate a good price-quality ratio for the operator.

http://www.paryavaransolutions.in/

Watsan Envirotech Pvt. Ltd.

Watsan Envirotech was started with an objective of harnessing technology to make affordable solutions for **providing clean drinking water and sanitation.** Since 2009, it has been focusing on building up a low cost, power free, maintenance free water filter and have been successful in making in-roads by providing the filters to thousands of people.

http://samhita.org/social-organisation/watsan-envirotech-pvt-ltd/#sthash.VtOu1ibr.dpuf

Gramalaya

Gramalaya was established in 1987 with a group of committed youths in the field of rural development. It has been operating in Thottiyam and Thathaiengarpet and Thuraiyur Block in the rural areas and in the slums of Tiruchirappalli City Corporation in Tiruchirappalli District.

www.gramalaya.in

Wockhardt Foundation

Wockhardt Foundation is a national, not-for-profit organization engaged in social service and human welfare activities. It's 6 programs have made perceptible change in its areas of operations to the lives of the underprivileged.

www.wockhardtfoundation.org

Banka BioLoo

Improves access to sanitation products and services in underserved markets, especially rural, by undertaking manufacturing, supplying and installating bio-toilets (or Banka BioLoo's Eloos) and bio tanks using **DRDO's bio-digester technology.** Also provides associated and ancillary services such as waste water treatment and recycling solutions.

It can install bio toilets in multiple sites and locations such as high altitudes, village schools, small communities, construction sites, industrial factories or where there are no sewage lines or direct connection to the municipal sewerage systems. To achieve the same, we extensively work with large government agencies and railways and are now expanding our clientele to corporates.

www.bankabio.com

Gartner Sees India Cozying Up to Green Practices in 2014

Indian companies are becoming increasingly conscious of corporate sustainability and are willing to integrate environmental and social concerns into their strategic business plans. They are going beyond viewing CSR as only philanthropy, and adopting green IT and sustainability initiatives into their core business operations.

Gartner, the global information technology research and advisory firm, in its recent report called 'Hype Cycle for Green IT and Sustainability in India 2014' has stated that India's spending on green IT and sustainability initiatives will amount to $34 billion in 2014, a jump of over 14 percent from $29.2 billion spent in 2013.

According to Gartner, the IT sector where energy and water costs account for a significant percentage of the operating costs, is stepping up efforts to make the operations more sustainable. Most of the companies have at least one green initiative driven by a motive to reduce operating costs. The use of renewable energy is being increasingly adopted, particularly in the sectors that have a high carbon footprint, such as oil, gas, mining and manufacturing.

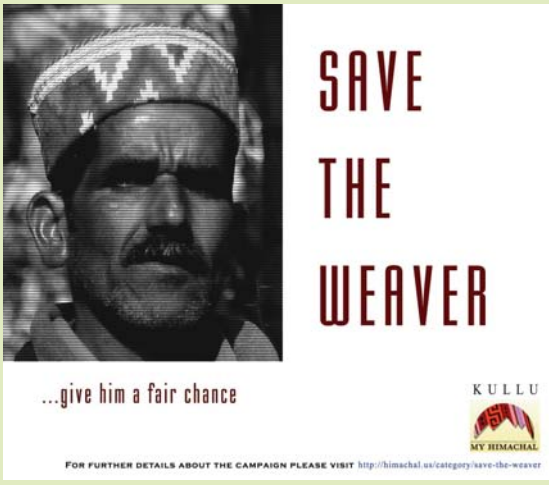
The report included three new technologies in this year's Hype Cycle and profiled 36 technologies this year. **The new technologies added to this year's Hype Cycle include smart city frameworks, facilities energy management and green datacenters.** Solar energy technology is one of the biggest movers in this year's Hype Cycle. State governments in India are increasingly promoting solar energy with policies and incentives designed to attract investments in this area.

Fight by 'Friends of Handloom' Intensifies

Hand woven linen is a pride of India yet people at the helm treat it just like any other cloth. In fact, if experts are to be believed, no other country today produces elegant hand woven linen as Indians do. It is almost a dying art in China and this could be the case in India as well if the people in this business are not given adequate protection and support.

Fortunately, the 'Friends of Handloom' movement has caught the imagination of the people and some respite is likely soon. Their best bet is Prime Minister Narendra Modi wears designer handloom fabric. They are organizing a postal campaign which includes sending one crore letters to the PM.

Their demand is to crack down on imitation fabric which is hurting the livelihoods of thousands of artisans. Sally Holkar, the activist behind the revival of Maheshwari sarees and handloom in India, started the campaign in Bengaluru early December 2014.



"Friends of Handloom" – with support from activists like Prasanna of Desi Trust and Usramma who is behind Dastkar Andhra – hope to send one crore letters to Mr. Modi by January 30, 2015, to coincide with Martyr's Day," he said. One of the important demands is implementation of the Handloom Reservation Act, 1985.

India has a big opportunity to brand and market hand woven linen globally as its heritage and if done with zeal the whole sector will benefit in a big way. What are we waiting for?

GoCoop.com Offers eCom Platform for Poor Artisans

GoCoop, GoCoop.com, an online social marketplace that provides a global eCommerce platform to co-operative and community based weavers and artisans in rural India, has entered into an MoU with three major corporations NSFDC, NBCFDC, NSKFDC under ministry of social justice and empowerment, Govt. of India to provide an eCommerce platform for backward class and scheduled caste artisans.

The objective of the GoCoop MoU is to provide beneficiaries of the NSFDC, NBCFDC and NSKFDC a global marketing platform, training, infrastructural and field-level services and support to help their artisans get market prices for their products and to scale up their business.

GoCoop currently supports over 50,000 weavers and artisans through 200 co-operatives and sells over 11,000 products. You can buy online, source your bulk purchases and collaborate with buyers and sellers. It is currently focusing on handloom, handicraft and khadi clusters.

Mr. Siva Devireddy, Founder, GoCoop.com says, "There is an urgent need to create better market access for our artisans and weavers and make the markets more equitable to producers. We are very excited to work with the Finance development corporations under the Ministry of Social Justice to promote their beneficiaries through our global marketplace. With our unique eCommerce-based development model, we would not only be creating market access but would be working towards improving the product quality and efficiency of the artisans."

GoCoop's unique development model is based on creating identity and awareness for artisans and hand-crafted products by listing them online. The skills and capacity of the weavers and artisan co-ops are developed through training and other capacity development initiatives for improving the products and preparing the artisans further for eCommerce.

Ericsson Launches 'Connect to Learn' Initiative

Ericsson announced the launch of its global education initiative 'Connect to Learn' in India. It implements Information and Communications Technology (ICT) in schools in resource poor settings, to ensure that children, no matter where they live, have access to learning resources and a quality education. In line with the vision of a complete 21st Century education for everyone, the program provides an opportunity for youth to access learning resources that were previously unavailable to them.

As a part of the program, Ericsson in association with three leading NGOs in India - Plan International (India Chapter), Smile Foundation and Pratham Education Foundation has launched projects.

Recognizing an important link between limited mobility of women and girls and accessing progressive learning opportunities, the project with Plan India focuses on ensuring increased access to opportunities for self-development for 15000 girls in the 15 – 25 age group. Ericsson will establish 12 Networked Learning Centres in Delhi as knowledge hubs for girls, in association with Plan India.

As a part of the third project, Ericsson will collaborate with Pratham Education Foundation to establish Learning Excellence Program (LEP) in about 15 schools in the villages of Gurgaon. The LEP provides need based support to Government Schools by targeting children who lag behind in their learning levels.

Elaine Weidman-Grunewald, Vice President of Sustainability and Corporate Responsibility (CR), Ericsson said, "As we move closer to the Networked Society, we see mobile broadband emerging as a powerful tool, offering the opportunity to connect even the remotest villages.

CSD - first NGO to get ISO 9001

The Bengaluru-based Centre for Sustainability Development (CSD) announced that it obtained the ISO 9001:2008 certification recently, the first NGO in India to do so. The Quality Management Standard is usually adopted by industries and product or service related business firms to establish and maintain good product quality standards and enhance customer satisfaction.

CSD decided to go for this certification since it wanted to distance itself from the stigma most NGOs carry – of not being transparent in their working and quality related procedures.

During its decade long operations, CSD has had some major achievements in helping the Karnataka government with important field level inputs from citizens and industry of which the most effective ones are: Preparing the Environment Report Card of Bangalore, first one in 2005 and the second in 2012; Karnataka Climate Change Action Plan in 2012 and Primary Collection of Solid Waste and Segregation in Bangalore in 2014.

CSD's outreach to communities includes skill development and capacity building through technical and managerial trainings in fields of energy efficiency and management, renewable energy, water & waste management, environmental governance, sustainable development, pollution control and enhancing biodiversity. Recently, CSD prepared a Smart Plan for Devenahalli region, near the Kempegowda International Airport, where huge industrial development is expected in the near future.

Its future plans include development of the Smart Cities Initiative launched in 2013, Green Skill Academy for training and development and Eco-choice, the energy portal to help consumers make informed, energy-efficient and eco-friendly purchases.

www.ecochoice.in and www.csdindia.in

Tiles From Old TV and Computer Monitors

With everyone who can afford to turning to flat screen technology to replace their old TVs and monitors, there's an abundance of old cathode ray tube (CRT) glass hitting the e-waste stream, and a dearth of ways to put it back into service. But an innovative ceramic tile company that focuses on the use of recycled materials in their products has a great idea for recycled CRT glass, giving it a second life as a sustainable interior design element.

Paul Burns, founder and Chief Ceramicist at Fireclay Tile, found himself wonderingwhat became of these obsolete monitors and TVs, which eventually led him on a three year journey to find a viable use for CRT glass.

"About two or three years ago my business partner replaced all our old computers, and I started to wonder, what happens to all those old monitors. Well, I found out they're piled up all over the place. I decided, why don't I try to make tile out of this old computer screen." – Burns

Fireclay Tile already produced decorative and architectural tiles from recycled materials and unprocessed stoneware clays, so turning to CRT glass as a potential material wasn't so much of a stretch, at least conceptually. However, developing a process to get the glass from monitor to finished tile wasn't without challenges, including the need to enlist an electronics recycler to remove the glass panels from their housing in order to start the process of crushing and sorting the material.

The finished tiles aren't colored, but rather their natural gray tone, which Fireclay has dubbed Phosphor, and the new tiles will be available in 2x8, 2x4, and penny-round mosaic sizes. According to Fireclay, these recycled tiles can be used for both indoor and outdoor installations, including commercial jobs, and could be the perfect accent in an eco home remodel.

Masdar - First Zero Carbon City in 2015

The first phase of the world's first zero carbon city, called Masdar City near Abu Dhabi in the UAE, is all set to come up in 2015 after a delay of some three years. It will be the world's first carbon neutral, zero waste, and fully sustainable city. The Phase 1 of the city, the initial 1,000,000 square meters (0.39 sq mt), is likely to be completed in 2015. Final completion is scheduled to between 2020 and 2025.

It will use clean-tech, solar, wind and hydrogen power plant to run the six square kilometer city. The initial population will be about 7,000 and could go up to 50,000. Transport system is public and uses only electric vehicles.

It expects to house 1,500 businesses, primarily commercial and manufacturing facilities specializing in environment friendly products. More than 60,000 workers are expected to commute to the city daily.

Masdar is a sustainable mixed-use development designed to be very friendly to pedestrians and cyclists. It will have terracotta walls decorated with arabesque patterns.

From a distance, the city looks like a cube. The temperature in the streets is generally 15 to 20°C cooler than the surrounding desert. The temperature difference is due to Masdar's unique construction.

A 45-meter high wind tower modeled on traditional Arab designs sucks air from above and pushes a cooling breeze through Masdar's streets. The site is raised above the surrounding land to create a slight cooling effect. Buildings are clustered close together to create streets and walkways shielded from the sun.

Masdar City was designed by UK firm Foster and Partners. Recognizing the efforts of UAE leaders, the International Renewable Energy Agency has decided to move its headquarters to this city.

Be Inspired by India's Innovations

Devika Devaiah, author of Orbit Shifting Innovation. Excerpts of her recent talk at a Centre for Sustainable Development event in Bengaluru

Friends of Handloom

What has happened is that we examine our world through the Western lenses. I had been to a conference a few weeks ago, it was Friends of Handloom. I learnt there that India is the only country in the world that produces handloom linen. There is a big demand for handloom today.

Even China is not able to meet the demand because it has completely gone into the power loom phase. Yet in India handloom is fighting for survival. It is a jewel in our crown, handloom from India can be what denim is to the rest of the world. That's how special we could make it but none of us know it, none of us value it.

In fact we are getting a legislation saying that power loom gets the hand loom status, that's what the handloom Satyagraha was about. They are fighting saying that it's so special and let's recognize it. Most of us don't even know that there is a problem.

It is clear that India cannot follow the Western model of development. India needs Indian solutions. The good news is that we have demonstrated to the world that we can solve many of our problems in our own way. Here are a few examples:

M V Foundation of Shanta Sinha said it is poverty that leads to illiteracy and therefore if you want to eradicate illiteracy first eradicate poverty. This way, Shanta Sinha provided an Indian solution and reversed it completely.

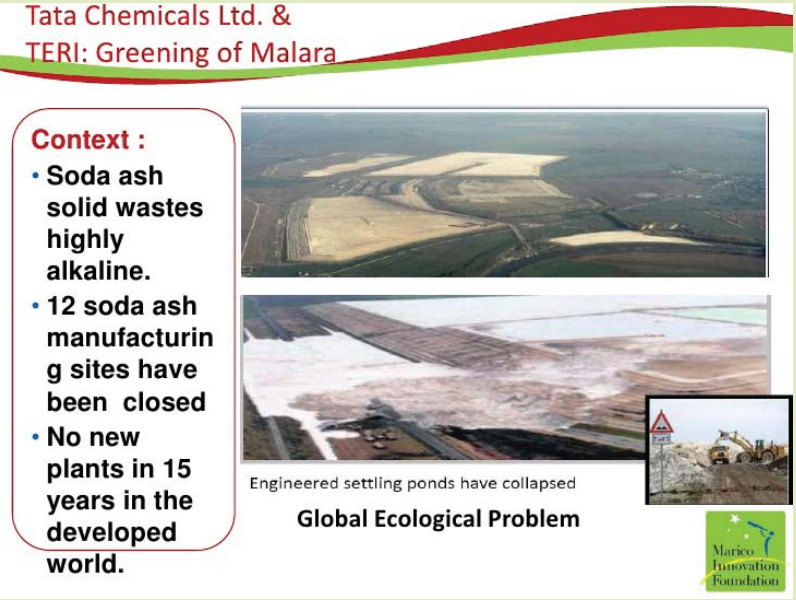
In Andhra Pradesh, in a couple of districts she got all the child laborers into school. Once they were in there, their jobs got filled up by adults. You can't pay adults what you pay children, you have to pay them more, so the family income started going up and children also started getting educated. What an amazing solution! So Shanta Sinha reversed the logic completely.

Since 1981, the M V Foundation has been trying to bridges the great gap between poor children and mainstream education. For her services Shanta Sinha won the 2003 Magsaysay Award for Community Leadership.

Mobile Revolution

The mobile phone revolution in India shows how Indian business model innovation was far superior to the western model. Even today, western users are stuck with old models and high price while even poor Indians are using it without much bother. We have actually leapfrogged the West there.

The revolutionary idea of microfinance too came from this region.



Tata Chemicals greening of Malara

http://www.tata.co.in/company/articlesinside/zN7LvBEzHTY=/TLYVr3YPkMU=

Soda ash is highly alkaline and therefore considered to be a large pollutant across the world. In fact, nowhere has any new plant in the last 15 years been allowed anywhere. 12 soda ash sites have been closed across the world. What did Tata chemicals do?

Tata Chemicals is the world's largest producer of soda ash. It had, over a period of time, created 30 acres dump site at Malara, coastal region of Gujarat. What was the innovation? For the first time, a highly alkaline landsite and saline site was recovered, a green cover with a living eco system was developed by the use of bio fertilizers and bio remediation technique.

Soda ash soiled waste has never before been reclaimed, saline water has never been used for irrigation, and reclamation has never been done. They used bio mechanics to make this happen. It countered saline resistance in the indigenous plant with suitable micro organisms. In fact, soda ash has a lot of rich ingredients for plants, the company found bio mechanisms that convert it from inert to usable and that is how these plants grew.

22.5 acres have been transformed, more than 20,000 plants of six varieties grow, vegetable grow, eco systems have started getting created and now there is zero fine dust pollution. It's first in the world and never happened anywhere else.

108 Ambulance Service

The last example is the 108 ambulance. It came out of EMRI, Emergency Management and Research Institute. The interesting thing about EMRI which doesn't happen anywhere else in the world was that not only is about emergency management but they are also about research. It's the world's only free and integrated health service. You have fire, police, ambulance all integrated together and also they are the only ones who come back to you.

They have all top data and information of exactly how many lives they have saved, and because of their top of the line research they have also now able to do predictive analysis to where they need to keep ambulances proactively. In the US in contrast, it's not free, a 911 call, depending on which state you are in, are charged.

So, organizations like Tata Chemicals, MV Foundation, EMRI show that Indian solutions work for Indian conditions and could work everywhere else. They have broken through the deferential mindset.

A research done in 2007 asked the question what are an Indian's priorities? It was 44% for family, some for work, leisure but was zero for the society. Is it something to be worried about?

Mahatma Gandhi wrote "Every Indian, whether he owns up to it or not, has national aspirations." I believe it's the same today, every Indian cares for India he just doesn't own up to it, even when he throws the garbage on the road, he cares for India. He just doesn't own up to it. What does it mean, get every Indian to care! **Don't copy paste from the West, be inspired.**

Solar Sunflower

Solar Sunflower Concentrates Power and Desalinates Water

Swiss company, Airlight Energy is producing a solar sunflower that tracks the sun like a sunflower does and **concentrates the sun's radiation by 2,000 times** (and converts 80 percent of that power to useful energy) in a unit that produces 12kW of solar electric power and 20kW of thermal power from 10 hours of sunlight.

It cools itself by pumping water through its veins just like a plant. Airlight says that the **energy produced is enough energy to power several average homes making the unit perfect for off grid uses.** And that's not all. The heated water can be used for cooling air or desalinating water. The unit can produce 30 to 40 liters of potable water from salt water, which will be great where water is too salty to drink or the area is an arid one near the sea. **Airlight energy is partnering with IBM Research to bring this "affordable solar technology" to the market by 2017.**

Here is what Airlight Energy says about its sunflower:

http://www.greenbuildermedia.com/news/solar-sunflower-concentrates-power-and-desalinates-water

Envirotouch Outlet Lets You Control Energy Use

Most homes have a handful of appliances or electronics that keep sipping away at electricity even when you're not using them. Many electronics companies have gotten better at implementing standby power settings that curb energy use, but still many haven't. While the best thing is to unplug, it's not always easy to remember. In the past few years, many **smart outlet type devices** have come out that put the kill switch on those vampires when not in use and now an even smarter one has hit the market.

The Envirotouch outlet features one-touch timer buttons that allow you to set a length of time for the appliance to run before it gets shut off, so you'll never have to worry about forgetting to pull the plug on coffee makers and other small appliances, video game consoles, heaters, battery chargers and turning off indoor and outdoor lights.

The outlet cover can be retrofitted to all outlet types and features four time lengths that can be set with the push of one button: 15, 45, 60 and 120 minutes. The shorter times would be well-suited for small appliances that are only used for a few minutes, while the longer ones would be good for lighting or heaters.

The **Australian company estimates** that users can save AUD$110 (US$90) a year for five 50 W halogen lights that would otherwise be left on for three hours a day and AUD$146 (US$120) a year for a 2,400 W heater left on for two hours a day. Of course your savings would vary depending on what appliances you use and for how long, plus the cost of energy in the country you live in, but curbing energy use will always save money.

http://www.treehugger.com/gadgets/envirotouch-outlet-lets-you-control-your-energy-use.html

Flaunting CSR Success Helps

The 2014 Global CSR RepTrak® study findings highlight the growing importance of CSR (corporate social responsibility) and sustainability issues for consumers. Today, 89% of consumers are willing to recommend companies with excellent CSR RepTrak® scores, compared to only 6% of consumers who would recommend companies with poor CSR RepTrak® scores.

Key findings of the study include:

- Overall, even the most reputable companies in the world lag in their CSR reputation: out of 101 global companies in the ranking, only 6 have Strong reputation for their CSR, with the remaining companies earning Average CSR reputation from consumers globally
- Consumers across countries remain highly uncertain about corporate performance in the Citizenship dimension
- **Increasing public awareness of company's CSR performance is key to maximizing the return on investment (ROI) in CSR and sustainability.**

  Companies that understand how to create positive perceptions of their CSR programs gain reputational and business benefit in the form of increased sales and recommendations from consumers.
- Top three CSR reputation winners in 2014 are Google, Microsoft and The Walt Disney Company

Ecova Survey Finds Fundamental Shift in Perspective on Energy

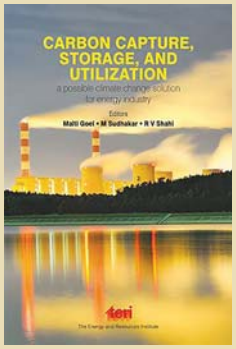
Ecova has conducted its second annual energy and sustainability outlook survey of more than 500 energy, sustainability, facility and finance professionals on behalf of North American-based companies.

This year provided more evidence of a fundamental shift in the way energy and sustainability professionals think about the broad spans of their responsibilities, with companies having a greater understanding of their energy and sustainability needs and maturing in their approach of these areas. While cost saving is undeniably a driver, this year's results show a more strategic, long-term view of energy and sustainability management. Companies are working to keep their eyes on the bigger picture as the industry becomes more complex and energy and sustainability management becomes essential to cost control and operational efficiency.

Ecova's outlook is based on its historic knowledge and expertise on the market, with more than 20 years of experience working with clients that represent more than 20 percent of the Fortune 500.

http://www.ecova.com/media/1078586/ecova_report_2015_energy_and_sustainability_predictions.pdf

BOOKSHELF

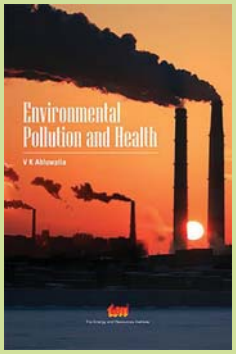


Carbon Capture, Storage, and Utilization

By Malti Goel, M Sudhakar & R V Shahi, The Energy & Resources Institute, TERI, November, 2014

Carbon capture and storage (CCS) is among the advanced energy technologies suggested to make the conventional fossil fuel sources environmentally sustainable. It is of particular importance to coal-based economies.

Carbon Capture, Storage, and Utilization deals at length with the various aspects of carbon dioxide capture, its utilization and takes a closer look at the earth processes in carbon dioxide storage. It discusses potential of Carbon Capture, Storage, and Utilization as innovative energy technology towards a sustainable energy future. Various techniques of carbon dioxide recovery from power plants by physical, chemical, and biological means as well as challenges and prospects in biomimetic carbon sequestration are described. Carbon fixation potential in coal mines and in saline aquifers is also discussed.



Environmental Pollution and Health

By V K Ahluwalia, The Energy and Resources Institute, TERI , August, 2014

Pollution as we know is an undesirable change in the physical, chemical, and biological characteristics of the environment. Environmental Pollution and Health expounds the three main types of environmental pollution—air, water, and land—and their effects on human health. It also focuses on photochemical air pollution, marine pollution, thermal pollution, noise pollution, and radioactive pollution and their effects on human health. The book also discusses the impact on the health of the human beings by factors other than pollutants. These factors include occupation of a person, stress, global warming, and ozone layer depletion. Finally, the author has dealt with various types of wastes generated in different establishments and how they should be managed.

The Growth of Biofuels in the 21st Century: Policy Drivers and Market Challenges (Energy, Climate and the Environment)

By Robert Ackrill, Adrian Kay, Palgrave Macmillan, December, 2014

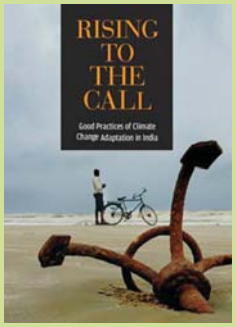
In recent years, governments globally have been promoting the production and use of biofuels as a transport fuel. This has been motivated by a range of political, economic and environmental concerns, notably climate change, energy security and rural development. As a result, biofuels production and use have expanded considerably in just a few years, a development which has brought biofuels a great deal of negative attention. Whether it is the linking of biofuels with increases in greenhouse gas emissions, rising food prices, deforestation, or as a threat to vested oil interests, biofuels are being attacked from many directions. In this timely and insightful book, Ackrill and Kay draw on interviews with key policy insiders in Brazil, the EU and the US, to analyse why biofuels policies have been implemented so enthusiastically by policy makers; and the consequences they now face, given the scale of their ambition for biofuels and biofuels policies.

Human Green Development Report 2014 (Current Chinese Economic Report Series)

By Xiaoxi Li (Editor), Springer; October, 2014

This exhaustive survey assesses the performance of the United Nations and its member states in all key areas, at the same time as laying down a road map for sustainable development in the future. Deploying the Human Green Development Index as a new metric for an era in which human survival is intimately dependent on the viability of the Earth as a clean and sustainable habitat; the report showcases a vast array of data, including HGDI indicators for more than 120 nations. It provides a detailed and comparative rationale for the selection of data for the 12 goals and 54 HGDI targets, which cover human and global needs into the future. The index measures 12 Sustainable Development Goals, based on but also extending the eight Millennium Development Goals defined in 2000. The SDGs, proposed by a high-level UN panel, will supersede MDGs in 2015.

They focus on ending poverty, achieving gender equality, providing quality education for all, helping people live healthy lives, securing sustainable energy use, and creating jobs offering sustainable livelihoods. They also work towards equitable growth, stable and peaceful societies, greater efficiency in governance, and closer international cooperation. With indicators covering everything from air particulates to percentage of threatened animal species in a nation's total, and informed by the latest research (with inequality-adjusted metrics for amenities such as education and healthcare), this comprehensive study offers readers not only a wealth of valuable core data, but also a well-argued rationale for using the HGDI. In today's world, we cannot view our development as being distinct from, and unaffected by, that of the Earth we inhabit, or that of our planetary cohabitees.



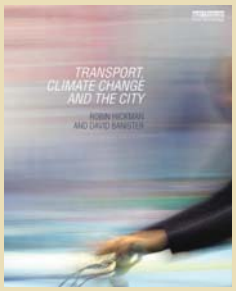
Rising to the Call: Good Practices of Climate Change Adaptation in India

By Centre for Science and Environment, December 2014

Adaptation is necessary to manage the risks posed by climate change. Rising to the Call is a collection of stories from all over India about the nature of extreme weather events experienced, how communities are responding and successful adaptation practices emerging out of these experiences. It studies the impacts and replicability of the different approaches to adaptation and brings out valuable insights for developing countries in the region and beyond.

Five regions are considered: The Indian Himalayan region, the Indo-Gangetic plain, the desert region, central and peninsular India, and coasts and islands. Case studies highlight crop diversification, payment for eco-system services, flood-proof housing, restoration of watersheds, protection of mangroves, groundwater management, weather forecasting and advisory services, flood-resistant rice, and more.

This book is a first-of-its kind that looks at adaptation with an ear to the ground. It looks into why some actions worked the challenges and enabling conditions.



Transport, Climate Change and the City

By Robin Hickman, David Banister, Routledge; March, 2014

Sustainable mobility has long been sought after in cities around the world, particularly in industrialized countries, but also increasingly in the emerging cities in Asia. Progress however appears difficult to make as the private car, still largely fuelled by petrol or diesel, remains the mainstream mode of use. Transport is the key sector where carbon dioxide (CO_2) emissions seem difficult to reduce.

Transport, Climate Change and the City seeks to develop achievable and low transport CO_2 emission futures in a range of international case studies, including in London, Oxfordshire, Delhi, Jinan and Auckland. The aim is that the scenarios as developed, and the consideration of implementation and governance issues, can help us plan for and achieve attractive future travel behaviors at the city level. The alternative is to continue with only incremental progress against CO_2 reduction targets, to 'sleepwalk' into climate change difficulties, oil scarcity, a poor quality of life, and to continue with the high traffic casualty figures. The topic is thus critical, with transport viewed as central to the achievement of the sustainable city and reduced CO_2 emissions.

Green Buildings of India

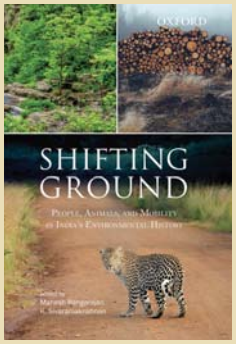
By CII - Indian Green Building Council, 2014

Green Buildings of India is a 216 page limited edition publication from IGBC. The book captures the following: • Key achievements with excellent high resolution photographs of the salient features like passive architectural design & landscape • Recognition to the project team involved like owner, consultant, architect, etc. • Tangible (energy and water savings) and intangible (health and comfort) benefits • and most importantly, the experience of the occupants. Inspirational quotes from the various project stakeholders highlight their commitment to sustainability. Building types covered include the following: • Residences • Corporate offices • Schools • Hotels • Factory buildings • Government buildings • Existing buildings • Airports

India Energy Sector and Market Outlook to 2025

By iData Insights, K Venkat Kameshwar, iData Insights; 2014

This is a 250+ pager Business Series Report and the scope of the research includes: Introduction to India Energy Sector, highlighting energy policy in the country. Analysis and future outlook on India, its Coal Sector, highlighting supply demand and pricing. Study on Indian Oil and Gas Market with future outlook on Power Sector in India. Detailed outlook on power generating sources such as thermal, nuclear, hydropower and renewable. Analysis on major market forces impacting the sectors under review. A brief on Major Market Participants, SWOT Analysis of India Energy Sector



Shifting Ground: People, Animals and Mobility in India's Environmental History

By Mahesh Rangarajan, K. Sivaramakrishnan, Oxford University Press, October 2014

Environmental history of India has developed as an important field of inquiry in the last twenty-five years. While providing major insights, the existing scholarship has primarily focused on drawing sharp lines of distinction - those between geographical spaces (forest, rivers, farms), people (herders, farmers, townspeople), eras (colonial, post-colonial) and so on. The limitations of these sharp divides are brought to the forefront when there is a critical engagement with the regions contested environmental past. Shifting Ground brings together an array of essays that pose critical questions regarding India's environmental past and the way it has been approached by scholars.

From debunking the idea of a primeval, pristine forest cover, to analyzing the dynamics that shape human-animal relations, to examining the conflicts created by post-Independence projects of rural development and conservation - this volume touches upon the various aspects of environmental studies and juxtaposes them with social history, history of science and technology and history of trade and culture. Drawing on original case studies the book not only explores the past, but also portrays how its traditions are often invoked to be deployed in contemporary conflicts - those that are often aggravated by the pressures on natural assets created by the recent prosperity and the vaulting aspirations of a rapidly expanding Indian middle class.

Entangled Urbanism: Slum, Gated Community, and Shopping Mall in Delhi and Gurgaon

By Sanjay Srivastava, Oxford University Press; December 2014

While it is difficult to grasp the particular essence of a city, its identity lies in its spaces, temporalities, and transformations - different from each other yet enmeshed in tangible and surreal ways that define both the dynamism and instability of its inhabitants. Entangled Urbanism looks at various sites in Delhi and the National Capital Region, unraveling the politics of settlement, construction, demolition, and exclusion along these locations through a twinned discourse of modernity and development.

What emerges from this combination of fieldwork and historical analysis is an exploration of the ways in which these contrasting spaces connect with each other: What processes link consumerism, the middle classes, and the urban poor? How do the pleasures of the gated residential enclaves encompass the pain of the demolished slum locality? What kind of city is produced by the relationship between illegal settlements such as slums, fake documents that seek to stave off demolition and representatives of the legal city such as Residents Welfare Associations? Covering issues like notions of citizenship, symbolic order of the nation-state; rituals of suburban life; and emergent relations between middle classes, the state, and the market, this work captures the myriad overlapping meanings of the city in all its fragments.

Events

Workshop on 'TERI-IGES Policy Research'
January 6th-7th 2015, New Delhi,
http://www.teriin.org/our-events

India Maritime Conference 2015
January 9th, 2015, Bombay Exhibition Centre, Mumbai,
http://www.ficci.com/events.asp

Conference Solar India – 2015
January 7th, 2015, Rajasthan
http://www.assocham.org/events.php

Training Programme on 'Social Impact Assessment'
January 12th-16th, 2015, CSE, New Delhi,
http://www.cseindia.org/content/training-programme-social-impact-assessment-0

7th AGRICULTURAL SUMMIT AGRI@8% Challenges & Way Out
January 15th, 2015, Hotel Shangri-La, New Delhi,
http://www.assocham.org/events.php

TERI-ITEC Courses 2014-15 Course V - Energy and Water-use efficiency
January 12th-30th 2015, Gurgaon,
http://www.teriin.org/our-events

The 5th Asia-Oceania Conference on Green and Sustainable Chemistry
January 15th-17th 2015, India Habitat Centre, New Delhi,
http://www.assocham.org/events.php

Summit-cum-Awards on Skilling India
January 20th, 2015, Hotel Le-Meridien, New Delhi,
http://www.assocham.org/events.php

EIA training programme - Understanding EIA: from screening to decision making
January 27th-31th, 2015, New Delhi,
http://www.cseindia.org/content/eia-training-programme-understanding-eia-screening-decision-making

YUVA Meet 2015
February 2nd-3rd 2015, India International Centre, New Delhi,
http://www.teriin.org/our-events

International Conference on Sustainable Fuels for IC Engines in Emerging Nations
February 2nd-3rd 2015, Taj Palace Hotel, New Delhi,
http://www.teriin.org/our-events,

Training Programme on Urban and Industrial Wastewater Treatment
February 2nd-6th, 2015, CSE, New Delhi,
http://www.cseindia.org/content/training-programme-urban-and-industrial-wastewater-treatment

TERI MDP on 'Green Growth and Businesses'
February 12th-13th 2015, Gurgaon,
http://www.teriin.org/our-events

Conference on Health, Safety, Security and Environment (HSSE)
February 12th, 2015,Vadodara, Gujarat,
http://www.ficci.com/events.asp

TERI-ITEC Courses 2014-15 Course VI - Renewable energy and energy efficiency
February 16th-6th March 2015, Gurgaon,
http://www.teriin.org/our-events

2nd SM@RT CITIES
SUMMIT 2015
February 17-18th 2015, India Habitat Centre, Delhi
February 20-21st 2015, Four Seasons Hotel, Mumbai
http://www.asappconferences.com/smartcities/

Seminar on Make in India Empowering MSMEs for Sustainability & ASSOCHAM SME Expo – 2015
February 17, 2015, Hotel The Lalit, New Delhi,
http://www.assocham.org/events.php

"Building better": Orientation training on sustainable building practices and policies
February 18th-20th, 2015, New Delhi,
http://www.cseindia.org/content/building-better%E2%80%9D-orientation-training-sustainable-building-practices-and-policies

3 day India- Africa experience sharing workshop on 'Mainstreaming Sustainable Water Management'
February 25th-27th, 2015, New Delhi,
http://www.cseindia.org/content/3-day-india-africa-experience-sharing-workshop-%E2%80%98mainstreaming-sustainable-water-management%E2%80%99

TERI-ITEC Courses 2014-15: Course VII - Natural Resource Security: Governance, Challenges and Opportunities
March 9th-27th 2015, Gurgaon,
http://www.teriin.org/our-events

TERI-ITEC Courses 2014-15: Course VIII - Integrated approach towards sustainable development
March 30th – 17th April 2015, Gurgaon,
http://www.teriin.org/our-events

TERI-ITEC Courses 2014-15: Special Course on Social Enterprise for Sustainable Development
September 15th – 3rd October 2015, Gurgaon,
http://www.teriin.org/our-events

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for inclusion of conferences, seminars, events
related to renewable energy, forest, cleantech, water,
climate change, green economics

Courses

Science and Management for Sustainable Living
www.bhoomicollege.org

Post Graduate Diploma Course in Sustainable Development (PGDM-SD)
http://bimtech.ac.in/

M.Sc. in Sustainable Development - Distance learning Course + information
The Global Open University
http://nagaland.net.in/

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

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

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

Post Graduate Diploma
IGNOU- Indira Gandhi National Open University
http://www.ignou.ac.in/

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

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

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

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

PG Diploma
Entrepreneurship Development Institute of India
http://www.ediindia.org/

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

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

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

MSc 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

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

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

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

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

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

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

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