

Editorial Speak

Seasons Greetings from us at Sustainability Initiatives. With the coming of this festive season of welcoming 2014; we at SI bring to you the very 1st issue of our quarterly magazine.

SI began as a dream for some. They were backed by the core group at the organization who further drove the dream of support by members like yo. We wish to grow bigger in number with wider scope of our work that will touch as many lives as possible.

Since 2011; Sustainability Initiatives has come a long way. From being recognized by GRIHA as patrons for the Western region in India to organizing a large scale 2 day conference 'Towards Urban Sustainability' with 300+ delegates. At SI we have reached out with our capacity building programs to all sectors and age groups; SI has held green building awareness programs for professionals to students from architectural and engineering. Our motto to spread the knowledge of sustainability is what drives us towards working across various disciplines and bringing vertical hierarchy distribution through dissemination of knowledge.

11.11.13 marked the 2nd anniversary of SI. We celebrated this day with our members to hear from them about their association with SI and get a feedback as to how we can grow with them for them. An annual report of all the activities done by SI through the previous years was inaugurated. A copy of the same can be found on our website.

SI was conceived with a core vision of systematic mobilization of creativity awareness through knowledge in the fields of Energy, Environment and Ecology with focus areas of work being categorized under Advocacy, Outreach, Research, Capacity Building and Knowledge based products. Sustainability Initiatives works on an open source platform which can be made available to any person or organization sharing the same passion of willingness to work with us on our areas of focus. Through this medium we encourage our members; professionals as well as students to bring to us an idea seed which can be further grown and nurtured with the support of SI and together we can work for the environmental benefit of the society at large.

The newsletter is to keep our members engaged with us in our activities and support us. We have tried to cover a variety of subjects and bring to our readers, analysis and approaches to sustainability.

Enjoy reading our In Focus: article on Green office audit where we put in focus how offices can go green.

I hope you enjoy the 1st edition of our newsletter and we look forward to your feedback and suggestions to help us improve.

Wishing you all very Green 2014.

en

Index

1 The
Green
Mile

2 Milestones
GRIHA with

3 Moving towards
a **Greener office**

4 Scrap Heaps behind the
Glory of

Ganeshotsav

5 Changing the
DNA of
Pune streets

en



6 Wealth
Waste from

7 NGO in focus:
SWACH

8 Technology
and
Innovation in
Sustainability

9 SI news

10 Connect
with **US**



The Green Mile

In recent times, we have seen architecture focused towards a more sustainable approach & there is a change in the way buildings are designed & built. Sustainable living is not a mere need of the hour now but a preferred way of life. This article gives an overview of the evolution of the green building sector in the building industry & PCMC's Green Building initiative for incentivising & thus promoting energy efficient building.

Architecture has gone through a series of transitions in the last 50 years and buildings have evolved from conventional architecture to sustainable developments. From 1960's to 2000's, with a backdrop of events like the Middle East war and the Oil crisis to the recent Iraq war, there has been tremendous development in the doctrine of sustainability and thus green or sustainable architecture.

With the dawn of the new millennium, architecture focused towards a more sustainable approach and we could see a change in the way buildings were designed and built. Green Buildings grew from being the need of the hour to a lifestyle change preferred by many. The most popular definition of Green building states that it is an environmentally sustainable building, designed, constructed and operated in a way to minimize the impact on environment. Green buildings save energy, increase comfort and create healthier environments for people to live and work, using improved indoor air quality, natural daylight, and thermal comfort. The energy generation, meeting water demands and waste management is through

sustainable practices and thus helps positive climate change.

India is now close behind US, Australia and Canada in promoting green buildings. There are number of rating systems available which help to rate the building under various green building criteria. LEED (Leadership in Energy and Environmental Design), GRIHA (Green Rating for Sustainable Habitat Assessment) and SVAGRIHA (Small Versatile Affordable GRIHA) being the leading two. Many governing bodies have also identified the benefits of green buildings and have taken steps to endorse and promote sustainable development through energy efficient buildings. Pimpri Chinchwad, NOIDA, Hyderabad, Chandigarh, are some cities which have incentivised green buildings. The Ministry of Environment & Forests has introduced a fast-track environmental clearance process for green buildings. This not only reduces the time taken for clearances, but also adds value by quantifying environmental benefits that are measurable and can be monitored. The Pimpri Chinchwad Municipal Corporation (PCMC) in Maharashtra has made a conscious effort towards

resource optimization and is one of the first Municipal Corporations in India to offer incentives to green buildings. Through incentivising green buildings, PCMC aims to increase sustainable development in the area and effectively ensure better energy, waste & water management. Incentives are offered through rebates in building premium charges for developers and rebates in property tax paid by the home-owners (Table 1.0). With a growing demand from property owners of small size buildings, GRIHA extended its rating system & developed a design-cum-rating tool 'SVAGRIHA (Small Verstile Affordable GRIHA)' for buildings less than 2500sqm. PCMC also offers incentives to buildings rated under the SVA GRIHA rating system.

GRIHA/ SVAGRIHA Stars achieved	Discount in Premium GRIHA/SVAGRIHA	Property tax rebate	
		GRIHA	SVAGRIHA
1 Star	10 %	--	5 %
2 Star	20 %	--	8 %
3 Star	30 %	5 %	10 %
4 Star	40 %	8 %	12 %
5 Star	50 %	10 %	15 %

Table 1.0

Until August 2013, 33 projects in the PCMC jurisdiction have been registered with GRIHA & SVAGRIHA rating systems. Of these, Ganga Skies has received a 3-star provisional rating & the administrative building for Pimpri Chinchwad New Town Development Authority has received a 5-star provisional rating. With approximately 1.2mn sqm built up space registered to be GRIHA compliant, it is estimated that there will be of 0.8MW of renewable energy installed and approximately 30-50% reduction in energy consumption.

A good incentive scheme is ineffective if there is no proper mechanism to implement and administer it. PCMC has formed an 'Environmental Engineering Department' which ensures the effective implementation of the incentive schemes for rated buildings & to achieve PCMC's goals towards sustainability. PCMC conducts regular awareness and training programs for developers, architects, consultants, etc to promote green buildings & remove

the barrier of green buildings being as extra construction cost. Though in some cases green buildings may incur a high initial cost but when the life cycle cost of a building is considered, green buildings are not expensive. These programmes are conducted with technical support of GRIHA secretariat which has also enthusiastically participated for the promotion of GRIHA rating system in PCMC.



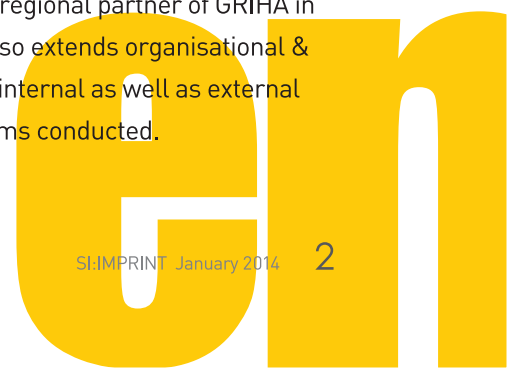
Ganga Skies Residential Project, Pimpri



Pimpri Chinchwad New Town Development Authority PCNTDA Building, Akurdi

The PCMC Municipal Commissioner formed a review committee consisting of representatives of all stakeholders with an objective to drive the GRIHA programme and to address technical issues & concerns faced by projects locally during implementation- so as to arrive at solutions that are beneficial to the society at large.

Sustainability Initiatives (SI) is working closely with PCMC since the initial stages of this initiative. SI has assisted PCMC to develop a structure of the incentives model for GRIHA & SVAGRIHA rated projects considering the best interest of all stakeholders. Being the regional partner of GRIHA in the western region, SI also extends organisational & technical support to the internal as well as external capacity building programs conducted.



Milestones with GRIHA

SI has been working closely with GRIHA and TERI and have collaborated for various capacity building programmes, outreach events and advocacy initiatives as well. SI is also recognized as a patron for GRIHA in the western region. This article gives an overview of over two years of the SI-GRIHA association.

Incentives framework for GRIHA and SVAGRIHA rated buildings in NMC, 2013

SI has also initiated work for creating an incentives framework for GRIHA and SVAGRIHA rated buildings under the Nashik Municipal Corporation jurisdiction. SI has facilitated stakeholder consultations with CREDAI and IIA bodies from the city to understand their expectations of incentives to promote the wide-spread building of environment friendly construction. SI is providing its expert advice to develop the best possible incentives framework which will help in wide-spread adoption of green building in Nashik and help in optimum use of resources through the medium of GRIHA rating.

One-day seminar on GRIHA rating system for CREDAI at Nashik, 14 November 2011

CREDAI- Nashik and Indian Institute of Architects (IIA) Nashik Chapter approached SI to organise a seminar for creating awareness about green building amongst the architect and developer community in the city. The seminar was attended by more than 70 professionals. Ar Poorva Kesar, Ar Priyanka Kochhar, Mr Shirish



Deshpande, Ar Anagha Paranjape-Purohit, Ar Nilesh Gandhi and Ar Hrishikesh Kolatkar trained the participants for achieving green building under the GRIHA rating system. The seminar focused on planning, designing and building of environmentally sustainable buildings and different ratings under which they can be rated.

Half-day interaction with Dr. R.K. Pachauri for CREDAI at Pune, 11 January 2012



Nobel Laureate Dr R K Pachauri was invited by Sustainability Initiatives to interact with the developers and architects of the city on the issue of Green Buildings. The interaction event was conducted in association with CREDAI Pune-Metro. The interactions focused specifically on GRIHA, a rating system that is developed by TERI (The Energy and Resources Institute) which is headed by Dr R K Pachauri. Over 45 developers from Pune and Pimpri-Chinchwad participated in this interaction with Dr R K Pachauri about design and evaluation of green buildings and the GRIHA rating system. Hon Commissioner of Pune Mr Mahesh Pathak, Hon Mayor of PCMC Mr Yogesh Behl and Mr Sanjay Deshpande of CREDAI also addressed the audience at this programme.

One-day workshop on GRIHA rating system for PCMC officers, 24 April 2012



Sustainability Initiatives organized a training programme for the officers of PCMC to give them an insight into green building design, processes adopted to design, operate and evaluate green buildings under

GRIHA certification. The GRIHA registration procedures were discussed in detail during this workshop so that PCMC can undertake an incentives mechanism to reward GRIHA rated building projects. This program was organised in joint association with PCMC and the GRIHA Secretariat. Ms Priyanka Kochhar, Mr Apoorv Vij, Ar Namrata Dhamankar, Ar Poorva Keskar, Ar Anagha Paranjape-Purohit, Ar Pranati Shroff gave the 40 engineers from Environment Engineering and Building Permissions department an overview of the GRIHA rating system. Ar Usha Rangarajan from Landmark Design presented a case study on the PCNTDA administrative building which is registered under GRIHA.

Half-day interaction between GRIHA Trainers & Evaluators at Pune, 12 May 2012

As a patron of GRIHA in the Western region, SI organised a session to communicate and interact with the GRIHA Trainers and Evaluators. Through this session, SI, presented a proposed schedule of activities for the promotion of GRIHA rating system in the region. SI initiated a dialogue on how the GRIHA Trainers and Evaluators across Maharashtra can be actively involved in the proposed activities as well as other GRIHA initiatives in the region. Ms Priyanka Kochhar from GRIHA interacted with the 40 trainers & evaluators who attended this programme which was coordinated by Ms Shruti Vaishampayan from SI.



Three-day workshop and examination for GRIHA Trainers and Evaluators at Nashik, 17-19 May 2012



Sustainability Initiatives organized a hands-on training programme in association with MEDA and the GRIHA secretariat at Nashik. The objective was to train participants to become GRIHA Trainers and Evaluators. The aim of this training programme was to impart training on the compliance, assessment & evaluation of all 31 criteria for buildings/ projects to be rated under GRIHA and to help enhance knowledge on green buildings. Expert trainers from GRIHA, TERI and Sustainability Initiatives, Ar Apoorv Vij, Ar Anagha Paranjape-Purohit, Ar Poorva Keskar, Ar Pranati Shroff, Ar Hrishikesh Kolhatkar, Mr Shirish Deshpande, Dr S Rajkumar, were some of the faculty for this workshop. An examination, to get certified as GRIHA Evaluator and/or Trainer was conducted.

GRIHA Regional Conference 'Towards Urban Sustainability- the GRIHA approach' at Pune, 12-13 October 2012

This 2-day conference on Urban Sustainability brought together experts and activists from various fields that work in the sector of Urban Sustainability. The conference was addressed by prestigious and eminent speakers like Dr Madhav Gadgil, Dr Ajay Mathur, Mr J R Tanti, Ms Mili Majumdar, Ar Marcus



Wilshere, Mr Arun Deshpande, Ar Rajiv Mishra, Mr Vinay Hardikar, Ar Jayesh Hariyani, Ar Leonardo Pasin, Mr Sanjay Kulkarni, Ar Anshul Gujarathi, Ar Usha Rangarajan, Ar Priyanka Kochhar, Ar Shreya Dalwadi, Mr Farhath Mirza, Mr Kapil Trimal, Mr Sameer Belvalkar, Ms Urvi Desai, Dr Prakash Barjatya among others. The conference focused on the discussion of the broader issues of urban sustainability and how GRIHA approaches this goal



through its certification mechanism. The speakers put forth their views on how the goal of urban sustainability can be achieved through policy mechanisms at national as well as community level. The participants also got a chance to interact with Ar Marcus Wilshere and experience the interactive urban planning tool designed by him. At the end of the first day, participants were given a tour of the Suzlon One Earth Campus and on the second day a visit to the GRIHA rated PCNTDA building was arranged, both of which are exemplary green buildings. The conference was attended by over 300 delegates from fields of architecture, real estate, environment, urban planning and engineering.

Half-day seminar on PCMC's GRIHA initiative at Pimpri Chinchwad, 22 January 2013



A half day event was organised at the Auto-Cluster auditorium to promote the incentives scheme offered by PCMC for GRIHA buildings. The programme was organised to connect with the developers and understand their views regarding GRIHA rating system and the incentives scheme offered by PCMC for GRIHA rated buildings. Representatives of CREDAI-PCMC, Marathi Bandhkaam Vyavasaik Association (MBVA) spoke of behalf of the developer community. The aim of this programme was to interact with the developers to understand their expectations and encourage them to get their

buildings rated under the GRIHA rating system. Ar Mili Majumdar and Ar Priyanka Kochhar, from GRIHA Secretariat, Mr Bhaskar Deol from Natural Resources and Development Corporation (NRDC) and Hon. Commissioner of PCMC Dr Shrikar Pardeshi addressed over 100 developers, architects, consultants and PCMC officers present at this programme.

SVAGRIHA seminar at Pimpri Chinchwad, 22 August 2013

This programme was organised by Sustainability Initiatives to announce the incentives offered by PCMC for buildings rated under SVAGRIHA rating system and was organised at the Auto-Cluster auditorium in Akurdi. This programme also introduced the SVAGRIHA system which is a design-cum-rating tool for buildings with built-up area less than 2500 sq.m. and the incentives offered by PCMC for buildings rated under this rating system. Mr Apoorv Vij and Ms Priyanka Kochhar from GRIHA secretariat briefed the participants on the SVAGRIHA rating system and demonstrated the SVA GRIHA tool. Hon Commissioner of PCMC Dr Shrikar Pardeshi, Mr Sanjay Kulkarni of Environmental cell, Mr Pathan of Building Permissions department, Mr Kacchi of Town Planning department were some of the other officials present for this event. Over 120 developers, consultants, architects, PCMC officers participated in this programme along with representatives of the media.



Moving towards a Greener office

We spend more than half of our day in the workplace & so it is necessary that our efforts to reduce the carbon footprint should start from our offices. SI conducted an environmental audit to understand how efficiently or inefficiently an office consumes resources & identify potential areas for improvement. A week long event helped to create awareness on the local environmental issues & promotion of sustainable practices in the office.

Green Office Week (GOW) is followed widely around Europe, UK and South Africa where workers are encouraged to bring about behavioral changes to positively impact the environment. The weeklong event creates awareness on the local environmental issues and promotes sustainable practices at work places through various activities. Sustainability Initiatives conducted one such exercise at VK:a architecture's office in Pune with an aim to assess the current scenario in resource use and reduce the stress on environment. The GOW was conducted in two phases; Firstly in depth assessment of existing daily energy, water use and waste generation was conducted; after which a week was dedicated to raise awareness amongst the employees to bring about minor changes in behavior to efficiently utilize resources in the office. After comparing the consumption figures from before and during the GOW, savings were determined. SI followed the process of conducting an environmental audit of the current working practices and operations in the office through physical measurements, behavior observations and interviewing the employees. The electricity and



Materials collected from waste audit



Posters to remind switching off lights when not needed

water bills were also analysed to note trends and seasonal variations. Some standard parameters like energy performance index, thermal comfort, and

optimum illumination were determined with the use of instruments such as clamp meter, thermo-hygrometer and lux meter. This background data led to identification of potential areas for improvement and formed the basis for the recommendations for reduction of current use. Some of the



Employees participating in the sketching competition



Good use of day light till noon hours

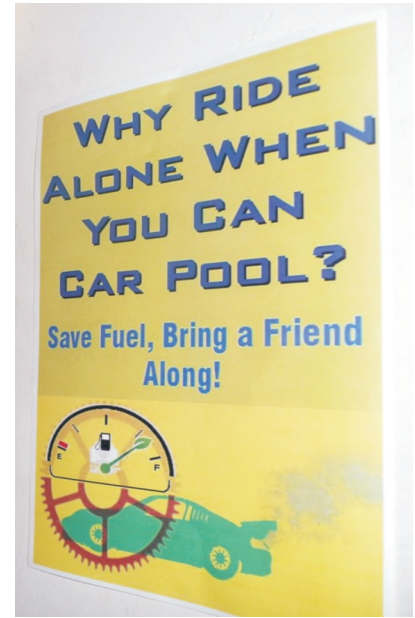


Take the stairs- they not only save electricity but are also a good exercise

recommendations included, replacing of old electrical appliances with energy star rated ones, change in office schedule to make use of available daylight & cooler working hours in the morning and changing behavioral habits of people to avoid wastage of energy and water.

Before the proposed changes were implemented, a brief session was arranged with the employees & management to assess the feasibility of the action plan and understand the willingness of employees to participate in the activity with enthusiasm. A thematic

GOW was organized with a different focus on each day of the week. Water, Electricity, Transport and Waste were the focus areas from Monday to Thursday and Friday was dedicated to interactive sessions and competitions.



Why ride alone- car pool

The GOW saw a good participation from the employees of Vka architecture and at the end of the week a feedback survey was collected to evaluate the feasibility of implementing the suggestions on a long term basis. This feedback survey showed that 46% of the employees felt that they were more productive during this week than regular working hours. They also faced less traffic during their commute to the office and hence were less stressed. Almost 95% of the employees did not use the lift during this week and some continue to do so. At the end of the week 14 kg of paper unsuitable for office use was sent to a handmade paper factory for recycling and 4 kg of paper was reused to make notepads for office use. Over 25 litres of water was collected daily from leftover water and bottle rinsing; this gave around 125 litres/week water which was used for mopping the floor. Since the office timing was moved to an hour earlier, the fans & lights were needed later than usual due to the cooler and calmer hours of the morning. This helped save up to 800 units of electricity. The car-pool day on Wednesday resulted in savings of 6% of total fuel use per day. Our observations showed that 35% less electricity was used during the Green Office Week by implementation of energy conservation measures. Collectively, through this week long event the company could save up to 3500 INR per week without any monetary investment.

Scrap Heaps behind the Glory of Ganeshotsav

Ganesh festival is one of the most jubilant & historical celebrations. With the increasing scale of festivities the city's existing issues of river pollution, waste management etc. are also aggravating. Sustainability Initiatives conducted a study to estimate the magnitude of waste generated & identified the varieties of materials like plaster of paris, thermocol, coir, wood, etc. that lie in the scrap heaps.

Ganeshotsav is an apt example of a mass ceremonial event where people display their devotion for Lord Ganesha through numerous pandals around the city, smiling Ganesha statues, artistic thermocol decorations, elaborate flower arrangements. Truly, this festival is the embodiment of devotion, faith, social celebration & communal culture of India. Pune alone has more than 3000+ Ganesh mandals that carry out various activities during the ten day festival. What is left behind after a fortnight of jubilation, once the fervour has died down, is important to take stock of after the festival. Somewhere in the midst of celebration, we have left behind the idea of sustainability and responsibility towards our environment and future generations. Although citizens are continuously being made aware of the noise pollution, effects of idol immersion in rivers and appropriate treatment of Nirmalya; the consequences of waste generated during processions, pandal decoration and their end-life treatment remain relatively ignored. Sustainability Initiatives attempted to study the current trends in decoration themes, types and quantities of material used and explored the



Segregation of the nirmalya from the 'Kalash' is another job

disposal method of these materials.

The results of primary data collected from the mandals showed that out of the 50 mandals surveyed, 43% utilize reusable decoration like portable fibre sets, electrical lighting theme and artificial flower decoration. Others use materials like plaster of Paris, fresh flowers, poster exhibition etc. The amount of plaster of Paris used varies from about 50 to 150 kg per pandal whereas floral decoration for procession chariots varies from 100 to 400 kg per mandal. 90% flex is reused as roofing material in slums and road



Floral decorations are most popular for processions

side stalls or even transported to villages for agricultural purposes. After analysing the PMC figures, it was found that there is an increase of 30% in the waste collected in the ten days accounting to an average of 400 tonnes / day. Study also showed that not all the generated waste is collected by the PMC; thereby leaving a huge amount of waste unaccounted for. Floral decorations that costs anything from 10,000 to 3.5 lakh Rs. land-up in trash just hours after the procession. A quick comparison revealed that with the production cost of flowers used by an average mandal one can grow 375 kg of onions. The online opinion survey brought into light that according to people the most significant driver of this large scale of celebration is the economic aspect of life. On the occasion of the festival, various vendors, decorators, artists, mandap contractors get immense business opportunities. Another aspect that came through the survey was that according to people river pollution is the most significant impact of the festival and solid waste pollution being the 2nd most important impact.

Another observation the most important during the festival is that no additional efforts are made by the civic authorities to manage the increase in waste during festivals such as Ganeshotsav. In addition there are no current methods to treat the new waste categories such as plaster of Paris, thermocol, flex etc. generated during the festival. The Nirmalya or floral offerings are disposed in plastic bags which makes its further treatment inefficient and cumbersome. Hence people need to be made aware of the appropriate method of waste disposal. As

mentioned above, the floral decorations during the processions utilize huge quantities of exotic flowers like orchids, carnations that are cultivated in poly houses and are not only expensive but are also high in water and energy demand. Hence a shift in rental fibre sets or other reusable material is necessary. After having put forth the results, the study discusses some recommendations to improve the waste management system specific to the festival. The Pune Municipal Corporation can promote reusable decoration material and provide incentives through competitions rewards and campaigns. Allotment of temporary waste collection bins for each waste category like flex, plaster of Paris, thermocol can be done. The maximum permissible limit for use of inorganic/ non reusable material can be defined and mandals can be penalised for exceeding the limit.

IMPrint Trivia

About 400 tonnes/ day more waste than average collected on the visarjan days mainly the 3rd, 5th, 7th & 10th. About 500 tonnes of Nirmalya was collected by PMC and SWACH during the 10 day period. Average 250 kg of fresh flowers are used during procession decoration.

"During the survey, it was observed that some mandals segregated their waste into organic, plastic and paper, or converted their biodegradable waste and floral offerings into manure. However the number of such mandals are less. In the coming years, NGO's can approach more mandals & make them aware of proper waste management". -

Pournima Agarkar, Volunteer

GAIA

Changing the DNA of Pune Streets

Streets are a vital issue related to Urban Sustainability. Safe, comfortable & environmentally viable streets are the need of every city and a basic necessity for the citizens. The first part of a three series article will give you an insight on the need of having an Urban Street Design Guideline & give an overview of the different elements that constitute the streets.

Streets are the nervous system of a city. As we use streets for numerous activities, like commuting, shopping, socializing, parking, walking, etc., streets are an indispensable part of our daily lives. It is thus necessary that streets should fulfill the needs of all kinds of street users and support all the necessary functions. A network of streets of various widths, types, and functions binds the city and provides

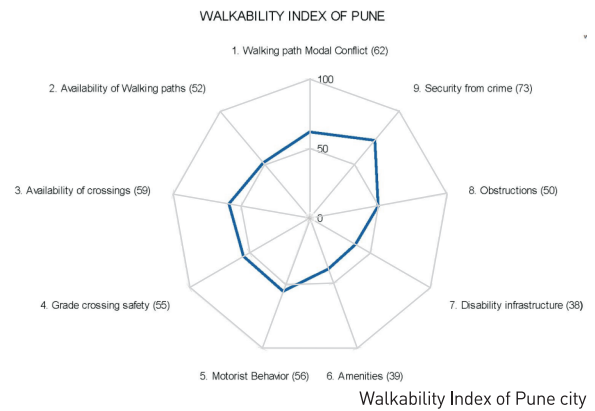
accessibility to different parts of the city. This network of streets consists of wide streets and narrow lanes, busy major roads and calmer neighborhood streets, streets abutting recreation areas and streets leading to cozy residential colonies, iconic streets and historic squares, big transport interchanges and lively pedestrianized streets, and from large junctions to hidden and sometimes forgotten nooks and crannies.

Different purposes of streets

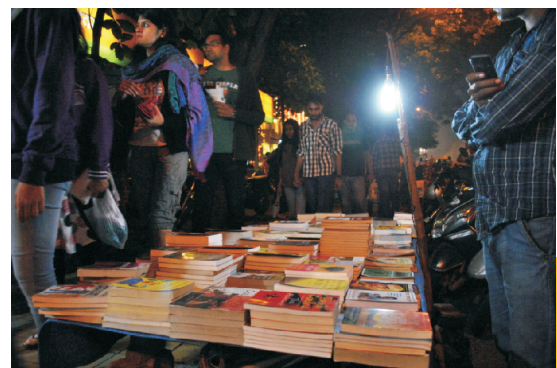


Pune is a city which experienced significant development leading to sudden expansion in the city limits, adversely affecting the organized development of the street pattern required to sustain the rapid expansion of the city. We rarely see properly planned road structure in the city. Roads were simply developed as per the requirement of the growing parts of the city. Hence, in Pune, we fail to have the planned grid and design of road network vis-vis planned cities like Delhi or Chandigarh. It is observed that while traffic planning and street designing in other countries, streets are designed considering high speed mobility of predominantly private vehicles. This vision does not take into account the variety and types of activities that actually take place on and around Indian streets. Along with the consideration of motorists on Indian roads; it is of utmost importance to also consider the needs of pedestrians, cyclists and public transport while designing and developing streets. This will lead to making our streets safer, lively and environment friendly. This has led to an urgent need to come up with a proper set of guidelines for street design which should be prepared keeping in mind the aspects to ensure better and efficient working of the streets and safety of all street users. Taking a note of this, the Pune Municipal Corporation has initiated work on developing the 'Urban Street Design Guidelines' for the city of Pune. Urban Street Design refers to the way streets of a city are designed keeping in mind important factors like street utility, adjoining developments, user profile and future development. There are various reasons to emphasize the need of Urban Street Design Guidelines for Pune; the most logical reason being that the streets have multiple use; from commuting to parking, walking, business, etc. and thus making it important to properly organize the various elements for efficient use of streets. After analyzing the traffic pattern and road network for the city, it was observed that the capacity ratios of the roads have exceeded their carrying capacity. The main reason being the rising number of private vehicles, cars as well as two-wheelers, leading to congested roads and thus increasing the average commute time. The high vehicle usage also results

into the issues like accidents and pollution affecting the comfort and safety of pedestrians and cyclists. This discourages people to walk or use cycles and encourages the use private vehicles instead, leading to an increase in number of vehicles on our city roads. Safety is the most important aspect which needs to be addressed in the Urban Streets. A study initiated by the 'Clean Air Initiatives' assessed various Indian cities on their 'Walk-Ability' quotient. Their analysis of Pune showed that the footpaths are not in the best condition to walk due to number of obstructions. The footpaths are also encroached by hawkers, in some places they are broken and of varying levels. At times we also see that different elements like, cable units,

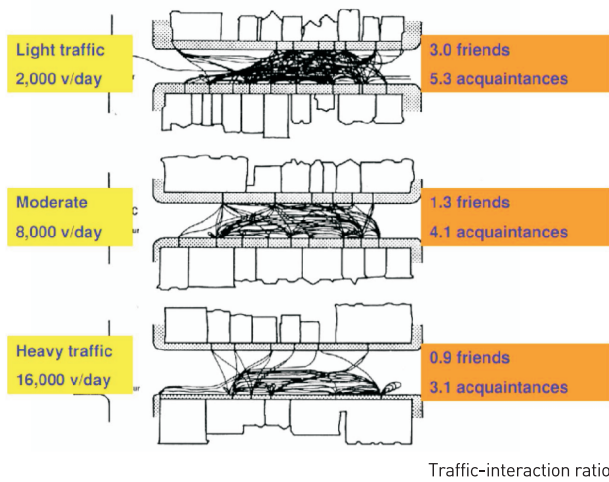


Unsafe pedestrian crossing



Encroachment on footpaths

trees, etc. are blocking the paths leading to inconvenience of street users. Sometimes, accidents take place as there is insufficient precaution taken while conducting road repairs and works. This leads to safety being considered of prime importance. The improper design of streets make them inefficient and indirectly affects the increase in number of vehicles and traffic congestion, further leading to rise in pollution. This environmental pollution has been causing various physical and mental problems to the citizens. Streets space that was once used for river beds, canals, hills, trees etc. has today given way for roads and infrastructure development.



Our social lives have not escaped from being affected by the street design flaws. Studies conducted across the world, have proved that traffic and congestion have an indirect proportion to our social lives. An increase in traffic and the width of the streets tend to reduce peoples' willingness to move out and socialize due to the inconvenience caused while commuting or crossing streets, thus reducing the average daily interactions between people, restricting gatherings and communal recreational activities. Many of the above discussed issues can be attributed to a mainly flawed street design for any city.

To summarize, an ideal layout of the street should be designed such that it provides ease and comfort to all street users without damaging the environment.

Based on references from various transportation studies and street design guidelines, three important goals have been identified which should be achieved

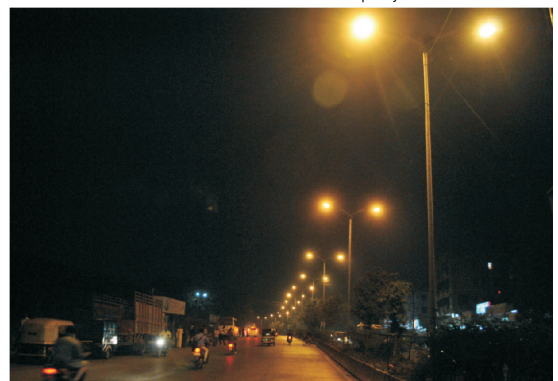
while designing any street to assure an efficient design of streets. For developing the Urban Street Design Guidelines for Pune the following goals have been kept in mind:



Mobility and Accessibility: The citizens using the streets should be able to commute on time, safely, and in a way that is convenient to them. All such elements related to & responsible for mobility by any means on street are considered. Some of these street elements are carriage ways, footpaths, cycle tracks, service roads, parking for different vehicles, BRTS bus lanes, metro stations, flyovers, subways etc. The design of streets should be such that along with the needs of the citizens, special needs of senior citizens, children as well as the physically challenged are also addressed and catered to.

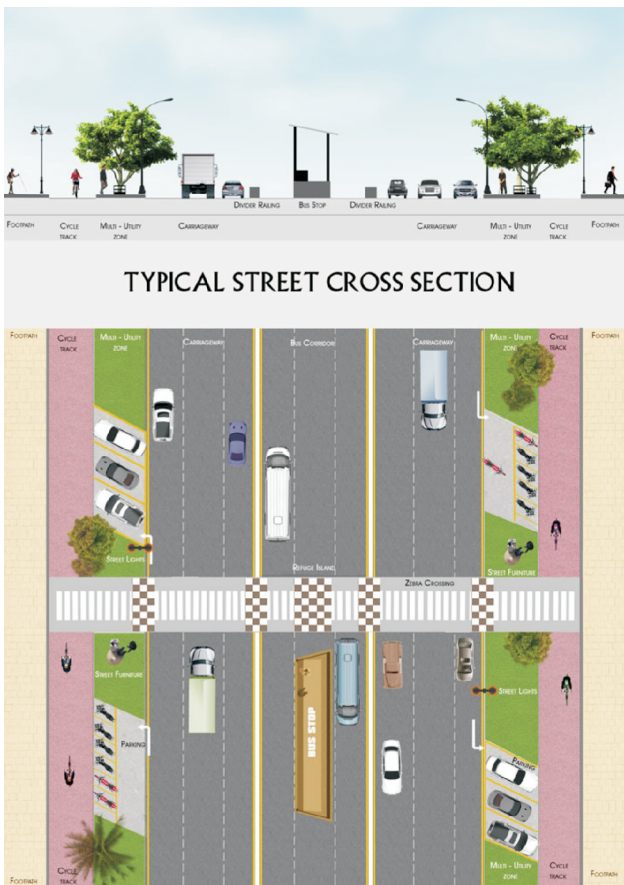
Safety and comfort: Streets should be clean, safe and pleasurable to walk as well as to drive. Walking or cycling should be looked upon as a comfortable option by all, only then this will lead to reduce traffic congestion in the city. All citizens; men and women, should feel comfortable and safe to use the streets. Badly designed streets lead to incidents of accident, harassment & mugging. To increase the safety of commuters and make it more comfortable it is necessary to consider elements such as dead width

Properly illuminated streets



for footpaths, multi utility areas, proper illumination of streets & pedestrian pathways, legible signage placed at proper locations, properly placed crossing bays, speed breakers, etc. Some traffic calming measures also need to be undertaken to reduce the incidents due to rash driving and over speeding.

Ecology and Environment: The design of the streets and the elements on and off the streets should be such that they have the least possible adverse impact on the natural surroundings. They should cause no harmful effect on the environment of the streets. The responsibility lies with urban planners and designers to ensure streets are designed and developed considering environment conservation. Trees and plantation space, public toilets, garbage bins, provisions for storm water drainage, facilities for rain water harvesting, well planned drainage channels, MSEB box/ cables are some of the factors that need to be addressed.



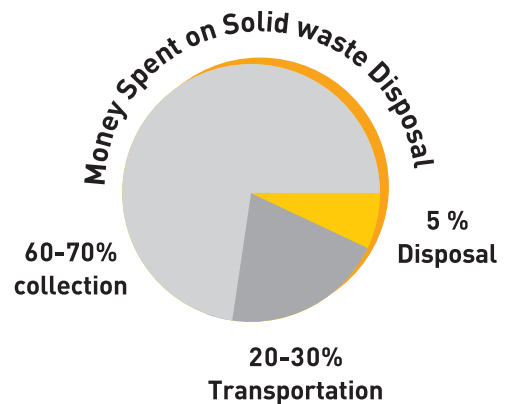
Typical Street Plan

These goals will help us develop guidelines which are in the best interest of all street users and balance the needs of all citizens.

This is part one of a three part series on developing the Urban Street Design Guidelines for Pune city.

IMPrint Trivia

The urban local bodies spend approximately Rs.500 to Rs.1500 per tonne on solid waste for collection, transportation, treatment and disposal. About 60-70% of this amount is spent on collection, 20-30% on transportation and less than 5% on final disposal.



Wealth From Waste

The business plan chalks out a strategy to deal with the ever increasing issue of solid waste management in the urban areas & how this waste can be used to generate biogas. This was an award winning business plan by students of Symbiosis' MBA in Energy & Environment programme.

Symbiosis Institute of International Business (SIIB) has a dedicated 2 year residential MBA program with majors in Energy and Environment. Under this program students work to generate a business plan for a business venture relevant to the latest industry needs and requirement.

This article presents a snippet into the business plan prepared by 6 students from the outgoing batch. The business plan chalks out a road map to address the alarming issue of Solid Waste that our cities generate on a daily basis and how this waste can become a powerful resource for generation of biogas. This business plan has also won the group many awards.

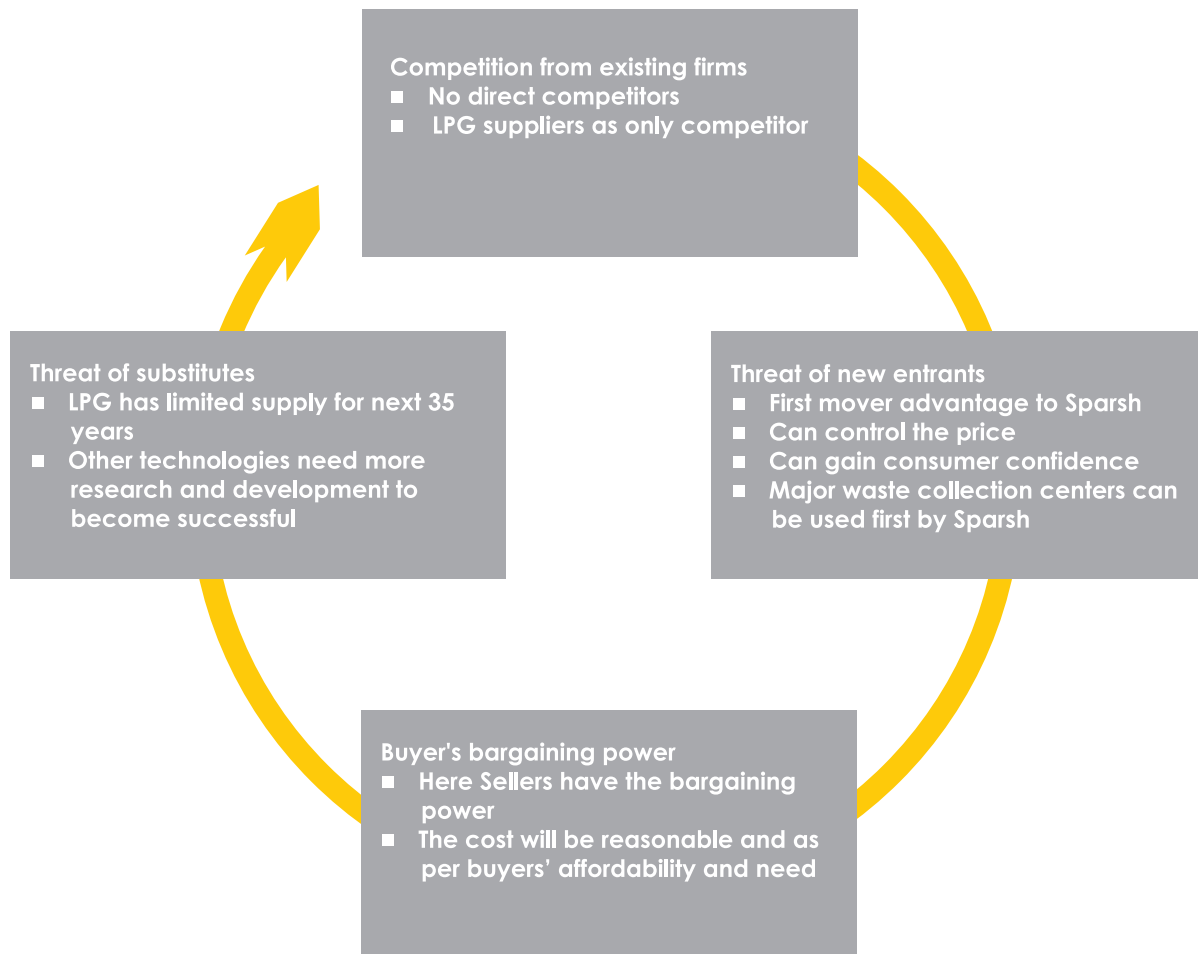
Sparsh Bio Innovations LLP

The inception of Sparsh was done to provide solutions to the most pressing issues of the day which include the alarming increase in the cost of LPG as a cooking fuel, waste management and waste handling issues, need for Clean fuel and green environment, energy poverty prevalent among the rural as well as the urban poor and energy security of the country.

Sparsh Bio – Innovations is a limited liability partnership firm which will focus primarily on the

development and production of biogas based cooking gas cylinders from waste that is collected from the farmer's co-operatives i.e. agro waste, waste from IT industry, hotels, neighboring places and other waste generating places like marriage functions- food waste and most importantly waste from municipal corporations- Municipal Solid Waste (MSW).

The idea of the business plan is to collect the waste from the local community as well as from the municipal corporation and then to segregate it into organic and inorganic waste. The organic waste is used as raw material in our main unit. The biogas produced in the main unit is sold and distributed to the consumers in the city in the form of compressed biogas cylinders at lower rates than the present LPG cylinders. Even the waste products of this unit can be sold as manure to earn both profit and carbon credits. The team studied the potential target customers for this business venture to be catering services in IT industries, street vendors, academic institutes and hotels and restaurants. Study of their competitors led them to analyse the current market trends & the need for such a product.



Consumption Process



The structure of the new company is based on the concept of 'skip level structure' and 'The SPFS or The Sparsh Point Factor System' which was designed keeping our needs as a growing, evolving and green organization in mind

The Product: Compressed Biogas cylinder for cooking purpose.

Brand- Sparsh Shakti

Weight: 18 kg

Color: Green

Design: Cylindrical with rollers at base

Features: Gas (with some other gases as mixture)

Specifications: Ignition temperature = 600 °C, calorific value = 7000- 8000 kcal/m³

Service: Sparsh products have free quarterly services for 1 year.

The pricing was decided based on the market research where the team found out that Rs 300 – 350 was the most preferred price for the cooking gas cylinder & hence have priced our product at Rs 375 for Sparsh Shakti which is reasonable and not far from the market expectation.

The Sparsh manufacturing plant and gas generation plant will be located at Mulshi near Mulshi Lake which is about 30 km from Pune city with the headquarter of Sparsh Bio-innovations located in Pune. The business will be promoted via Sparsh family cards, local shops, online marketing, banners, brochures and magazines in and around municipality areas, local business areas etc. The business of Sparsh is planned to work in three phases spanning over time duration of 5 years.

In phase one the waste is collected from the local community as well as from the municipal corporation and is segregated into organic and inorganic waste. The organic waste is used as raw material in our main unit. The biogas produced in the main unit is sold and distributed to the consumers in the city in compressed biogas cylinders at lower rates than the present LPG cylinders. Even the waste products of this unit can be sold as manure to earn both profit and carbon credits.

In the second phase the production of assembled small portable biogas plant will be done. It will be in two designs and sizes and will be sold to the rural and semi urban areas. The user can directly use the daily organic waste produced in the house or residential complex and can generate biogas for cooking purpose. The waste from it can also be used as manure.

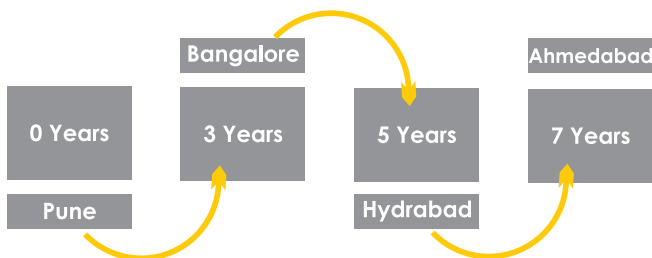
In the third phase which is in development stage the plant size is to be increased with ability to generate higher amount of biogas so that it can be converted to electricity by using fuel cell technology. This will be fed into the local grid and can also be used for captive power generation.

The basic concept of the design is based on a process known as Up flow Anaerobic Sludge Blanket (UASB) developed by Dr. Lettingah in the Netherlands where the waste with suitable quantity of water will be collected in a grit removal cum mixing chamber where grit will get settled at the bottom and feathers will be removed from the top using slow moving scrapper mechanism. The mixing mechanism in the chamber will help in preparation of homogenized slurry. The homogenized slurry is then fed into a modified UASB digester. The Anaerobic Digester is a two stage hybrid High Rate Bio-methanation Digester. Both the digesters contain internal proprietary modular system. They are also provided with gas tight top cover with slow revolving scum breaker mechanism which breaks the scum. The treated overflow from the outlet of both the digesters is connected to recycle chamber and then is partly recycled into the system for slurry preparation and the rest to be treated separately. A three phase separation takes place in the digesters; Biogas- which will be collected and will be bottled after enrichment; organic manure which is periodically removed and can be used as good organic manure and the overflow part of which will be recycled for slurry preparation and remaining to be treated separately. The Biogas generated from both the digesters is collected in dry membrane type of biogas holder housed in an enclosure/room. The Biogas utilization system comprises of Biogas Blower, Biogas

Receiver tank with requisite safety and automation. The pressurized biogas will be cleaned using a scrubber and then used for power generation or bottling after enrichment. The sludge from the bottom of both the digesters is periodically removed and can be used as good organic manure. The liquid fraction/ Overflow can be discharged after suitable dilution. Biogas flare is used to flare the biogas when not in use, excess generation or during shut down. Green Quadrilateral Expansion Plan: With an aim to



grow the business in other cities as well the following expansion plan is worked out. Any business requires monetary investment to kick start as well as to sustain.



Sl No.	Description	Amount In Rs.
A	Total Capital Investment	128,500,000
B	Means of Finance	
	1. Venture capitalists	12,850,000
	2. Secured Term Loan	77,100,000
	3. Capital Incentive subsidy@30% for Project Cost	38,550,000

A. Operational Parameters:

Debt: Equity Ratio	60:40
Cost of Debt (10 Years)	13.50 %
Return on Investment	36 %
Security Margin	37.72 %
Depreciation (SL)	4.93 %
Project Life	20 Years
Taxes	0 %

B. Per Unit Cost of production – Sparsh Shakti:

	Particular's	Cost Rs.
Variable	Procurement of residue	20
	Transportation of residue	60
	Additives (Oils & Gases)	20
	Chemicals	5
	Packaging material	40
	Labour	15
	Utilities	75
	235	
Fixed	Plant Overheads	36
	Office Overheads	16
	Store Overheads	21
		73
	Total per unit cost	308

C.Scenario Analysis:

Scenario	Unit Sales	Cash Flow (Rs.)	NPV (Rs.)	IRR	Pay back
Normal Approach	78,270	40,834,100	15.55 Crore	36 %	2.9 years
Pessimistic Approach	45,000	20,690,000	2.61 Crore	19 %	4.8 years
Optimistic Approach	90,000	46,180,000	18.05 Crore	41 %	2.2 years

With all logistics and investments worked out the business venture looks to be a profitable venture in the long run and also a good alternative for the conventional gas cylinders.

NGO in Focus



A higher level of self-reliance

SWACH (Solid waste collection and handling) or Swach Seva Sahakari Sanstha Maryadit, Pune is the country's first wholly owned cooperative of self employed waste pickers since 2008. An autonomous enterprise SWACH provides front-end waste management services to Pune. Since its' inception, it has come a long way in successfully initiating a lot of campaigns to create awareness amongst the citizens, on solid waste management. Sustainability Initiatives (SI) got in conversation with Mrs. Manisha Desai (MD), Outreach Manager SWACH, talking more about Swach and its initiatives.

SI: Since 2008, Swach has come a long way.

How has the journey been?

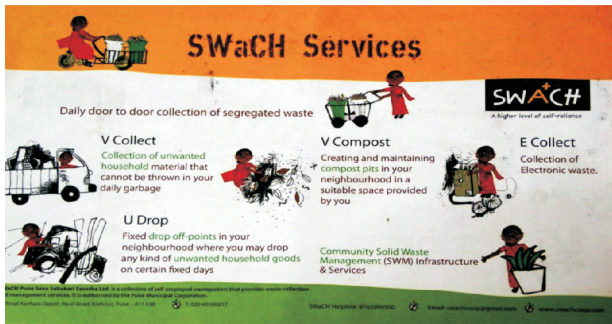
MD: Well, we started off with Kagad Kach Patra Kashtakari Panchyat (KKPKP) in the year 1993 where we felt that there should be some change in the working conditions and livelihood of waste pickers from what was regularly happening. So that is when the model of SWACH was conceived which focused on building an institution or a cooperative of waste pickers where they would get a chance to become more aware about solid waste management and improve their livelihood. It has since then been a partnership between the Pune Municipal Corporation, the waste pickers cooperative and citizens who have helped us to take a step towards our goal of creating a self-sustainable social enterprise. We wanted to create livelihood with good working conditions and also socially uplift the waste pickers to make them much more independent. The journey so far has been great. We've achieved quite a lot; but there still is a lot of work to be done, lot of perceptions to be changed and a lot more citizens to be made aware.

SI: Swach; one of the largest cooperative of waste pickers in the country is due to the strength and support of the waste pickers. Tell us more about the various initiatives taken by Swach for their empowerment.

MD: The waste pickers indeed are the soul of the Swach model and its contribution to the solid waste management project is immense irreplaceable. They collect everyday dry waste which is further segregated into several categories before it enters the recycle stream. They have a role to play in munching this dry waste thereby conserving the environment.

SWACH rally for dignity





Poster for activities done by SWaCH for waste management

The income of these waste pickers is also two-fold. Firstly, from citizens directly and secondly, they have ownership over the recycled products from segregated waste. So, over the years through the medium of this decentralized model of solid waste management, a change in the livelihood of the waste pickers is seen evidently. They have shorter hours of work, direct reach to the waste, safety equipments, push bags and other perks. Earlier, waste pickers use to roam around on streets collecting waste in a garbage container. Now, they move around in uniforms with identity cards and a push cart from door- to door which gives them a sense of dignity.

SI: How have citizens responded to your initiatives? What changes have you seen in their behavior and approach in the past few years?

MD: The main challenge over the years in dealing with the citizens has been to convince them to avail of our services and secondly to actually get them to segregate their waste at household level. Citizens would often question like why are they paying the waste pickers if they themselves have to segregate the waste? The real challenge was to actually make them realise their role as citizens and actually get them to segregate their waste.

But I must say; that over the years, the understanding amongst the citizens has increased and they are willing to work and cooperate with the waste pickers in making this model work. There have been many citizens who have played their part and segregated their waste on their own; but the number is still very small with only 30-40% people actually segregating their waste at household level.

SI: This year Swach launched 'Send it back' and 'V-collect' campaigns. Give our readers an insight into these initiatives.

MD: On a daily basis, waste pickers have to directly handle sanitary napkins which are not disposed off in the right manner. So, over the years we've been trying to find an alternative for the safe disposal of these napkins. The one thing that we designed for under this are disposable bags which come with a label for the waste pickers to identify what is inside them and whether it can be recycled or not. This has definitely made the task easier for waste pickers; but at the



V-collect Waste collection drive by Swach



Send it Back campaign



Sanitary Napkin Disposal bag

same time we also felt the need to work with companies who are producing these sanitary napkins to manufacture eco-friendly products themselves. The material with which these sanitary napkins and diapers are made presently are non-biodegradable and end up in landfill; to which PMC's suggestion is incineration which again is very harmful. Since according to the Plastic Management Rule in 2011, it is mandatory for the companies to look at the full life cycle of their product, we are trying to have a dialogue with these manufacturers. This is termed as 'Extendable Producers Responsibility' (EPR) but nothing has worked out till date. That's when we decided to take this campaign. On International Women's Day, we send bulks of soiled sanitary napkins and diapers waste to these companies to make them realize the epathy of waste pickers who handle this on an everyday basis. The companies finally came to Pune for consultation with Mr. Suresh Jagtap, Deputy Commissioner, Solid waste Management. But again till date there has been no commitment or progress on this front. We have now asked the citizens to step in and write letters to these companies expressing their agitation. Our V-collect campaign has been a successful story many ways where we ask corporate companies to send old used clothes and any other old items for recycling. These items are then used or recycled as per requirement.

SI: Talking about your green school program, how is it different from the regular environmental studies course taught in schools?

MD: What is very different about this program is that it gives an hands-on experience to students. It is clearly an activity based program. For example: If we want the children to learn about energy consumption or waste management, we ask them to do an energy audit of their school in groups and find out the amount of energy consumptions during different school events. Students are further asked to also come up with an action plan based on this audit which they try to carry out in their day to day activities. There are ways in which we have been successful in involving



SWACH Green School Programme



SWACH Green School Programme

parents in our program as well. We came up with the 'bus cycle' initiative where parents will start from one point of the city and cycle with their kids to some other students house and ask them to accompany them so in the end, there is an entire group cycling to school, resulting in reduction of traffic and decrease in their carbon footprint. We have got a lot of feedback from the parents and the students that they look at it not as a classroom session but a fun activity where both parents and children learn.

SI: Apart from solid waste collection, what are the other type of waste Swach is dealing with and how has the response been?

MD: Apart from our door-to door collection drive to ensure segregation and better treatment; we started to do something that is known as "Allied activities" with the waste that is collected. These allied activities are usually: managing composting units in housing societies, Housekeeping services where the waste

pickers have taken the initiative of cleaning up common areas in housing societies for which they get paid. Apart from this, the waste pickers also maintain biogas plants in some societies/areas. All these activities are aimed at making waste pickers and the cooperative more successful and self-sustainable.

SI: How has your association with the local authorities been since the inception of SWACH? Your benefits and limitation of working with a Government bodies?

MD: The idea of making this model sustainable was institutionalizing it with the urban local body instead of running parallel to them. So the whole endorsement with a government body makes the model much stronger and authentic. The collaboration assists SWACH by giving administrative cost as well as equipment cost in the form of buckets and uniforms. The challenge here lies to ensure that these costs's get covered on time. Payments not getting released on time; not getting equipments on time are a few of the challenges we are facing. This has resulted in us letting go off our staff due to payments delays, cut back on few operations amongst others. This has therefore also reduced our scope of expansions with new projects.

SI: Give an insight about your latest "Nirmalya collection drive" during Ganeshotsav. How has the journey been over the years with citizens, volunteers, logistics and management?

MD: We started the Ganeshotsav Campaign six years back where we adopted one of two ghats to collect nirmalya. Since then, the scale of this collection drive increased to many fold. We have therefore started involving other organisation and corporate houses. We give the corporate an opportunity to adopt a ghat which means that the corporate would support financially and also provide volunteers for these activities during the festival time. Over the years we have seen a change in the attitude's of citizens in relation to the waste that is generated and also the perception about immersion process in tanks. Earlier, people wouldn't change the pattern of their



Nirmalya Collection drive during Ganeshotsav



Nirmalya collection during Ganeshotsav

immersion as they believed it would harm the sanctity of their religion. But today people have become more aware about the situation and have started to look for waste pickers and the volunteers on these ghats to hand over their nirmalya. The media too has covered this change very well for the people to notice the impact. About 97 tons of nirmalya was collected this year which proves to be one of the reasons for the increase in the volunteers because there aren't any special skills required to help in this activity. Also, direct results are visible to us which has motivated citizens in a big way.

SI: Share with us the future plans of Swach and any upcoming events.

MD: The main aim of our various programs & initiatives that we come up with is to create an inclusive sustainable community. So the whole idea is to get people to understand the importance of waste pickers and the role they play in environmental conservation, and also to make them realize their role as citizens. So our future plans too will aim at achieving & strengthening this association with the citizens of Pune.

Technology & Innovation in Sustainability

A look at what is happening around the world in the field of Sustainability. A section where you can know about the technologies that will change the world and innovations that will shape the future.

Solar powered outdoor station

Solar powered outdoor station



Photo: ccgigogreen.com

Are you an outdoor person, who likes to read on their e-book in the park or are you used to listening on your iPod when strolling but the battery life of your device limits you? Don't worry cause soon we can have this ConnectTable which is a solar-powered station that comes in the form of a café, picnic, or deck table.

ConnectTable is the latest creation of CarrierClass, a company that specializes in solar technologies and broadband connectivity. At an upcoming GreenBuild

International Expo in Philadelphia, CarrierClass will unveil the ConnectTable made keeping in mind the outdoor enthusiasts. With seamless integration into a variety of landscapes, the ConnectTables can provide renewable energy to a wide range of public spaces.

Curved mirror solar collectors

Curved mirror solar collectors



Photo: Zenithsolar.com

ZenithSolar, an Israel based company has developed a new technology for collecting solar radiations

through curved mirrors. The company studies show that these curved mirrors can collect five times more energy than ordinary solar collectors, & will help to make solar power cost competitive against fossil fuels. The incredible technological advance can improve overall solar power conversion efficiency up to 75 percent. In fact, if Zenith's curved solar panels were placed on just 12 square kilometers of land, 10 percent of Israel's population could live on this energy.

Spray-on solar panels

Spray-on solar panels

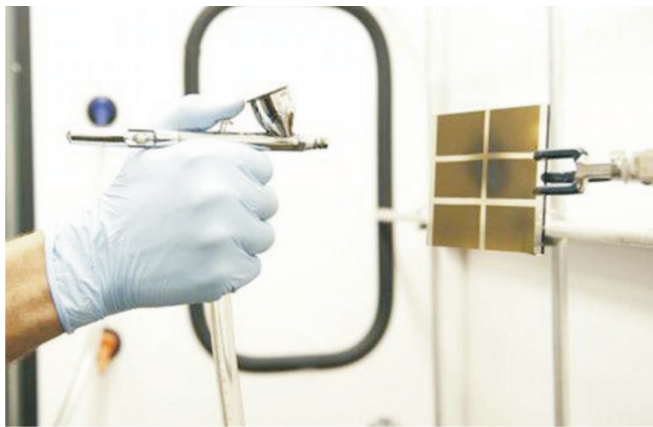


Photo:University of Texas at Austin

New Energy Technologies have developed transparent solar cells which can be sprayed onto any glass surface like paint. With the use of nanotechnology, this unfathomable technology is being made possible. The solar cells are actually light-absorbing nano-materials that are 10,000 times thinner than a strand of hair. Since the cell are transparent they can be applied to almost any glass surface very easily. New Energy Technologies hope that this technology will help to greatly reduce the cost of solar installations.

Carbon-sucking Nanotubes

Nano-tubes is the new technology making waves everywhere. A company named Porifera has developed a technology to use nanotubes to absorb carbon. They have specially designed nanotubes which have increased porosity and 'nanofluidic' properties which absorb the target molecules- in this case CO2. If successful, this technology will help in

carbon capture and water desalination by viably sequestering carbon molecules.

Carbon Sucking Nanotubes

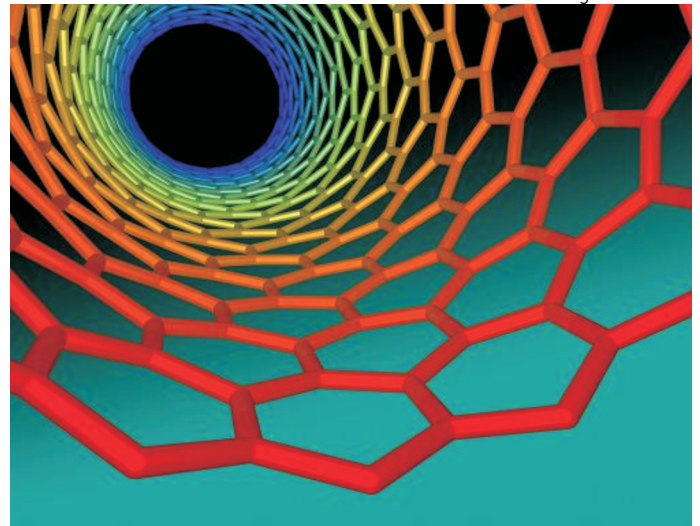


Photo: flickr.com

Pencil printer

Hoyoung Lee has developed a concept printer which separates the wood from pencil stubs and used the lead to print documents. There is even a built-in eraser component that allows you to erase the print and reuse the paper. This technology will reduce waste and also help you save money on printer cartridge and paper so you save more trees in return!

Pencil Printer



Photo: Hoyoung Lee/Yanko Design

SI News

Updates on SI activities of the past, their reviews/ photographs and details of any forthcoming events. A section dedicated to events, programs and news from SI.

Site visit 31 August 2013

A site visit was organised by Sustainability Initiatives for students of 'Symbiosis' Masters in Energy & Environment' programme on 31st August 2013. About 20 students from Symbiosis visited Suzlon One Earth, Hadapsar and Orange Srushti project, Bavdhan. Mr Nitin Gurav conducted a guided tour of the Suzlon campus explaining the green design features like energy, waste and water management techniques used through-out the building.



At Orange County Foundation, Mr Sandip Sonigra gave a presentation to the students on the various

sustainable construction, energy management, renewable energy technologies, etc. used in his projects. The students got to see how the technologies were implemented on-site at the Orange Srushti project in Bavdhan.



Opinion survey on perception of people on environmental effects 'Ganeshotsav' conducted in September 2013

Festivals are an inseparable part of Indian culture and thus also have a significant impact on the environment we live in. To understand this impact Sustainability Initiatives conducted a study during the



Ganesh festival to assess the types of wastes generated, their management and disposal. SI volunteers conducted a survey about which materials are used by the Ganesh mandals during the 10-day festival and collected data of materials used for daily puja, pandal decorations, processions, visarjan, advertising, etc.

The information was analysed to know the types of materials used along with their quantity and disposal methods. As a part of this project an opinion survey was conducted to understand the perception of people on the effects that Ganesh festival has on the environment. The effects of the festival on environment, issues that need to be addressed and the perceptions of people on the topic are compiled in a report. The results of this study were shared with the media in a press conference on 8th Oct 2013.

Opinion Survey for Street Design Guidelines in Pune initiated in October 2013



The Pune Municipal Corporation Road Department has initiated the work of preparing 'Street Design Guidelines' for the city of Pune. This work is taken up by Vka: architecture in association with Sustainability Initiatives.

The aim of the project is to develop guidelines to make city roads more user-friendly, safe and address the requirements and needs of all stakeholders and road users. As part of this project, SI has initiated an

opinion survey to know the perception of citizens about the streets in Pune. This online survey will help to know what the citizens think of the roads in the city and what improvements they would like to see in the future. A press conference was organised to appeal to the citizens through media to participate in this survey and give their feedback. Additionally, we have also collaborated with number of corporate organisations, schools and colleges from the city to participate in this survey. The feedback received from the survey will strengthen the need for such guidelines and back the recommendations given through this document. The link to this online survey is available on the SI website homepage as well as the PMC website home page (www.punecorporation.org)

SI Foundation Day celebration, 11 November 2013

Sustainability Initiatives celebrated its Foundation Day on 11 Nov 2013. The event was organised especially to connect with the professional and student members of SI & interact with them on how to involve more members in the activities and initiatives by SI. The evening began with Ar. Poorva Keskar welcoming the guests and introducing them how SI started. Further Ar Anagha Paranjape-Purohit briefed on the journey of SI since Nov 2011. Members & associates of SI with whom we have connected over the past 2 years shared their thoughts & their experience with us. The SI Annual Report 2013 was also opened on this occasion. Mr I P Inamdar of Ahura Builders and Dr Parvez Inamdar of Inamdar Hospitals were the special guests for this evening. The evening ended with a short film screening. The presence of SI members and associates was very encouraging to the whole team. Ar Namrata Dhamankar thanked all the guested and other who made this event possible.





Events in 2014

January 2014	Disha: Careers in Environmental Management and Sustainability
February 2014	Green Building Workshop
March 2014	Green Building Workshop
April 2014	Earth Day awareness and interaction
May 2014	Experiential visit to an eco-friendly building
June 2014	World Environment Day awareness and interaction
July 2014	Movie screening and discussion
August 2014	Green Lifestyle workshop
September 2014	Experiential visit to an eco-friendly building
October 2014	GRIHA Regional Conference
November 2014	SI Foundation Day and release of SI Annual Report
December 2014	Environmental Impact Assessment workshop



Connect with Us

Membership with Sustainability Initiatives offers an opportunity to connect with other professionals to develop ideas and concepts on sustainable built environment, urban planning, environmental awareness and sustainability in general. It offers a platform for professionals as well as students to network and develop ideas on sustainability concepts.

Who can become a member?

- Professionals, Academicians, Retirees, Business Owners and Students from any sector interested in contributing to or pursuing careers in the fields of sustainability, environment, energy, etc.

Benefits to members

- Opportunities to initiate and lead projects in association with SI
- Guidance for academic/ research projects
- Learning sessions
- Networking events
- Meetings with professionals, etc. for career development
- **Subscription to SI:Imprint**
- Discounts at SI events/ workshops and for SI publications
- Discount in membership fees for SI:KRIS the online resources library
- Paid/ unpaid opportunities to volunteer/ intern with SI

Name:

Correspondence Address:

Email: **Contact no.:**

Company name and designation:

Current field of work:

Office address:

Membership type:

- Professional –
- Rs 1500 for new annual subscription
- Rs 1000 for annual renewal
- Rs 3000 for 3 yr patron membership
- Student –
- Rs 500 for annual membership

Cheque/ DD/ MO no. _____ drawn on _____ for Rs _____ in favour of 'Sustainability Initiatives'

Details of payment: cheque/transfer no. _____ Bank _____ Dated _____

Signature: _____

Date: _____

To become a member fill the form above & post it to us at

Sustainability Initiatives,

5, Agarakar Bhavan, Navi Peth, Pune 411030

Or email us at mail@sustainability-initiatives.org

Website www.sustainability-initiatives.org/



