

**Inspire. Engage.
Transform.**

Summer 2014
ISSUE 2

si: **print**

Women in
Sustainability



**E-waste Recycling:
an Impending Problem**



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Editorial Speak

Welcome to a new issue of SI:Imprint! Many of you have sent us feedbacks and appreciations for the first issue of SI:Imprint. Thank you to all. In the second issue, we bring to you inspirational stories and talks by Women from the field of Sustainability. We salute their involvement, passion and determination to achieve the many milestones they have. SI got in conversation with Mili Majumdar from GRIHA, Aneeta Benninger from CDSA, Ketaki Ghate from Oikos, Manisha Gutman from Ecoexist and Aarti Mohan from Sattva Media. These women each have a story to tell about their journey and the experiences of venturing into this field when there were few others.

We also bring to you the second part of the three part series on Urban Street Design Guidelines wherein we talk about the various stakeholders involved in designing streets and also share our findings from the stakeholder surveys & consultations held as part of this project.

In every issue we try and look at addressing a very pertaining topic to our cities which remains ignored by citizens and authorities. This issue talks on e-waste and its awareness amongst citizens. Everyone generates it, but no one knows how to dispose it.

Apart from these we have our regular feature articles. 'NGO in Focus' where this time we are in conversation with Shantanu Dixit from the Prayas Energy Group. Then we have the academic article 'Everything can become Something' based on a design exploration done by the students of Brick School of Architecture, Pune; they have developed some very interesting product concepts and all made from waste materials. In another article we have given our take on the Earth Hour. And there is the SI News section.

We have also featured a special article written by Kanako Ide from Yokogawa Electric Company, Tokyo who was an intern at SI. She writes her experience on the roads of Pune and how they are in stark difference with her homecity.

We hope that you find this issue as interesting as the first. We also have a line-up of activities every month for our members and we invite you to be a part of them and our projects at SI.

Happy Reading!



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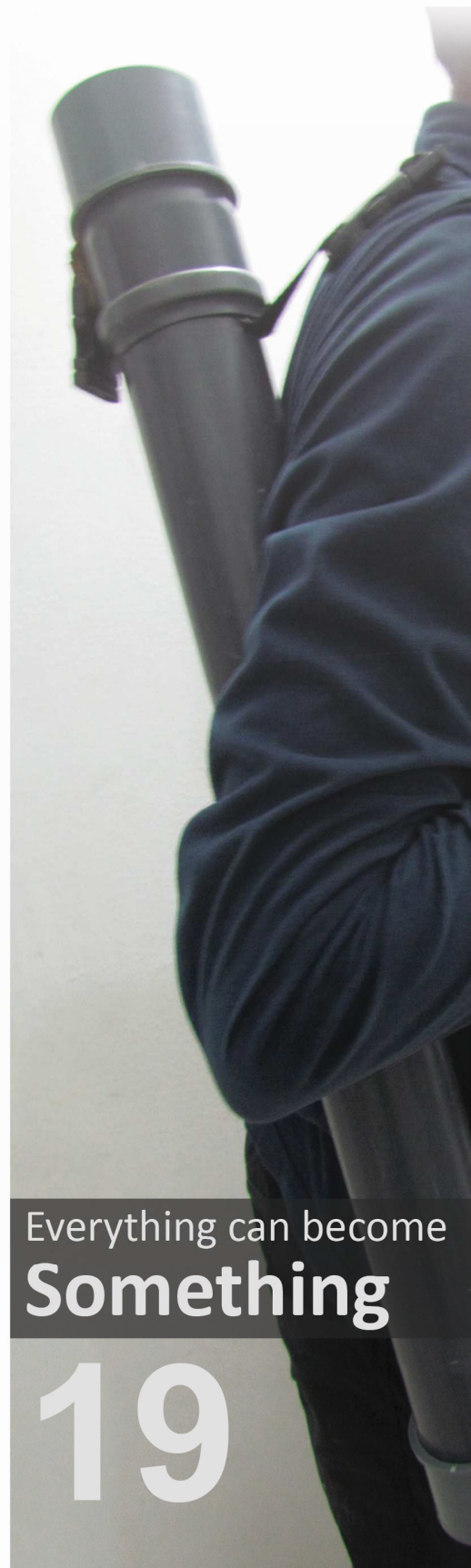
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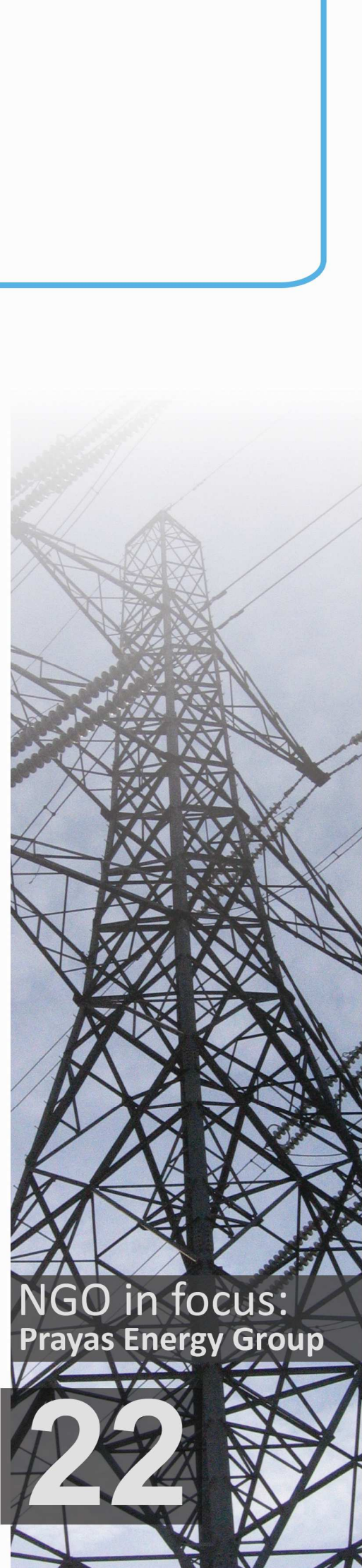
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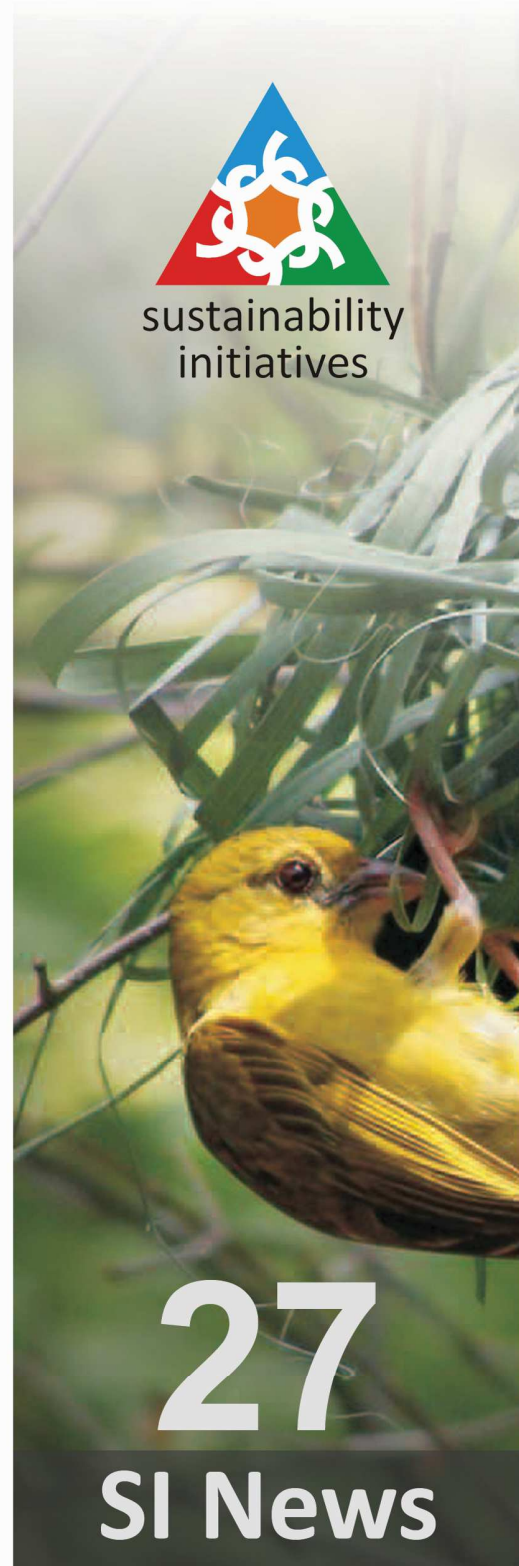
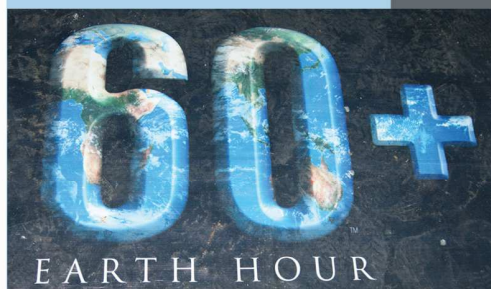
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SI News

Women in Sustainability

Last month we celebrated the spirit of womanhood on International Women's Day and commemorated women who have been or are a major part of the revolution and change happening in the society. Through this article we share with you some compelling stories of women working in the sustainability sector and their careers success stories.

It has been said that women have most of the traits that define leaders in the Sustainability sector. Humanity, collaboration with people, compassion, empathy are all inherent to feminine nature. It has been proved through various studies that companies who have a good ration of men and women in their top management perform better in Sustainability. Women are essential for strategy and planning because of their ability to deal with complex problems in a calm and logical way and to approach problems with a long-term view for resolution.

The Forbes 2013 list of most power people consists of 5 women in the first 50, and 15 in the total list of 72. Forbes also releases a separate list of the The World's Most Powerful Women. There are 11 women in the list of 100 billionaires of the world. And there are many women in the list of the highest paid CEOs of the world starting with Irene B Rosenfeld of Kraft Foods at No. 40. Women in Brazil, Russia, India and China (BRIC countries) hold many more leadership positions than their female counterparts in Europe and America. 11% of CEOs in the largest 250 Indian companies are female and in Brazil they make up 12%. On the counterpart, it is a mere 3-5% in the United States and United Kingdom.

Through all we can know how women make better leaders and companies perform more sustainably. We at SI spoke to a few women who have led the way to sustainability in their respective sectors and asked them about their journey. Through this article we share with you the many compelling stories of women working in the sustainability sector and their careers success stories.

Mili Majumdar

Director, Sustainable Habitat Division- TERI



Mili Majumdar has 20 years of experience in the field of energy, environment and sustainable habitats. She has been part of all major policy formulation in the green building segment in India and also led a team to

conceptualise and develop the GRIHA system for rating of green buildings in India. She has edited a book on "Energy Efficient Buildings in India" which is one of the most successful publications in this domain in India. She has also steered development of a master's level course on "Green Buildings" for Ministry of Urban Development. She has been awarded the Construction World Woman of the Year 2011 by ASAPP media.

SI: What does Sustainability mean to you?

MM: For me Sustainability is that whatever we do today should be something which does not have much effect on the future in terms of resource consumption. And this does not limit to your practices or the job that you do and what you are offering to others but it should also be practiced yourself. You have to walk the talk of being sustainable.

SI: How has your experience been as a woman working in the Sustainability Sector?

MM: There is no difference between man and woman. I have never thought about sustainability work from a gender point of view. But I must say that whenever I go to forums or any dialogues, I am pretty much in minority. There are very few women but that picture is changing and we see more and more women joining this sector.

SI: What do think are your strengths or traits that have helped you advance in the sustainability sector?

MM: The experience that I have gained over the years has been my strength and has helped me advance in my career. In the overall education that is imparted to architectural students or students who are taught about sustainability or efficiency, we see that very less overall development is looked at in their curriculum. Like in Architecture, students are only taught about building design and not much about the overall systems or the environmental considerations. When I joined TERI, I was involved in actually going to the field and understanding buildings, air conditioning, lighting, electrical and that I could very well connect with architecture. So, that knowledge which I did not get from my studies I gained from my experience. Also, since we were the early starters in this area in terms of the entire policy development in the country, we were involved in all major processes, which gave a lot of experience and expertise. The holistic understanding of architecture, systems, policy, financing helped me to connect all the dots in the sector. Moreover being in TERI gives you a lot of exposure to International communities and understanding of what is happening worldwide and you get to talk to different people which helps.

SI: What are the hurdles that you faced while working in this sector?

MM: I think hurdles are a part of every job. When I particularly started, nobody spoke about sustainability. So in terms of business generation and other things, it took a while before we really could get projects or make people understand the need of doing certain things. That initial struggle was there. But once things were in place it was much less.

SI: What changes have you seen in the sustainability sector and its evolution in the past few years?

MM: People are more aware about sustainability and take it as a mainstream subject that you need to incorporate. It is a part of the business agenda and architectural discourse and is no longer a fancy item to be considered. Government is more aware, private sector is aware, corporates and government is taking interest. I have seen the overall increase in understanding the need of sustainability over the years.

SI: Does sustainable architecture have more patrons now than it had 10 years ago? If so, what do you think has led to this change in perspective?

MM: Yes, of course, that goes without saying. It has many more patrons. Now it is part of every architectural stream unless you want to exclude it, it is included. This is a sector which has fair amount of understanding in the community. But when I started working in the 1990s, understanding was very less. It took quite some time to make people aware of the necessity of looking at 'Sustainability' as an integral part of the entire development agenda particularly the construction sector, and make them feel the need of saving water or energy and so on. But today, everybody has started facing the brunt of the depleting resources and the degrading quality of environment and are feeling it in terms of pollution levels and availability of energy and water. People have understood the payback and economics of going green.

SI: What message would you like to give young aspirants, men and women, pursuing sustainability-focused work?

MM: Working in the Sustainability sector requires a holistic understanding and little knowledge is dangerous. We should keep our ears and eyes open and try to gain as much knowledge as possible and then offer solutions. I do see a lot of youngsters coming in this sector and trying to work. I don't say that they are not dedicated but in terms of knowledge and understanding two things are important. One is study much more and get in to the field or get at the grass root level to understand how things work. And it is also that 'one size does not fit for all'. The solutions are case specific so you have to keep your ears and eyes open, gain knowledge. And distributing this knowledge to others is also very crucial.

Aneeta Gokhale-Benninger
Center for Development Studies and Activities



Aneeta Gokhale - Benninger is a Geographer and Sustainable Development Planner. She co-founded 'The Center for Development Studies and Activities, (CDSA)', a research & post-graduate

teaching institution in 1976. She has done pioneering work in decentralized planning, micro-level planning and watershed management. Through CDSA, Aneeta has carried out policy analysis work for the World Bank, United Nations, various central ministries of the Government of India, the Government of Sri Lanka, the Royal Government of Bhutan, the Asian Development Bank and various countries in Asia.

SI: What does sustainability mean to you?

AB: Being a geographer, I am a very earth-bound person. Sustainability, for me, is permanence of the earth. The earth's evolution should not stop, it should not be destroyed. People don't realize that technology can do a lot of changes to nature and nature adapts to these changes. The consequences of this adaption may not be fit for life. The human race has become a desperate lot, eager to consume. We relate consumption to development. But in this race, people have forgotten the real meaning of development. Nature provides to fulfill our basic needs of survival- air, water, food. Shelter was a creation of mankind and we have now gone on and about creating this shelter- building tall apartments on every available space. Man and nature are meant to be symbiotic, both benefit from each other. But it seems that man has taken nature for granted. This greed and exploiting of nature needs to stop and only then can we achieve sustainability.

SI: How has your experience been as a woman working in the sustainability sector?

AB: As a woman, I find myself very privileged to be working in this sector. I was the only woman on the planning committee for the 23 fringe villages of Pune city. Others were Corporators, present and former Sarpanchs, Architects- all men! They were initially awkward about working with a planner and that too a woman. But when we started working on the committee, I could connect to them on their level. I was working for rural development since many years and so I would discuss with them about

farming and village life, share rural anecdotes, etc. Through our talks, I was able to convince them the need of protecting the biodiversity. I think women have a nurturing instinct in them and are able to connect with people on all levels. This nurturing instinct is very important in conservation. We are intuitive, conservationists by nature which is very important in the sustainability sector.

SI: What are your strengths that have helped you in your work.?

AB: There are mainly 3 things that have been very innate to my work. One is my ability to connect with people; my education being from Marathi medium helped me to connect very easily with the local & rural community during my work. Secondly, my upbringing has been very important in the way that it has shaped me. I can connect and interact with any person irrespective of his or her position or stature. And finally my education and knowledge of the subject helped me. Being a geographer I have all the technical knowledge of surveying and things related to it. Also having studied town-planning, I am very well versed with the legislation and rules, regulations and bye-laws of planning.

SI: What are the hurdles that you faced while working in this sector?

AB: Attitude of people and corruption in the government are the two most difficult hurdles that I have faced. As a planner it is our constant effort to do work that is transparent, accountable and which is implementable. The work should give the results as envisaged. But not all the authorities are open to this vision. There is a lack of confidence that people have in you, sometimes even your colleagues, who come from different backgrounds. Secondly, there is a huge amount of corruption. We work with the government and there are massive kickbacks which go in these projects. Merit is secondary. Kickbacks have become a part of the process and are one of the saddest things. We do get very less work because of not falling into this process, but it helps keep my conscience clear. We find it is much easier to work with the UN, the World Bank and other international organisations where the processes are much transparent. But vast majority of projects in our sector are ultimately with the government and so we need to work with them to make an impact. With better ministries and cleaner ministers we do have more transparent processes and work is being given to talented people.

SI: What changes have you seen in the sustainability sector and its evolution

in the past few years? Do you believe that the need for sustainable urban development is now more necessary than ever?

AB: As regards evolution, I think now the awareness is more than before but it has also led to more corruption. Since there is increased awareness there is a lot of conservative & protective legislation. The law is stricter and there is stricter punishment for those who break these laws. So the amount you need to bribe has also gone up. After globalization and liberalization in the 1990s an aspirational middle class was formed which wanted all the luxuries and was ready to pay for it as well. This changed the lifestyle considerably. And the throw away attitude has increased. This aspirational middle class has grown phenomenally and is spending exorbitantly on all luxuries- fashion, shopping, travel, eating out and what not. There is no framework of morals, ethics, values that is governing our lifestyles. People simply do not have the conviction to apply the sustainable development principles to our daily life. More legislation will lead to sustainable development only when there is no corruption. The laws are made for good purpose and they should be followed only then will the vision behind these laws come to reality. I feel that the time to act is now and the ball is in the court of the new generation, who has to decide and influence. Awareness should be inculcated in the next generation and they should be guided to take the right decisions for a better future.

SI: What according to you are the most important aspects of urban planning that need to be addressed for a sustainable urban development?

AB: What is happening to our cities now, is not urban development, but just inflation of population in the urban areas. The migrant population in cities is not at all urban. Because being 'urban' means being 'urbane' which is an evolved position and evolution is a thought process. This migrant population was not part of the city's evolution but has just shifted to an urban community. Urban growth which is happening now is like an inflation of the cities where rural people are coming to cities and settling here but they are not urban and there is no urban life. Their behaviours are definitely inappropriate in the city life. Rural and urban cultures are different and they both may be appropriate in their context. But we have a whole lot of rural population coming in to cities from nearby rural areas and in fact rural population has now increased and they have become the dominant culture of the cities. We need to create sensitivity towards urban environment in the villages and specially the villages which are coming up as census towns. If this sensitivity is created the people will inculcate good

habits. Also there should be a reliable and efficient transport, then people from nearby towns will not need to migrate. Such nodes around the major cities should be identified and developed. Only then will there be an evolved urban area and not just inflation of urban population.

SI: What message would you like to give young aspirants, men and women, pursuing sustainability-focused work?

AB: My message to the young generation is "Stop what you are doing, take a deep breath, try to understand what is going on- what is bluff and what is genuine- and run behind the genuine stuff". The younger generation needs to do a lot of thinking, reading and understanding. You should read as much as possible; read articles, books, research papers, everything related to the subject- and gain knowledge. The focus of study should be to get knowledge and not just to get degrees. You have to demand for good education. Demand for knowledge, skills, understanding of the subject matter, sensitivity towards the subject, for showing the ropes in career and not just for getting degrees. Nowadays students are short changing themselves. As a teacher, for me it is very important that a student is showing interest in what he is doing even if he or she is making mistakes or going wrong. Make mistakes but be enthusiastic in what you are doing and give it your best shot.

Ketaki Ghate **Oikos for ecological services**



Ketaki Ghate and Manasi Karandikar started 'Oikos for ecological services' in 2001. Their ecological consultancy provides expert services in Ecological and Biodiversity Assessment of lands,

Ecological Land Management, Restoration Planning, and Plantation Planning using native plants. Ketaki is also a Trustee at the Ecological Society, Pune and a Member of Joint Forest Management committee for Bambhurda forest range. Ketaki & Manasi have been honored with the 'Ramabai Joshi Award for Innovative Management Services' in 2006, by MCCIA and the 'Unch Maza Zoka' award by Zee Marathi, in 2013.

SI: What does Sustainability mean to you?

KG: Books give us a nice definition of sustainability, which says that we need to achieve our goal without compromising the needs of future generation. Real Sustainability does not allow use of energy source which is pollutive. It allows use of local energy i.e. only solar or wind that too without conversion.

It allows use of only local materials to satisfy needs of local people. While extracting resources even at local scale, it should not hamper life of other organisms. This kind of Sustainability is difficult to achieve in today's world and with today's psyche of masses, even with the kind of business we have. But we can definitely go "NEAR SUSTAINABILITY". To achieve the same, we must have control or restriction on our own consumption. Another aspect is that any species that has to survive has to disturb nature. Survival of the fittest is an inherent rule of nature. To achieve ultimate sustainability, you may have to live in a forest. This is impossible in today's world. So I believe that, there are various stages of attaining sustainability. In our business we try to develop land in such a way that neither the development activities nor the resulting development increase the carbon footprint beyond a certain limit. While restoring a land we see that we don't use any fossil fuel energy or any external input. We have a site where travelling to the site is the only carbon footprint.

SI: How has your experience been as a woman working in the Sustainability Sector? What do think are your strengths or traits that have helped you advance in the sustainability sector?

KG: It has definitely been a good experience. I do not think that the sustainability sector has very good money as in other technology/ IT sectors. But, being women, we can afford to earn less than our male counterparts and so it is easy for us to pursue this career path. That also is one reason why we see more women working in the sustainability sector. This sector definitely offers immense satisfaction and pleasure. Specially in our case, we really don't need any active entertainment or holidays !! Me and Manasi did a course at the Ecological Society on Natural Resource Management taught by Late Dr Prakash Gole. We thought that it was very necessary to implement the knowledge that we had received in this course. With this inherited passion we started Oikos in 2001. So I think Passion for the environment that me and Manasi shared was one of the strengths that has helped us.

SI: What are the hurdles that you faced while working in this sector?

KG: I would say that our journey was pretty much smooth and we did not have too many hurdles. Mostly the hurdles were in the initial stages when it was very difficult to convince the clients that not doing anything on your land is really doing something for your land. Clients could not understand that making a garden & land restoration

are two different things. Gardens can be made in 6 months but they are not ecologically friendly; they are artificially created greenery. Whereas restoration may take 10 years but it is completely ecological and we try to do it through minimum impact on nature. To take clients to this level of understanding and make them understand that restoration can take time was the main challenge. But now with the experience that we have and projects we have already completed, we can show the clients what can be achieved through our land management and restoration works.

SI: What changes have you seen in the sustainability sector and its evolution in the past few years? How do you aim to achieve a sustainable future through your platform 'Oikos'?

KG: First and foremost, the awareness which has definitely increased. A change is seen regarding plantations. Earlier when we asked people to plant native species, they did not understand the concept because for them, maintaining ecological balance was planting trees irrespective of native or non-native. And it was very difficult to make them understand the science of growing native species. But now, with awareness, people themselves come to us asking about native species. So this is a big change. But from a deep ecological point of view, I think that it is not good because somewhere you keep on increasing your interference/ interaction with nature and increase an ecological footprint. Not doing anything is very essential but very hard to follow. So we support a middle way, which does not have a very high impact nor is it very hard to follow. Under Oikos we offer three main services. Through ecological assessments of private lands, we record the biodiversity of the land over the year in different seasons. We also help identify eco-sensitive areas and create an ecological map of the land piece. We thus help land owners connect with their land. Secondly we do ecological master planning, to place different zones on the land for development, recreation, landscaping, etc. And third we do ecological landscaping by using appropriate native plants in the right places over the area. Through landscaping we do not just create greenery but make the place livelier by maintaining the natural biodiversity. In this way we help maintain ecological balance of nature and restore natural resources through our services. Along with these services, we also help develop eco-tourism destinations. Also we have one small nursery for native plants.

SI: Do you think there is potential for 'Green' entrepreneurship and sustainable careers in India?

KG: Yes definitely, there is huge potential.. There is a very good scope for green entrepreneurship now

than ever. Our students are also realizing the potential. Many green courses have been initiated on Environmental Architecture, Biodiversity and so on and all these courses are operating in full capacity. It does take a long time to survive in this sector, but the kind of satisfaction that you get is not comparable to anything.

There is now an increase in people, who follow environment friendly practices for a real reason and not just for certification. The number of these people who do things going beyond certification is now growing due to awareness by media, education curriculum etc. Green sector is quite a boom now and 'Green' entrepreneurship is spreading.

SI: What message would you like to give young aspirants, men and women, pursuing sustainability focused work?

KG: Youngsters need to be conscious not only in selecting their career but also in day to day life. They should understand if it is really green or it is green just for the sake of green. I am really surprised when people working in environment don't have knowledge about water, soil and biodiversity. They only keep applying their technical knowledge. Many people don't know the trees, birds around them. You need to develop a connection with your surroundings and the nature. We really believe in having an heartfelt connection with environment. When we talk to people, they immediately understand what we think about environment. So developing this personal connection with nature is very important for those who wish to take up sustainability related work. A basic course like the Ecological Society's weekend course helps you to gain a perspective to look at nature, a holistic perspective to look at life and your own profession. After gaining this perspective one may realize that you need not be in sustainability sector to achieve sustainability but every sector can help sustainability!!

Manisha Gutman **eCoexist**



Manisha Gutman is an architect by training and has been involved in environmental activities and social enterprise for the last 15 years. She has led several environment campaigns

in India and has been invited to the United Nations to speak about Business and Biodiversity. In 2006, she

founded eCoexist, a social enterprise that promotes eco-sensitive lifestyles through socially sensitive means. eCoexist works with underprivileged groups including prisoners, self-help groups and the mentally challenged to make and distribute products such as Cloth bags, eco-friendly Ganesh idols, natural Holi colours and other eco-friendly products.

SI: What does Sustainability mean to you?

MG: The term Sustainability has to be looked at in several ways. When one speaks of sustainable development it refers to development which ensures that future generations will have a world that gives them full potential for growth and our decisions today do not compromise the quality of the world we are leaving behind for them. However, when one looks at humanity & the place of humanity in the Natural World one has to recognise that Nature is an incredibly powerful and resilient force and that truly the question is whether humanity as a species is going to survive its own short sightedness or not. So when I think of Sustainability I am thinking more of consciousness in human form and whether the current trends of 'progress' will enable this form to be sustained.

SI: How has your experience been as a woman working in the Sustainability Sector? What do think are your strengths or traits that have helped you advance in the sustainability sector?

MG: Me and Lolita Gupta who has built eCoexist with me, have always worked on our own terms. We have been fortunate because we have had tremendous support from friends, family and the society for the work we chose to do. Lolita and I have a deep belief in what we do, and combine this with a spirit that never gives up. We connect with people at a personal level and this has helped create a network of well wishers to whom eCoexist owes its success. eCoexist was formed to serve Nature and help people and this is the attitude with which we conduct our activities.

SI: What hurdles/ challenges did you face while starting up and working in this sector?

MG: Both neither Lolita nor I have a background in business and we have learnt everything about the eco-products sector from scratch. This means that our progress has been slower than others but we have grown a lot as individuals. Social entrepreneurship was also a very new concept in India when we began and most of our beginning years were spent in convincing people about our mission. The triple bottom line of environment conservation, social justice & financial self sustainability is a very ambitious thing for a start up and we often faced financial pressures and instability of our work force. We have

done every activity at work from making the products to packaging them to marketing them ourselves and this has not always been easy.

SI: Do you believe that women, through their typical traits of empathy, collaborative nature among others, are able to get social and sustainable initiatives built across a company in a better way?

MG: I do not know enough about similar companies run by men but I do feel that what is important is consciousness. Empathy and collaboration are not traits limited to women although they may come to us more naturally. Every individual irrespective of their gender works from their level of consciousness. As this level rises, the focus becomes more on integration and sharing. Running a social enterprise may also need more 'masculine' qualities such as assertiveness in the market; emotional detachment etc and those individuals that are able to balance their feminine and masculine energies are able to run healthier organisations. Having said this, we do predominantly work with women in our organisation.

SI: How do you aim to achieve a sustainable future through your platform 'eCoexist'? What changes have you seen in the sustainability sector and its evolution in the past few years?

MG: eCoexist focuses on the present. A present that works in harmony with Nature will evidently lead to a harmonious and sustainable future. We also focus on growth of the individual & raising consciousness in each one of us. The eCoexist team is made of sincere and aware individuals who reflect on their own personal choices as carefully as they advocate a more sustainable lifestyle to others. This self work is as important to us as the work we do in our environment. Our aim has been to influence people like ourselves in the cities we live in, giving them small and simple ways to make a change. We have received a significant response to our efforts from the urban population and both our key products, the natural Holi colours and the eco Ganesh idols have become mainstream market products due to the efforts made by us in the last eight years.

As environmental problems faced by Indian cities and villages become more acute, people are beginning to see the need for a radical change in lifestyle. Whereas earlier people would hesitate to spend a little more on an eco-friendly product; we now see how the market has expanded to include these items. The small space that existed between voluntary organisations and for-profit enterprises is now growing and a host of social enterprises that combine social and environmental goals with financial viability have entered this space. Hopefully the growth

of these organisations will enable a development that is sensitive and sustainable.

SI: What according to you is the potential of the 'green' entrepreneurship and social enterprises in India?

MG: India does not yet recognise social enterprises as entities. Most social enterprises have to be registered either as proprietorship or partnerships and are accountable to them to adhere to their social or environmental commitments. Often this is not really measurable and therefore it is difficult to evaluate the genuinity of such enterprises. India should develop a model for social enterprises which demands transparencies, sets standards and brings some way of accountability to them. On the other hand, they should also be given support to survive in the cut throat markets through such recognition. Ultimately all enterprises have a responsibility to be green – to supply to the market through processes that are environmentally sound and socially just. Green businesses are pioneers in the sense that they take this responsibility seriously. The potential of such businesses is not to be measured simply in the financial surplus they generate but in the quality of people they produce and their contribution to the well-being of society.

SI: What message would you like to give young aspirants, men and women, pursuing 'green' entrepreneurship?

MG: Go out and experience Nature, connect with an animal or a tree from your heart. From this space, choose the activity you want to spend your life on – and ask yourself whether it is an activity that will benefit them as much as it will benefit you and the society you live in. Green enterprise is not a choice anymore, it has become the necessity and the day will come when all businesses will be asked to become socially and environmentally accountable. If you start in this premise with sincerity, you will be truly building something for the future.

Aarti Mohan **Sattva Media and Consulting**



Aarti is a co-founder and heads Content, Communications & Audience Engagement across media properties at 'Sattva'. She is the Chief Editor of 'The Alternative', Sattva's media platform for sustainable living and

social impact. Prior to Sattva, Aarti played key technical & mentoring roles in Texas Instruments and AMD. Aarti holds a B.E(Hons) in Computer Science from BITS, Pilani, is a graduate of the IIM-B's Management Program for Women Entrepreneurs (MPWE 2010) and a Goldman Sachs-ISB fellow.

SI: What does Sustainability mean to you?

AM: Sustainability to me means being able to make those choices where I can live my current day to the fullest & enjoy all things I do while knowing that in my own way I am contributing to a better tomorrow. Sustainability to me is also like a 'portkey' to a world of wonderful & unique experiences that make my life more meaningful through simple ways – right from the excitement of taking a tree walk to discovering my roots through indigenous Indian art and craft.

SI: How has your experience been as a woman working in the Sustainability Sector? What do you think are your strengths or traits that have helped you advance in the sustainability sector?

AM: I have had the good fortune of working in spaces and amongst people who are extremely supportive & progressive about the idea of women in the workplace, so in some sense my journey is biased towards the positive. We are seeing more women take up entrepreneurial roles in the social sector and that's a good trend. Where there is a gap, and I hope to see more infusion of women talent, is in assuming senior leadership and mid-management roles in social enterprises and outside the regular comfort zone – in areas like water, sanitation, rural livelihoods and so on.

I think tenacity is something you need to possess. The ability to not give up when all chips are down, especially in a sector like this. Next is the ability to work at a variety of jobs – to take up and execute on. And lastly you should possess the strength to encounter failure and to learn from it.

SI: What hurdles/ challenges did you face while starting up and working in this sector?

AM: Painting a white canvas with conviction and executing on that inner belief everyday has been hard. Sometimes the road ahead is nebulous, but you have to trudge along, simply because steering through the fog along with your team is the only way to obtain some clarity. Just as in any other profession, you encounter the glass ceiling here – as a woman, you become a card carrying member of the "passion club" and have to work hard to be taken seriously beyond your purported "well-meaningness" to give back to society. And there is ofcourse the challenge of evolving a new language of thought and expression in a sector that has seen such polarity

and bias – from the traditional charity mindset to the other end of the spectrum – where greed is good. We know today that it is so much more nuanced than that, with organisations and ideas sprouting out of so many diverse disciplines and thought processes.

SI: Do you think women, through their typical traits like empathy and collaborative nature are better able to get social initiatives built across a company?

AM: Yes, the ability to rally people around a particular cause, lead change, persist at it and wait patiently for results, have been women's strengths that have helped build sustainable initiatives across – whether in apartments or in corporate companies.

SI: How do you aim to achieve a sustainable future through your platform 'The Alternative'?

AM: At The Alternative, we wish to make sustainability a way of life through informed choices and mindful practices in our everyday life that lead to a larger positive impact. The biggest effect we are having on society and our planet today is as consumers. We believe in consuming sustainably. We believe that 'Sustainability' (this is a very variedly understood word) can actually translate to a bunch of small things– everyday activities, mindful choices and exciting new ideas, opportunities, products and ways of living that one can discover. Once you actually start thinking about these small bunch of things, you discover that there are a million ways to go green in your home and everyday life. And what can you save? Taking a bucket bath saves 8 litres a minute. Recycling 1 can means energy saved to run a TV for two hours and so on. It isn't about what one "ought to do" so that the planet can survive, but what one would "like to do" – for one self, for one's kids, for one's health, for the family and for that unique incredible experience that makes sense to you. And that's what we try to achieve at The Alternative – through our magazine, our green bazaars and our program in schools on sustainability.

SI: What is your message to young aspirants, men and women, pursuing sustainability-focused work?

AM: Sustainability is a hugely growing, exciting and challenging space. Come here, not because your heart seeks to give back, but because you are drawn to the exciting pursuit of a difficult challenge, because you can embrace chaos and work in it, because you'd like to have a substantive role in charting India's growth inclusively, and most importantly, because you want to join India's next start-up revolution.

E-waste Recycling: an impending problem

Rapid innovation has shortened the life cycle of electronic products and appliances. There is an increased demand of electronics and we do not think twice when replacing old ones with new. What we do not consider is that electronics contain toxic materials that are harmful to humans and environment and so they need to be disposed safely. Thus, there is an urgent need to raise awareness about segregation and proper disposal of electronics and encouraging proper recycling of e-waste.



Electrical appliances and products have become an integral part of our lives providing us comfort in this fast paced life. Our day starts and ends with electrical appliances and equipments. Lights, fans, air conditioners, mobilephones, laptops, computers, televisions, washing machines all are now an inseparable part of our existence. But there comes a time when these appliances stop working and/or become outdated. When electronics become useless they are referred as Electronic waste (E-waste) or Internationally called as Waste Electrical and Electronic Equipment (WEEE). It includes all types of electronic equipments/ products which have become obsolete or have been discarded due to advancement in technology, changes in fashion, style, status or perception and nearing the end of their useful life. About 20-50 million tonnes of e-waste is generated every year globally. As per the MPCB report, 2007, around

20,270.6 tonnes of e-waste was generated in Maharashtra out of which Pune alone contributed 2,584.21 tonnes and PCMC 1,032.37 tonnes. The major sources of e-waste generation in Pune are IT companies, banks, institutions, household, schools and organizations.

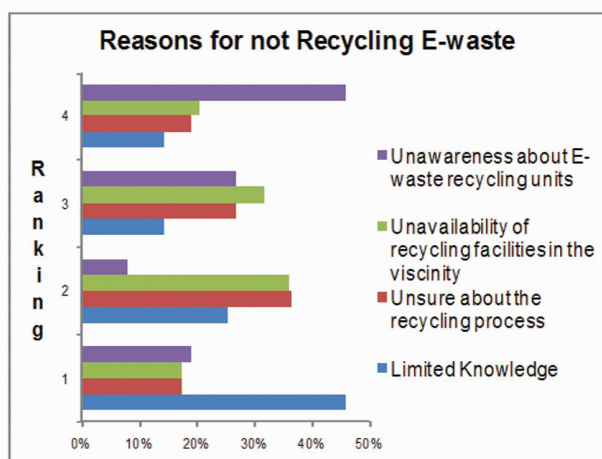
Did You Know?

- Pune ranks among the top 10 cities in India for generation of e-waste.
- No regulated system for the collection and disposal of e-waste exists in the city.
- Unorganized/ informal sector handles almost 90% of the total e-waste generated in the city.
- Pune does not have an e-waste recycling facility.

E-waste contains more than 1,000 substances, which can be classified as hazardous and nonhazardous substances. This e-waste contains valuable materials such as aluminum, copper, gold, silver etc. and also contains harmful substances like cadmium, lead and mercury. In the absence of suitable techniques and protective measures, recycling or disposing e-waste can result in toxic emissions to the air, water and soil and pose serious health and environmental hazards. Hence, there is an urgent need to address the problem of e-waste in the city where collection and disposal of e-waste is not yet regulated.



We are aware of using electronics but we don't know what should be done once these gadgets become obsolete. Many a times we have these obsolete electronics at home and we end up giving it away with other household wastes or selling it to the 'kabadiwallahs'. This is mainly due to limited knowledge about e-waste segregation among people, uncertainty about the actual recycling process, unavailability of recycling facilities in the vicinity and lack of awareness about the e-waste recycling units. SI conducted a study to understand the e-waste disposal and recycling process that takes place in Pune and also surveyed the citizens to know the level of awareness about the e-waste segregation and disposal.



During the study on E-waste management done by SI, it was found that most of the e-waste in the city is collected through the informal sector. The scrap dealers or the kabadiwallahs collect the e-waste from

door to door and give money in return of the equipments. These scrap dealers extract the valuable metals from these equipments and burn or landfill the non-useful parts or send them to other cities for recycling. There are only three authorized dealers for the management of e-waste in the city, viz. SWaCH (Solid Waste Collection and Handling), Poona E-waste Solutions and Hitech India Pvt. Ltd. Among these only Hitech dismantle the e-waste after which it is sent to Mumbai for further processing. The former two are authorized only for the collection of e-waste. These dealers collect waste in bulk and keep it at a storage facility until a fair quantity is collected to transport it to other cities/states where dismantling and recycling facility is available. The unorganized sector has better reach in collection due to huge spread of scrap collectors and is also able to offer better prices for the e-waste. They can afford to do so as they do not pay taxes and employ labor at low cost in crude working conditions within minimal investments in equipments. Thus the organized sector is unable to grow and displace the unorganized sector.



The burden of e-waste disposal is primarily due to its composition. It is made up of multiple components some of which contain toxic substances that have an adverse impact on human health and environment if not handled properly. How would improper disposal of this e-waste matter and be harmful to us! The fact is, Harmful metals like cadmium, lead, mercury, etc., present in the e-waste if not recovered and treated properly, percolate into the soil and to the groundwater and ultimately affect our health and environment. These toxic materials can also affect the health of the employees who manually sort and treat the waste by entering in their body through exposed skin, respiratory tracts and also through the mucous membranes of the mouth and digestive tracts. The impact of this is worse in developing and under developed nations where sorting and dismantling is done through unorganized sector, where men, women and also children work without any protection or safeguards. Often waste components which do not have any resale or reuse value are openly burnt or disposed off in open dumps. Pollution problems associated with such backyard smelting using crude processes results in toxic emissions causing health concerns. According to some studies conducted in the past informal sector handles almost 90% of the total e-waste generated and since there is no regulated system for this sector, data regarding the quantity of the e-waste collected and methods that are actually followed for its processing is unavailable.



Although a wide range of policies and regulations are made by the Indian Government, there are no specific laws or guidelines for the effective management of e-waste. The first comprehensive law was the Environmental Protection Act, 1986, after that the Hazardous Wastes (Management & Handling) Rules, 2003 came into force and e-waste was categorized under the hazardous and non-hazardous wastes. The management of e-waste was covered under the Environment and Forests Hazardous waste

(Management & Handling) Rules, 2008. An exclusive notification on E-waste (Management & Handling) Rules, 2010 under the EPA 1986 was also framed. Further on 12th May 2011, guidelines were issued for the safe and environment friendly handling, transporting, storing and recycling of e-waste.

The E-waste (Management & Handling) Rules talks about the Extended Producer Responsibility (EPR) which says that, the responsibility of the producer is extended to the post-consumer stage of product life-cycle, including its final disposal. According to the Greenpeace report (2008) 9 brands out of 20 had no takeback service for their products. Other brands claimed to have a take-back service but these companies were unsuccessful to provide easily accessible collection centers to their customers and also lacked in spreading awareness. But after the WEEE directive was passed in India in 2011, almost all the brands started providing takeback service and have managed to set up collection centers throughout India. They have also tied-up with authorized recyclers for effective wide-spread collection and disposal of e-waste.

How can we change the picture of E-waste management? Most of the e-waste in the city is recycled through unorganized units which involve a significant number of manpower. Working in dismantling and recovery of metals is the most hazardous act in the process, hence capacity building, training and awareness programs should be conducted with the scrap dealers and recyclers. Awareness should also be raised among people about the rising problem of e-waste and the need of segregation and proper disposal of e-waste. Also, organized e-waste processing should be encouraged and more authorized dealers should come into force for e-waste management. Bridging the gap between the informal sector and authorized dealers will also solve the problem to some extent, while setting up a channel between manufacturers and consumers so that e-waste can be dropped at the nearest store would encourage people to manage their household e-waste.

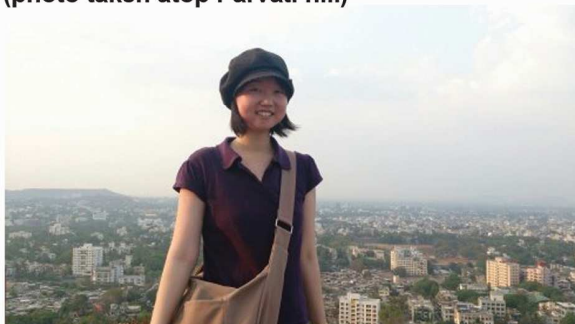
Measures like introducing tipping fee would help reducing the generation of e-waste. If we are made to pay for the waste we generate, we will think twice before buying new electronics. Also, end of life management should be made the priority before designing new products. This will also help in reduction of e-waste and ultimately lower its effects on the health and environment.

Pune Traffic

my experience

I am Kanako Ide from Tokyo, Japan. I belong to the International Accounting Department in Yokogawa Electric Corporation and doing a two-month internship in Pune with Sustainability Initiatives. Through my experience here, I hope to learn more about the work culture and way of life in India. India has been developing rapidly but the environmental problems occur in exchange of this development. Through this I am sharing with you my experiences of traveling and moving around in Pune.

Me with Pune in the backdrop
(photo taken atop Parvati hill)



When I arrived in the city, I was surprised to see cars, motorcycles and auto rickshaws traveling together on the road and they were all in a hurry to run, even driving in zigzag fashion. The vehicles were very close to each other and noises of horns were heard from everywhere.

The roads were filled to the brim with vehicles, leaving no space for people to walk or even cycle. It was very noisy and dangerous. I observed that many people used motorcycles and auto rickshaws to travel. And I felt it was difficult to walk or use bicycles because automobiles seemed to have more priority than pedestrians or cyclists. I was very amused by this scenario.



Traffic Chaos in Pune

In Pune, I go to the office by car with a designated driver. Alternatively, there is bus, auto rickshaw and walking. But I hesitate to use these because of air pollution. Also, we cannot use train services in the city, like I would do in Tokyo, because it is not connected at present. It is difficult to know which bus I should take because there are no displays about the bus routes and timings. The auto rickshaw drivers try to con and sometimes take extra fare from foreigners. While walking around, I found it difficult to cross the roads because pedestrian signals and crossing bays on the roads are very few and it becomes dangerous also because automobiles are speeding in the traffic. Footpaths are very narrow in some places and they are not well-maintained.

I also noticed that when there is maintenance work for drainage, electricity or other services there are not enough signs around the site to warn people. I felt very unsafe to walk on the roads because of danger of accidents.

In Tokyo, pedestrians have first priority and pedestrians and other vehicles follow the traffic rules. Roads are divided into separate lanes for automobiles, cycles, and pedestrians. Most people use railway or metro to commute and use bicycle, bus or walk between train stations. Using a car is considered a burden in Tokyo because the parking area is limited, cost of parking is high and the road is crowded with buses in some areas thus leaving very less space for cars.



Cyclists use separate lanes on the roads
(http://tokyoroomfinder.blogspot.in/2011_11_01_archive.html)

There are spaces for bus stops on the sides of the road. Many crossing bays on roads, signals, traffic signs and footbridges allow people to cross the roads safely. The police patrol some areas by bicycles, bikes or cars and take strict actions for anyone breaking the traffic rules. Also in some areas near schools, parents take turns to monitor children to cross the road safely. If there is a construction or maintenance work going on the road, a notice is distributed in advance to the neighborhoods and put near the areas so people can be warned in advance about the inconvenience that may be caused. Around the site, there are protective barricades and representatives of the maintenance agency to guide people and make sure there are no mishaps.

I also noticed that the traffic congestion in Pune happens because there are more private vehicles. They also seem to be increasing and with this traffic, accidents and its fatalities are also increasing.



There are traffic rules and guidelines in Pune, but people do not follow the rules and the police are also unable to monitor the movement of vehicles and take adequate actions against law-breakers. The traffic rules also do not take into account the interests of all the people using roads.



Double parking on FC road

Considering the situation in Pune compared with Japan I made some observations. In Pune, many vehicle riders neglect the lane, do not keep a distance and tend to overtake from wrong side. As the picture shows, cars do not follow the rule of NO double parking which narrows the space of the road available for moving vehicles.

In Japan, wearing helmet is mandatory for motorcycle/ scooter riders and more than two people riding is prohibited. In Pune, wearing helmet is not strictly regulated. More than two people riding is prohibited by law, but I saw three, four even five people, including children riding on one bike. The two-wheeler accidents tend to be serious because they are in high speed. The risk is increased on crowded roads, especially for children riding on the back. Auto-rickshaws have capacity only for three persons, but sometimes they also do not follow the rules and people also support it because the fare becomes less in sharing the auto. How can people move safely and smoothly? I have two suggestions.

Firstly, if people can use public transportation systems such as bus and trains more frequently, the traffic congestion will be reduced and then accidents, air pollution and noise pollution will ultimately decrease. So it is necessary to make the public transportation systems more convenient and efficient so that people will prefer to use them. There is lot of space for improvement in the public transportation system. The current bus service, is not well maintained and sometimes it is also difficult to ride in the crowded bus. People are even covering their mouth and nose with scarfs avoiding air pollution. And as mentioned, I could not see the sign of bus station's name and time schedule at the station. The congestion in the buses has reached a critical level. People even ride hanging at the doors of the buses which is very dangerous. The railways are not connected within the city and can be used only by those who travel from suburbs to the city. Even though there is a problem of land space for the railway's construction, utilizing underground or elevated space can be considered as an option.

Secondly, the roads should be developed to have priority for pedestrians and cyclists and stringent traffic rules should be made. The traffic police should also make sure that the rules are followed and strict action is taken against those who break the rules. This situation would make people travel and move more safely and comfortably on the streets.



People waiting for the bus on F C road

I think enough space should be made and maintained for pedestrians and cyclists and there should be enough space for bus stops where people can wait for the buses. In the picture, people are waiting for buses on the road because there is less space available for the bus stop. There should be clear lanes for automobiles, cycles, buses. There should also be proper pedestrian crossings and signals to cross the road safely. Near schools and hospitals, I think having footbridges is a good option. Strict rules need to be made so that automobiles do not cause congestion on the roads and these rules should be followed by all and strictly monitored by the police.



Pedestrian overbridge for crossing the roads in Japan

(http://ja.wikipedia.org/wiki/eight_route_tokyo_shinjuku_road)

In conclusion, I think that there are many things that need to be improved but mainly there are two points that need immediate attention. Firstly public transport should be developed for the convenience of the public. It means that there should be well-maintained vehicles and stations, enough coverage of route, enough frequency and capacity and on-time operation. Also to make up for the lack railway lines, the metro system should be introduced. The introduction of metro may help in reducing the traffic congestion by a great extent if it is designed, developed and maintained properly to suit the needs of the citizens. Second, the road's structure such as space, lanes and traffic rules are also to be considered to have priority to pedestrians and cyclists and be monitored by the police at the same time. All these suggestions can be considered which will help to solve the problem of traffic in the city and lead to making a sustainable society.



Metro in Japan,Source

(<http://treealerts.org/topic/transport/2013/04/tokyo-metro-photo>)

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 second part of the three series article will give you an insight on the importance of stakeholders in designing streets and the results of the opinion survey and consultations done as part of the project.

In the last issue we discussed the need of having Urban Street Design Guidelines (USDG) for the city of Pune and an overview of the various aspects responsible for improving the streets. In this article we will discuss the need for public participation for this project and different avenues that SI has explored to achieve this motive.

Streets are an inseparable part of urban life and used by all the citizens irrespective of age, gender or profession. As the streets are being used by everyone and for various purpose, it is necessary that the design and construction of streets is done considering the needs of all these street users. It is thus important to understand their views, aspirations and problems about using the streets for achieving the goals and objectives as envisaged in the 'Urban Street Design Guidelines'. Although opinion of every street user is equally important, inputs and views of following stakeholders are found to be more useful and relevant in this process of formulation of guidelines for better design and construction of streets -

- The Municipal Corporation that is the authority responsible for design and construction of streets.
- Traffic Police department that manages the traffic

pattern and ensures maintaining the law & order on the streets.

- Hawkers for whom streets provide space for earning livelihood.
- Public Transport department.
- Departments responsible for public utilities and underground infrastructure network.
- Sr. citizens and differently-abled individuals that have special needs when using streets.
- Pedestrians and cyclists who are in minority and get dominated by users of vehicular mode of transport.



The purpose of conducting a primary survey is to validate the need of the study, identify the problem areas, verify the recommendations of the study and understand the aspirations of the stakeholders regarding the street design.

SI is using the following tools for involving citizens in this important project:

- Opinion survey.
- Workshops for Stakeholders' consultation.
- Focused Group discussions and awareness programmes.

Opinion Survey for public participation

The easiest and the most popular method of garnering public participation is through opinion surveys. SI designed a survey, the results of which would help to represent the opinions of the public through a series of questions. The survey was based on random sampling to get responses of all the stakeholders and every responsible resident of the city. The survey was shared through the network of emails, websites, and also through social media. However the reach of the online survey is limited to educated working class. In order to reach out to a wider audience, it was necessary that the survey be circulated through other avenues as well. A questionnaire in a printed format was circulated to various establishments especially schools and colleges. Prominent among those were NCL Jr. College, Delhi Public School, D.A.V. School, Little Millennium Pre-school, Jnana Prabodhini, Victorius Kidss Educare, Fergusson college, Symbiosis Institute of International Business, College of Engineering, Pune. The schools were especially very supportive of this initiative and also appealed to parents to complete the survey.



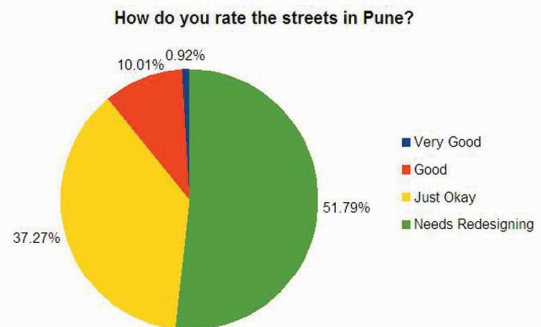
Results of the opinion survey

The results of the survey that was conducted over a period of 6 months, and answered by thousands of respondents of all ages and backgrounds are quite interesting.

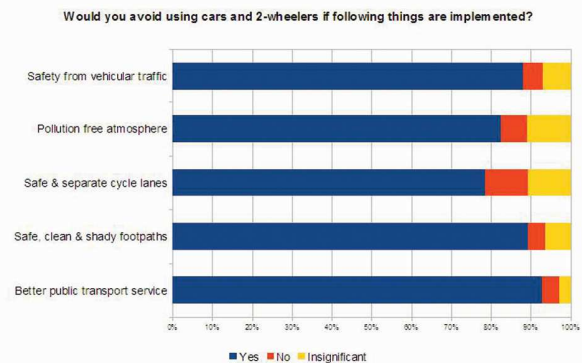
The results indicate that the citizens are convinced to have better mobility, safety and comfort while using the streets through the formulation and implementation of Street Design Guidelines. Most of the respondents believe that the streets in Pune need to be redesigned to improve the condition of traffic in general.

A majority of the respondents stated that they used

two-wheelers for daily commuting followed second by cars. None of the respondents felt that the roads in Pune are very good, and a majority were of the opinion that the roads were in need of redesigning.



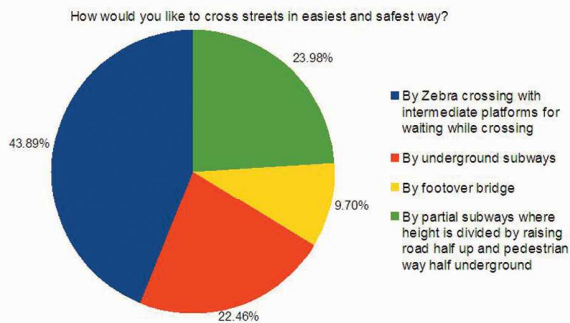
Seeing the current state of roads and the anticipated traffic congestion, many respondents stated that they would avoid the use of their private vehicles if a better public transport system was made available. Better pedestrian and cycling facilities wherein safety is assured while walking or cycling on the streets is felt to be quite important. People who are presently forced to use private vehicles due to various unfavourable reasons are willing to use public transport and cycles and avoid using private vehicles in future. Providing equitable space on streets for public transport, pedestrians and cyclists is thus seen as the need of the hour.



The information about origin and destination of daily trips has shown a very interesting travel behaviour. The average daily travel distance of citizens is 20 km per person. Most citizens travel from core city areas to Hinjewadi, Kharadi, Magarpatta and parts in PCMC for work as these are the major locations of work-places. Thus a good connectivity via public transport needs to be established with these areas to reduce the use of private vehicles on these routes.

Another issue that is very important from the point of safety is provisions for crossing the streets. Foot-over bridges especially at intersections are considered to be most ineffective means to cross the street. Most respondents have favoured at-grade crossing with refuge islands followed by preference to partial or hump subways.

Parking on streets has always been an important and controversial issue. Street Parking although is for the convenience of the vehicle users, as per the survey, respondents feel that parking on streets create hurdles in the vehicular and pedestrian traffic flow making the conditions unsafe.



People have strong opinion about discouraging the street parking by avoiding it on narrow local streets or by levying high parking fees. Some also suggested that RTO should register cars only after ensuring that the person owns a parking space.

It was also felt necessary to understand whether people would like to have dedicated pedestrian streets for certain stretches of roads or special streets having high pedestrian movements as is done in outside cities. Majority of the citizens opine that Laxmi Road, FC Road and MG Road which are famous for the high commercial activity have potential for being pedestrianized in future.

Respondents also enthusiastically commented about other aspects not included in the questionnaire such as avoiding of U-turns, treatment to road reserves to avoid encroachments, importance of road cleaning, consideration to hawkers zone, discipline for auto drivers, heavy penalizing for driving in opposite direction etc.

One of the outcomes of the survey was that the discipline amongst road users need to be improved for better functioning of streets. Conducting awareness programmes for the same also helps in having the public participation for such projects.

Road Safety and Children

Children are very observant and inculcating good habits at a very young age goes a long way in making them better citizens of tomorrow. With this thought, a "Children and Road Safety" session was planned at pre-schools, Little Millenium and Victorius Kidss Educare. The aim of this session was to increase awareness in children about basic street safety when they walk around the local and city streets in a fun and interactive way.

Through this session, we helped children to understand about traffic rules and road safety with guidance from Pune Traffic Police officials. This was done using posters, Powerpoint presentation and videos, activities and role-play involving the pre-school children to emphasize the importance of rules like use of Zebra crossing, footpaths, necessity to follow traffic/ pedestrian signals etc. Ms Neelam Jadhav, of Pune Traffic Police was also part of this programme in various schools.



This activity encouraged the kids to pass on the message of following traffic rules and regulations to their parents who many a times ignore the traffic rules.

Stakeholders' Consultation

Along with this a very important part of the project was stakeholder consultations. Along with opinion surveys, it is also important that the stakeholders are made aware of what the design guidelines have in store for them, what they will receive through these guidelines, the design implications suggested through this document and how it will effect them. Thus the important stakeholders in this project like the Traffic Police, Road department, Pune Municipal Corporation, Public Works Department, PMPML, Senior Citizens, Hawkers, Cyclists, Pedestrians, School Bus Drivers, etc. need to be consulted.

SI and VK:a have together conducted a stakeholder consultation with representatives of different street users. The consultation was done with representatives of Pune Municipal Corporation (Road department), Pune Mahanagar Parivahan Mandal Ltd. (PMPML), Pune Traffic Police, Pune Municipal Corporation (Garden department), Cyclists, Pedestrians, Auto-rickshaw drivers, Senior citizens and representatives of the Disabled community. A road stretch, part of the Karve road was considered and the stakeholders were asked to share the problems that they faced while using these streets as well as the positive aspects that should be implemented at all the roads.

The consultation helped to understand the first hand feedback of road users and how they are affected by the various elements of streets that are considered while designing the same. With all the stakeholders present at the same time it was also beneficial that each of the street users understood how their behavior affects the other users. The results of these consultations showed that the proposed ratios of design and space allocation for different street users are more or less in line with those proposed in the guidelines. Thus these consultations have helped to validate the suggestions in these guidelines.



It has been observed that inspite of diverting most of the energy for improving travel of private vehicles, streets are still not attractive and safe. A proper streamlining, segregation and design is required to ensure better mobility on streets. Junction design and management plays the most important role in functioning of the street and needs to be given utmost consideration for all road users. Flyovers if properly designed taking into consideration the network traffic problem and not only specific junction traffic problem then only they are effective. Design of flyovers should include provision for all road users and not only vehicles.

Majority of the respondents have understood the fact that providing more infrastructure for private vehicles will never make streets livable and healthy. There is a need to address public transport, walking and cycling as the future modes for commuting and designs should give equal consideration to them. Clean, wide, un-obstructed, and safe footpaths are the most essential elements of the streets for citizen. Cycling is still a popular option and steps need to be taken to develop good infrastructure for the same. Mere provision of cycle tracks will not encourage cycling. It needs to be supported by cultural, land-use and policy changes.

'A street design is good if the design itself ensures enforcement of rules. Design should make it convenient to follow rules'

IMPrint Trivia



In the average home, 75% of the electricity used to power home electronics is consumed while the products are turned off.

The average desktop computer idles at 80 watts, while the average laptop idles at 20 watts.

A Sony PlayStation 3 uses about 200 watts and nearly as much when idle.



It is better to switch off and unplug your appliances/ electronics when not in use to save energy and reduce your power bills.

Everything can become Something

Brick School of Architecture is a centre for innovation and one of the Pune's few independent design schools that seeks to create a “Learning environment that enables creative and critical learning”. The students of their first year Architecture class focused on the principle of Reuse to create some innovative and useful products from unwanted materials.

Architecture till very recent times has always been an esteemed craft, and the architect as master builder held the skill of knowing the full layout / ‘plan’ of the creation, meeting its every need & aspiration, while balancing the aesthetic intent with the technological compulsions. Hence architecture can only be practised as a craft; and for learning the same, the only method would be apprenticeship to a senior skilled craftsman, and learning the skills patiently through the different labours of the entire process, before one could ‘profess’ the craft.

However, in the last couple of centuries and particularly in the last few decades, architecture like any other field of human endeavour has seen immense specialization and internal diversity. It has also become imperative and even highly useful to compress the many years of ‘labour’ into a couple of years concentrated & planned activity – targeted to equipping a person fully with the different aspects of the craft.

Since we are dedicated to educating prospective architects and designers who will imagine and shape the future, it is very essential that they are exposed to concepts that are futuristic like that of “Holistic Sustainability”.

Holistic Sustainability has emerged in the last few years and when not quite understood completely poses a challenge for any architect responsible for creating an environment in which the future civilisation will thrive.

Holistic Sustainability and Waste

Under the huge umbrella of Holistic Sustainability, waste is one of the primary aspect. We all know that one of the outcomes of not being sustainable would be running out of precious natural resources and ending up with vast barren lands filled with mountains of waste. Luckily for this generation, we have not yet run out of time and have ways to reduce the piling waste. The three R’s that each one of us is well aware of- Reduce, Reuse, Recycle. Brick School of Architecture, chose to focus on ‘reusing’ as a way to introduce principles of sustainability to the first year architecture students.

Exploration

The exploration was about designing and making a wearable and multi-functional object or a shell. It was a requisite for their design solution to be innovative, as well as it had to be made from waste. The exploration provided the students with an opportunity to apply their learning of anthropometry along with understanding how the concept of ‘reuse’ could be integrated in the design process.

They worked in a team of two, generating an uncommon, innovative design that had not been executed already. They drew inspiration from a couple of ideas presented by faculties.

Collecting the Waste

The 'climax' of the exploration was that they were supposed to transform these ideas into actual wearable items using only any two types of waste from a set of prescribed list- plastic bottles used for water, cola, etc., jute gunny bags used for storing foodgrains, empty cement bags made of plastic, bubble wraps, thermocol waste, cardboard boxes and other such waste items. Collection of these waste items was planned well in advance and was an unique experience on its own for the students. Students now valued each bottle of cola, every plastic bag or bubble wrap, which they would have otherwise thrown away. They collected these items from big restaurants and offices which generate these kinds of waste in large quantities almost every day.

The process of gathering waste in itself resulted in increased awareness about the quantities of waste produced (by their own household or society for example) and also about the 'life-cycle' a specific material goes through. The faculty also suggested they take inspiration from books like 'Cradle to Cradle' and short films like 'Story of Stuff' to enhance their understanding about waste and reuse of waste.

The Process of Exploration

The exploration started with basic sketches and ideas for the products. Students transformed their designs to actual wearable and usable products using a variety of materials. This helped them to understand the basic properties of material and to choose the best material for their products. The exploration was conducted in three stages across four weeks, which included developing the concept for the product, finalizing on materials and generating the final product. There were presentations and discussions across these stages to help and guide the students throughout the exploration.

Outcome of the Exploration

About 40 innovative, wearable, multi-purpose products were created by the students which were displayed in a one of kind exhibition at the Brick school campus. Ar. Dhara Kabaria inaugurated this exhibition where she also shared her views about how this exploration can be taken further.

As a creative designer who generates furniture using waste and used items, Ar. Dhara Kabaria, rightly commented at the display- 'Everything can become Something'. In her interactive session and presentation, she elaborated on this point of view – there is nothing that is waste – everything has a potential to transform into something useful.

Conclusion

Even though 'sustainability' is a complex idea, designers can achieve it by simple measures that can be incorporated in daily practice. Reducing the generation of waste that ends up in landfills and promoting innovative ways of reusing discarded materials can help to reduce the pressure on natural resources and use of virgin materials. Introducing sustainability concepts from the very beginning of learning architectural design can prepare the students to tackle more complex issues of sustainability that they are to face in the future. It helps them to embrace sustainability as an integrated aspect of design and not as a separate imposed idea. Apart from applying principles as designers, these kinds of explorations also make students, as individuals, realize the importance of natural resources and take more initiatives towards being incorporating sustainability in their daily practice.

Some Innovative Products from the Exploration

Akshay and Vipin, thought of reviving the sheet container using the waste plumbing pipe. They not only provided enough space for large sheets but also created a small container at one of the ends to store pencils, brushes etc. This container can be used separately also as shown in the image



The Sheet container

Snehal and Nikhat, wanted to design a flexible book/ kindle stand so they can continue their reading while waiting for bus or otherwise. They wanted 'something' that would allow them to keep their hands free while reading as well as it can be folded when not in use. Finally they came up with 'Readezee' which exactly did what they wanted. Here they have used plastic bag, making the sling bag water proof and card board to give that stiffness.



Readezee- Sling bag + book holder



The Sling Band

Saurabh and Maitreya identified an issue they were facing during drafting- 'where to keep their pencils and pens'. They addressed this issue by designing a jute bag which fits in their arm while drafting and can otherwise become a sling bag.



Exhibition at Brick School of Architecture

NGO in focus: Prayas Energy Group

Prayas Energy Group (PEG) has been active since 1990 in the area of electricity sector. PEG works on theoretical, conceptual and policy issues in the energy and electricity sectors through a comprehensive, analysis-based approach for furthering public interest. Mr Shantanu Dixit (SD), Group Coordinator, Prayas (Energy Group) talked to SI about Prayas and their efforts at making 'Energy a development tool' and democratising energy governance in India.

SI: What was the idea behind starting PEG?

SD: Energy Group is part of 'Prayas' which was formed in 1994, by 2 Doctors working in HIV issues- Dr Vinay Kulkarni and Dr Sanjeevani Kulkarni along with Late Mr Girish Sant, myself and Dr Subodh Wagale. Others like Mr Shripad Dharmadhikari have been a part of this journey since the beginning. The larger organization Prayas has mainly three groups. Prayas Health group works in AIDS, HIV related issues. They focus on awareness, training of health workers in the context of HIV, undertaking care and support activities for HIV patients through several hospitals in Pune district. Prayas Resources and Livelihoods group focuses on works related to water management, disaster management and have also worked on low external input agriculture, employment guarantee schemes, etc. And the Prayas Energy Group (PEG) that focuses on policy issues in the energy sector especially electricity. The energy group focuses on analysis and advocacy in the context of policy issues and policy processes in the sector. The 3 groups are a result of the founders' individual interests in different sectors.

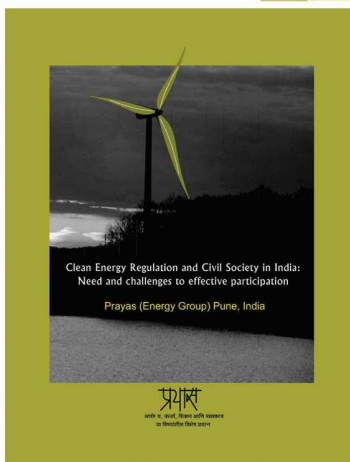
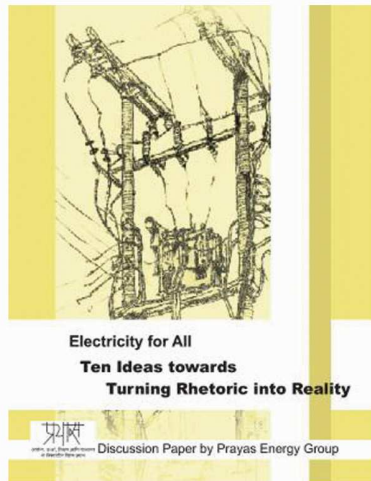
SI: What are your major areas of work?

SD: Currently we focus broadly on five themes. One theme looks at various issues related to fossil fuels- oil, natural gas, coal and the governance



Shantanu Dixit

issues in these sectors, how these are affecting production of fuels and the availability of fuels for the power sector. Second theme is energy efficiency issues. There is a lot of scope for increasing the end-use efficiency of various appliances that we use. But more efforts need to be made at the policy level to attain this energy efficiency potential. Policy responses are required so we can have more energy efficient appliances. The third theme we work on is regulation and governance. Here we look at issues such as long term planning in the energy sector, the kind of projects that are required to be undertaken, the appropriate tariff for electricity generation projects, what should be the general tariff for consumers, how we can promote performance improvement and accountability of the performance of distribution companies amongst others. We frequently intervene in the regulatory processes to improve transparency, accountability and public participation for decision making in this sector. Fourth theme is Renewable Energy. The focus is on policy issues and trying to find innovative solutions so that there could be greater contribution of Renewable Energy in the energy mix. And the last theme we focus on is the overall long term energy security and energy policy planning for the country.



SI: What type of projects do you carry out under these focus areas?

SD: We undertake research and analysis of relevant issues, produce reports, papers, articles based on it and share the findings of the analysis with relevant government agencies-

Regulatory Commission, Planning Commission or the various Ministries, and encourage them to adopt the policy solutions that we are promoting or suggest ways for improving effectiveness of programmes & projects already undertaken by them. An example of our work would be on the National Solar Mission launched by the Government of India. The objective of this mission is to enhance solar based electricity generation in the country. We analyzed the document on this Mission and felt there was a need for competitive bidding in the solar sector which will lead to competitive prices for electricity. These are the kind of suggestions we provide in the policy making process. Most of our work is independent and we do not work with the government *per se*. We carry out independent analysis, but for policies to improve, we have to share our analysis with government agencies, encourage them to adopt some of the policy procedures, suggestions and options.

SI: Tell us more about your ongoing projects and their objectives?

SD: Recently, the planning commission wanted to do a 'India Energy Scenario 2047'. The idea behind this project is to present what the country's energy demand will be in the year 2047, how that demand

can be met and what are the different possibilities for serving this need. This is kind of a tool for civil society groups or researchers in the sector to understand the macro energy scenario. We are working with the Planning Commission as knowledge partners to develop this tool. We have just completed the work on 'India Energy Scenario 2047'. Another interesting exercise we are doing is the Super Efficient Equipment Programme (SEEP). Appliances are the main energy guzzlers in our households. There is a lot of potential to improve the efficiency of these appliances. One appliance that we have focused on, to improve its efficiency, is the ceiling fan. Normal ceiling fans consume about 70 watts; but if we use better technology, the energy consumption can be reduced by about 50%. There is some incremental cost required to achieve this technological advancement. The idea here is that the government will give some incentives to the manufacturers to produce and bring out these more efficient products in the market. Since there is an incentive from the government, the price of these appliances would be competitive even though improved technology is used. Consumers will thus prefer to go for these 'super efficient' appliances. The programme developed has been approved by the Bureau of Energy Efficiency (BEE) and the Planning Commission and will be officially launched in the next few months. PEG will be providing technical support to this programme.

SI: You have mentioned that PEG does not undertake commercial consultancy assignments or individual consumer based regulatory interventions. How do you fund your work?

SD: From the perspective that we want to be independent in our analysis, we do not undertake any commercial assignments or work for corporates, private organisations. Most of our work is funded through grants from other government, non-government agencies. Sometimes we get projects from the government for which certain funds are allotted for research and analysis. But most of our initiatives are independently carried out where we identify areas where work is needed through research, where there are policy gaps and analysis is needed to fill these gaps.

SI: Apart from the aforesaid themes, what other initiatives do you undertake?

SD: Occasionally we have also conducted analysis outside the said themes, like on transport. Though it is not our core focus area, in the past we worked to analyze what subsidies are given for different modes of transport. Transport though not directly related but is an important energy consumer.

SI: What does energy sustainability mean to you? How does PEG aim to achieve sustainability and equity through its work in the energy sector?

SD: Sustainability in the energy sector would require adopting a 'R-I-R' approach.

R-Reduce, Reducing energy needs wherever possible;

I-Improve, Improving the use of energy resources through efficient appliances and products;

R-Replace, Replacing fossil fuels by renewable energy where we can't avoid using electricity.

That's the broad framework we need to adopt.

Through our work at PEG we try to do analysis which will demonstrate the economic benefits of adopting this approach and develop policy options which will enable large scale actions built on these 3 aspects, like- promotion of renewable energy, better policies to increase the contribution of renewable energy in the energy mix, improving efficiency of appliances or promoting through policy the use of different kinds of fuels/energy to meet our needs. We work to create, develop and promote appropriate framework to enable us to move towards this paradigm.

SI: Please explain your role as a facilitator for innovators in the Energy sector.

SD: The innovators who work on developing super efficient appliances/products, intend to improve the end use efficiency of these products. Earlier there was no proper policy framework to promote or support these technologies and developments. We worked to create programmes and facilities in order to create an environment which would promote the manufacture and sale of more efficient appliances created by the innovators. We directly do not promote any product or technology. What we do is see if there is possibility of furthering public interest by using innovative technologies and if such opportunities are available we develop policies and programmes which will facilitate the promotion of the innovative technologies.

SI: What according to you are the challenges that India faces in the Energy sector and how can these be overcome?

SD: There are three main challenges that we need to address in India. First and foremost is the Access to electricity. We still have over 200 million people in the country who do not have access to electricity. There is a large inequity that needs to be addressed. Second is the Limitation of resources. All the conventional resources needed for electricity generation are in shortage- land, coal, oil, gas. How to achieve the Access in context of this Shortage of resources is the key challenge. Third important but mostly neglected

aspect in the sustainability debate is the challenge of Weak Governance. We quite often find that because the governance is weak, the institutions are not strong and influential. That really affects the implementation of many innovative solutions that can overcome the problem of access and shortage of resources. All these challenges can only be overcome by various factors. But the key factor is having more enlightened and aware citizens. And not just awareness, but awareness leading to actions is more necessary. They have to collectively start influencing various decisions in the sector, take actions to advocate the right decisions, to make sure that these programmes are effectively adopted and implemented. At the same time, energy conservation, buying energy efficient appliances, using renewable energy wherever possible should be done at individual level. At both levels- individual and collectively, consumers and citizens need to be active and participate in the whole process.

There are people within the Government/Planning Commission who are open to getting inputs and are willing to support new ideas and analysis. There are opportunities for improvement and we should make the most of it by looking for innovative ideas and make positive contribution to the development.



Google accounts for roughly **0.013%** of the world's energy use. It uses enough energy to continuously power 200,000 homes.

Google data centers used 260 million megawatts of power in 2010.

Earth Hour or Not

Climate Change is now a known phenomenon and across the globe various national and International groups are taking action to curb its effects. Every month there are numerous days to create awareness about different biodiversity elements and global phenomena. The Earth Hour celebrated on the last Saturday of March is one such day, when millions of people switch off their electricity for an hour. It is a token act to raise awareness about the depleting fossil fuels which fulfill our needs of electricity.

Switching off lights for an hour! Doesn't sound very difficult for us Indians, to whom the summers inadvertently bring regular power cuts, more commonly known as 'load-shedding'. But in the more developed countries where power cuts are as rare as a meteor shower, an hour of lights-out is a lot. And when millions of households switch off their lights and electric appliances for an hour, we hope they do make a difference.

With this thought, WWF Australia came up with the concept of a large scale switch off. The idea came from a think tank initiated by Earth Hour CEO and Co-Founder, Andy Ridley, resulting in the formation of a partnership between WWF Australia, Leo Burnett and Fairfax Media to address the climate change issue. It was originally called the 'Big Flick'. The first Earth Hour was held on 31st March 2007 in Sydney, Australia at 7:30 pm local time. In 2007, there was still a degree of skepticism and denial about the issue of climate change. Celebrating an Earth Hour was an initiative to rally people to the reality of climate change and inspire other individuals to address the greatest problem facing our planet today through act. Inspired by the Sydney Earth Hour, San Francisco also ran its own "Lights Out" programme in October 2007.

After the success of the October event the organizers thought of making this an annual worldwide event and began rallying for the Earth Hour 2008. The first international Earth Hour was held on 29th March 2008 from 8:00 pm to 9:00 pm local time.



Sydney Harbour Bridge and Sydney Opera House darkened during Earth Hour 2007

The second-to-last and last weekend of March is around the time of the Spring and Autumn equinoxes in the northern and southern hemispheres respectively, which allows for near coincidental sunset times in both hemispheres, thereby ensuring the greatest visual impact for a global 'lights out' event. Hence the Earth Hour is held on the last Saturday of March every year from 8.30PM to 9.30PM in the local time zone. Earth Hour 2014 took place in more than 7000 cities and towns in 154 countries and territories across all

seven continents. Hundreds of millions of people switched their lights off for an hour along with around 3395 landmarks that participated. Landmarks all around the world turned off their non-essential lighting for Earth Hour, including the Sydney Opera House (Sydney), Empire State Building (New York), Golden Gate Bridge (San Francisco), Eiffel Tower (Paris). Earth Hour was also observed across various cities in India. Lights of illuminated monuments such as Gateway of India, India Gate, Howrah Bridge, Chhatrapathi Shivaji Terminus railway station & the Rashtrapati Bhavan plunged into darkness during the Earth Hour.

India Gate is seen lit (top), and the same location with the lights turned out for Earth Hour, in New Delhi, India



Cities across the world have reported upto 12% reduction in electricity during the Earth Hour. But there was a lot of criticism that encircled the reduction of electricity that was measured during the Earth Hour lights out. Some critics pointed out that the reduction in power

consumption in most cases was indistinguishable from zero. The Herald Sun equated the power savings in the Sydney to "taking 48,613 cars off the road for 1 hour". Australian Columnist Andrew Bolt pointed out that "A cut so tiny [48,613 cars off the road for 1 hour] is trivial – equal to taking six cars off the road for a year".

In answer to this criticism, the Earth Hour Global FAQ page now states "Earth Hour does not purport to be an energy/carbon reduction exercise, it is a symbolic action. Therefore, we do not engage in the measurement of energy/carbon reduction levels for the hour itself. Earth Hour is an initiative to encourage individuals, businesses and governments around the world to take accountability for their ecological footprint and engage in dialogue and resource exchange that provides real solutions to our environmental challenges."

Some other critics of the Earth Hour state that alternative sources of energy like solar, wind power which are cheaper than the conventional fossil fuels be promoted & encouraged. This will help to offset carbon energy sources for a lot longer than one hour and keep the planet green. Some others also quote that the Earth Hour is only a symbolic act and instead leads to more consumption.

Youngsters switch off lights at home and rally around the city in vehicles thus using petroleum instead and contributing to long-time traffic jams. Also at many events that support the Earth Hour, people gather and light candles. Most candles are made from paraffin, a heavy hydrocarbon derived from crude oil. Depending on the number of candles burnt and the source of energy used to produce electricity, in some cases, replacing light bulbs with candles cause an increase, instead of a decrease, in CO2 emissions. Arguments are also made on how the main electricity grids faces complications due to the rapid lowering and increasing of electricity demand.

Earth Hour promotes that lights should be switched off at the scheduled time, but can remain off until they become necessary and should be switched on in stages as they become necessary. This will help to reduce the sudden load that may occur with switching on millions of lights at the same minute. Only the non-essential lights should be turned off for the one hour and not lights for public safety. Lights that are for decoration purposes, display boards, neon signs, etc. can be easily switched off and can stay so even beyond the hour. It would also make sense to have torches or flashlights handy before Earth Hour starts. That way if you need to see, you have a light source close at hand, and you can still respect the spirit of Earth Hour and keep yourself and your family safe.



Electronic billboards are turned off for Earth hour in Times Square, New York.

The Earth Hour aims to encourage an interconnected global community to share the opportunities and challenges of creating a sustainable world. The concept of Earth Hour is to inspire and engage people to take action beyond the hour.

SI:News

A section dedicated to news, events and activities from the SI forum. Here you will get updates on what all we are up to.

Road safety session for children, 16 January, 2014, Little Millennium School, Baner



Little Millennium Pre-school was helping SI to collect responses for the USDG opinion survey. As part of this project, and on request of the school, SI also conducted a session on “Children and Road Safety” at their Baner branch. Through this session, we taught children about traffic rules & road safety with guidance from the Pune Traffic Police. The session included posters, slide-show presentation, videos and activities to make young minds understand the importance of road safety. Important traffic rules like use of Zebra crossing, walking on footpaths etc. were explained to the children. The presence of traffic policemen also helped to emphasize the importance of road safety to all. Through this

activity, we also encouraged kids to pass on the message of following traffic rules to their parents. The children enjoyed the activity very much & were also glad to meet the Traffic Policemen in person.

Disha Seminar on making careers in Environmental Management & Sustainability, 21-22 January 2014



Sustainability Initiatives partnered with Ekonnnect Knowledge Foundation, Mumbai and organised a career guidance seminar ‘Disha’ in Pune with the Symbiosis Institute of International Business. ‘DISHA’ was a two-day programme focusing on providing guidance to students and young professionals with a background of environment, who wish to

pursue careers in Environment and Sustainability. The subjects covered in the two day seminar were Renewable Energy, Green Buildings, Smart Cities, Life Cycle Thinking, Green Products & Procurement, Extended Producer Responsibility, Corporate Social Responsibility, Sustainability Reporting and Climate Change Mitigation and Adaptation. Mr. Pramod Chaudhari, Founding Chairman & MD, Praj Industries was the chief guest for the event. Expert speakers and panelists from EcoAxis Systems Pvt. Ltd, ACWADAM, BVP College of Architecture, Tata Motors, Forbes Marshall, IL&FS, TUV, Oikos, TQMS, Infosys and others participated in the programme to guide and interact with the students.

Site visit to Kirloskar Yamuna, 28 February 2014

Sustainability Initiatives members and students from Masters in Environmental Architecture, BNCA visited the Kirloskar Brothers Limited's Corporate office 'Yamuna' located at Baner in Pune. It is the first IGBC



LEED Platinum certified building in the city. The building was completed in 2009 and is spread over 3 acres of land and houses about 500 employees. Mr Nishikant Ingle and Ms Sheetal Nagare of started the tour by first explaining the Green building features that Yamuna has incorporated and then showed the building with respect to these green features. A short film about the company was then screened. The tour of the campus included the heritage display room of the company. Water-cooled VRV air conditioning system with sensors for monitoring CO2 levels, photovoltaic panels to generate electricity, glass panels to allow natural light, recharge pits for rainwater harvesting and green roofs.

KarmaKonsum: 'Sustainable built environment' session by Anagha, 6 March, 2014 and 'Greening your home- DIY session', 8 March 2014

KarmaKonsum, a green festival was organised in Pune on 6-9 March 2014.

Anagha Paranjape-Purohit, talked about Sustainability in the Built Environment at the KarmaKonsum. Her



session emphasised the need of considering our built environment while greening our lifestyle.

SI also organised a workshop as part of this festival. The workshop conducted by Ar Pranati Shroff was on the basic primer in climate analysis of homes. This non-technical presentation aimed to teach participants to analyse and improve their own homes for comfort and better energy efficiency. Participants were also given tips to efficiently use the lighting in homes, water management and other tips to conserve energy.

Consultation with stakeholders for Urban Street Design Guidelines, 29 March 2014



As part of the Urban Street Design a stakeholders consultation was held in association with VK:a to understand the perspectives of the different street users and their needs that are to be considered while designing streets. The stakeholders invited for this discussion were representatives of Pune Municipal Corporation (Road department & Garden department), Pune Mahanagar Parivahan Mandal Ltd. (PMPML), Pune Traffic Police, Cyclists, Pedestrians, Auto-rickshaw drivers, representatives of differently abled community & Senior citizens. The road stretch considered for this consultation was a part of Karve Road. The discussion began with a brief on the project & each stakeholder was asked to share their problem while using the streets and how they would like the streets of the city to be in the coming future. SI felt that it was important that the stakeholders are made aware of the design guidelines, the implications suggested through this document and how it will effect them at a personal level.

Events in 2014

Jan 2014 Disha: Careers in Environmental
Management and Sustainability

Feb 2014
Experiential visit to an eco-friendly building

Mar 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

Aug 2014
Green Lifestyle workshop

Sep 2014
Green Building Workshop

Oct 2014
GRIHA Regional Conference

Nov 2014
SI Foundation Day and release of SI Annual Report

Dec 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

- Events/ Seminars/ Workshops worth more than Rs 1000
- Subscription to SI:Imprint (4 issues a year)
- SI members meet twice every month for learning sessions, networking events, meetings with professionals, etc.for career development
- Opportunities to volunteer and intern with SI
- Opportunities to initiate and lead projects in association with SI
- Guidance for academic/ research projects
- Discounts at other events/ workshops and SI publications
- Discount in membership fees for SI:KRIS the online resources library

**To become a member fill the form overleaf and post it to us at
Sustainability Initiatives,**

5 Agarakar Bhavan, Navi Peth, Pune 411030 or email us at mail@sustainability-initiatives.org



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