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India is not doing enough in managing climate change. India, and the world, will have done enough only when greenhouse gas emissions decline rapidly

Shailesh Rao

The technology expert discusses an innovative project to manage global warming with Managing Editor **Sheela Bhatt**

Shailesh Rao walked into a movie house for a screening of former Vice President Al Gore's documentary film *An Inconvenient Truth* – and walked out again knowing his life had taken a different direction.

Dr Rao, as executive director of the San Jose-based company The Lighting Project, was involved in the creation of new communications technologies. He was, among other things, responsible for developing the world's first single-chip real-time MPEG video encoder, the IEEE 100BASE-T2 Ethernet standard, and the IEEE Gigabit Ethernet on Copper (1000BASE-T) standard that is currently deployed in millions of computers worldwide.

That was before the inconvenient truths laid out by Al Gore captured his mind; since that May 2006 epiphany, he has been working exclusively on the problem of global warming. Lighting Project, a non-profit, is dedicated to substantially improve the energy efficiency of lighting systems in low income neighborhoods throughout the world.

Dr Rao, an alumnus of IIT Madras who did his post-graduation from the University of New York and PhD from Stanford, is now busy proselytizing a unique socio-business idea to empower the poor in India while helping them to save money, curb carbon emissions, and help ease global warming and the consequent climate change.

Could you go into your project in some detail?

We are a non-profit California corporation working on a grass roots solution to global climate change. The project is based on the observation that if 1/6th of the ice-free land area on earth is reforested, global carbon dioxide emissions will likely become a negative number. To accomplish this, we are partnering with NGOs and villagers who are focussed on reforestation, but are off the electrical grid. We provide these groups with renewable energy technology and resources to help them become net negative carbon emitters. We call these people 'The Climate Healers', celebrate their commitment by publishing their pictures and stories on the Web, on www.climatehealers.org, monitor their performances and reward them appropriately while inviting the affluent community, as patrons, to support them.

Why did you decide on this route? What is unique about this idea?

There is growing frustration among people that despite two decades of governmental action, the world's annual greenhouse gas emissions have been relentlessly increasing, at a faster rate than ever before. As a presenter for Al Gore's Climate Project, I witness this frustration at every talk I give on the climate crisis, as people who want to make a difference are relegated to changing light bulbs.

Our project is a grass roots solution to global climate change (GCC), where every human being can participate and make a tangible contribution to the solution. The ultimate goal of our project is to reforest over 6 billion acres of land, while restoring bio-diversity, addressing global climate change, promoting sustainable living, and creating social networking links between the bottom and the top of the pyramid.

As GCC, environmental degradation and unsustainable development are all intricately linked problems, ultimately it requires a sea change in human attitudes and a move away from self-aggrandizement to reach a stable solution for these problems. It is our belief that when a sufficient number of people participate in such a grass roots solution, it will create a movement that can achieve such a sea change among the majority.

This project recognizes that the use of wood for fuel is a major contributor to worldwide deforestation and carbon emissions, as 1.5 billion tons of wood is collected and burnt



annually for cooking, and that in order to persuade people to switch to solar cooking instead of wood, we need to reward them. The project uses a carbon offset mechanism and the patronage of the environmentally aware, affluent community to fund this change in behavior among the poor.

Isn't the solar cooker a bit unwieldy for the poor to operate, especially in cramped slums and huts?

The project is focused on rural communities who can help with reforestation of open public lands, and will not be deploying the solar cookers in city slums. Ideally, we would like to see a reverse migration of city slum dwellers back to the rural areas, where the reforestation work can take place.

I understand that the grassroots operation has kicked off in Orissa and Rajasthan – could you go into detail?

For our pilot phase, we are partnering with the Foundation for Ecological Security (www.fes.org.in) and we will be deploying in two villages, Hadagoudi in Orissa and Karech in Rajasthan, where FES has been working with the villagers for several years on reforestation and ecological restoration. While the solar cookers are being designed and prototyped, we are deploying solar lights to each household in these villages, taking pictures of the recipients and putting them up on the web site in order to streamline the database and social networking functions.

We visited both villages earlier this year, and found the villagers were uniformly enthusiastic about the project. In Orissa, the village is in three hamlets, and each hamlet is spread about a mile apart from each other. Each hamlet has a main street, and the huts are lined on either side of the street. Each hut has a courtyard in the center, which could be where the solar cooker gets used during the day. The head of FES Angul, Mr Sisir Pradhan, explained the concept of the project to the villagers in Oriya.

The women whose lot it is to collect the wood for cooking were appreciative that they wouldn't have to do much of that in future, but they asked what would happen during rainy days. We told them they would need to do what they

are doing today during those days. They asked if they can cook rice and Dal on the solar cooker, and we agreed to demonstrate that during deployment. They also thought that the LED light would be very effective in driving away elephants who share the forest with them, and that the cell phones would be useful to talk to their friends in other hamlets.

While Orissa gets substantial monsoon and has a lush, wet climate, Rajasthan experiences a much drier climate. The village of Karech is near Udaipur, in the Aravalli hills in the south western part of Rajasthan. The dwellings in the village are spread about on the hills, but the villagers had assembled in the main street to hear us out. The head of FES Udaipur, Mitul Barua, explained the project concept to the villagers in Marwari, and once again they were very enthusiastic about the project.

The main concern of the women here was whether Rotis can be made on the solar cooker, and asked that we demonstrate that. The villagers stated that they collect 20 kg of wood per household per day for their cooking, and that they also collect an additional 10 kgs of wood per household per day in order to sell to neighboring villages which didn't have much access to wood. They appreciate that the government built roads into their villages so they can easily transport wood to neighboring villages.

While the villagers of Karech had been protecting about 700 acres of forest near the village since 2002, they used other forest land for grazing cattle and for procuring wood for cooking. The protected forest area had been fenced off with stone fences since 2002, and the villagers have taken turns to patrol the area to prevent stray cattle infringement. Grazing cattle eat anything green on the ground, and thus prevent the forest from recovering. Since 2006, the cattle in the village are being stall-fed as the protected forest area is yielding roughly 20 tons of nutritious grass per acre per year, which the villagers harvest once a year. The villagers were very proud of their reforestation effort, and asked Mitul when FES would help them fence off the rest



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of the forest area, once our project gets underway.

Our field visit to the villages indicated that there is tremendous enthusiasm for the project among the villagers and with the NGOs. The villagers liked the idea of not toiling two to three hours each day collecting wood, or spending a whole day at the ration shop to procure kerosene for lighting lamps. It is mainly the women and children who do this work, and the time they save could be spent usefully on other pursuits like education. The villagers were already working on reforestation, and clearly understood that reforesting more land area would yield better food and water security for them in the future. They believe that a healthy forest attracts rain, which their crops also depend upon.

Would you agree that your project is a sort of trade, a mechanism to earn money through carbon credits?

Our project plans to use a voluntary carbon offset mechanism to pay for the equipment given to the stewards, and to reward them for their use of the solar cookers. We guarantee that every cent contributed by the Patrons is used for the project, and will not be used for the operating expenses of our non-profit corporation. We intend to raise funds separately from foundations etc to meet our operating expenses.

Fundamentally, we believe that global climate change, environmental degradation and unsustainable development are a direct result of our current economic systems, which are fundamentally based on the endless acquisition of material wealth by individuals and corporations. Given the technological prowess that humanity possesses now, such a system will necessarily

lead to the rapacious exploitation of every material resource on the planet in short order, which is precisely what we're witnessing today. To quote Albert Einstein, 'We can't solve problems by using the same kind of thinking we used when we created them,' and hence our decision to use a non-profit model for the Climate Healers project.

Besides, we don't think that the healing can happen under the umbrella of a profit motive, no matter how benevolent the profiteers.

Are there many NRIs in industries related to climate change in the US?

There are numerous NRIs working in the alternate energy and battery storage industries in the US, which indirectly address climate change. To name just two, Dr K R S Murthy is cofounder of a start-up company called SunRGI, which aims to produce solar power at a cost below that of coal generated power, using concentrated solar photovoltaic technology. Dr Desh Deshpande is chairman of A123 Systems, which is developing batteries needed for the plug-in hybrid cars of the future. More directly, there are several NRI scientists who have been working selflessly on behalf of the Intergovernmental Panel on Climate Change, which was jointly awarded the Nobel Peace Prize with Al Gore. These Nobel Laureate scientists are true heroes, in my opinion.

Can Indians in America contribute in some way to India's efforts to reduce carbon emissions?

Perhaps the contribution should come from Indians in India, to the world. The first mantra of *SriIsopanishad* can be roughly translated as 'Take just what you need from the earth and no more, for the earth and all her bounty does not belong

■ Dr Shailesh Rao at a village meeting in Hadagoudi, Orissa

to you, but to the Lord'. It advocates the sort of minimalism and sustainability that the whole world needs to embrace.

What is your opinion on Indian Prime Minister Dr Manmohan Singh's recent report on climate change?

It is a good start but, as an engineer, I was disappointed to see the lack of concrete quantitative goals on emissions.

Is India doing enough in managing climate change?

No, India is not doing enough in managing climate change, but neither is the rest of the world. Ultimately India, and the world, will have done enough only when greenhouse gas emissions decline rapidly in the annual measurements. That is the only true measure of success in managing climate change.

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