

“Even if the world were to end tomorrow, I will still plant a tree today.



- Otto Frank

TALKING TO MIT-USA SLOW COOLING IN THE WORLD OF FAST FOOD

BY RAJENDRA SHENDE, CHAIRMAN TERRE POLICY CENTRE



Five graduate, doctoral and post-doctoral, students i.e. Selma, Alex, Scott, Xiodi and Nabathai from Massachusetts Institute of Technology (MIT), Boston USA were in the rural office of TERRE Policy center recently. They were passionately discussing their new research project on adsorption technology.

The technology of adsorption potentially replaces the vapor compression technology in modern air-conditioning. Vapor compression uses refrigerant gas compressors which are electricity guzzlers. There are other technologies for cooling like evaporative cooling (desert cooler as we call them in India) but adsorption cooling is amazingly simple, and has potential to reduce the electricity stress experienced by India due to rising demand that does not keep pace with the supply. Adsorption avoids use of refrigerants like Hydrochlorofluorocabons (HFCs), which are 2000 times more global warming than carbon dioxide-commonly known green house gas.

No mechanical engineering knowledge needed to understand the adsorption technology. There are no moving parts. A stationary porous material adsorbs the water vapor produced by a heat taken from the space that (hence) gets cooled. The external heat from

solar water heater later desorbs the water vapor which is then condensed and again heated by using the heat from the space to be cooled. The cycle repeats. Only external energy is in the form of low temperature water from solar heater (about 60 deg cent heat).

If so, why further research needed if the technology is so simple?

Surely our ancestors must have used this technology in the past for cooling and even for refrigerating. Then came the beginning of 'disruptive' 19th century when invention of the gas/vapor compressor engine changed and made us forget the way cooling and refrigeration is done. The world was excited about comfort cooling. Then started the discomfort and descent once world understood the environmental impacts of refrigerants like CFCs and HCFCs, mainly stratospheric ozone depletion. **Continued on Page 2**



Earth Care Awards (ECA) are given annually to people working for environment. Environment is the source of life to all human beings. It gives away all its resources to support our life. ECA is a way of appreciating those who choose to work for mitigation and adaptive imperatives related to climate change.

The awards are given away under three categories: innovation, industry and community. This time, there were hundreds of applications received for ECA. Each of the three categories received around 70 applications coming from India and SAARC countries. TERRE Policy Centre, apart from being outreach partner, plays a vital role in evaluation of these applications. The team was at the Jindal mansion on 12th of March for the evaluation of ECA applicants. The team participated in groups to evaluate the three categories. After a day-long meeting, around 12 applicants were shortlisted.

In the next phase of ECA, the jury will evaluate the shortlisted applications to finalize the awardees.



Whether you have a Maruti or BMW, the road remains the same. Whether you travel economy class or business, your destination doesn't change. Whether you have a Titan or Rolex, the time is the same. Whether you have Apple, Samsung or Lava, people who call you remains the same. There is nothing wrong in dreaming a luxurious life. What need to be taken care of is to not let the NEED become GREED. Because NEEDS can always be met.. but GREED can never be fulfilled.



- Rajinikanth

CHAIRMAN MESSAGE

TALKING TO MIT-USA...



From Page 1 These gases were

addicted to high energy and modern society was addicted to comforts that inhibited their ability to recall the low energy processes. The COP (coefficient of performance) of adsorption cooling is, however, low as compared to vapor compression cooling. The cooling is slow and not continuous unless series of adsorbers are used. MIT-USA is now researching to find if the porosity of the solid material in which the vapors are adsorbed can be improved to enhance COP. May be Nano-porosity? Talking to MIT's students was like eating in MacDonald's while thinking about promoting nutritious food cooked on slow fire. Have we forgotten how plants keep themselves cool with interplay of porous leaves and water moisture, without vapor compressor? And the human body cools the body-temperature (again without using vapor compressor) on hot days by letting perspiration out from porous skin on hot days?

Its time to go 'down to the roots and back to basics'.

ECONOMICS AND ENVIRONMENT- AN UNCOMFORTABLE RELATIONSHIP

RENDEZVOUS WITH DR. GURUDAS NULKAR

After a few years of successful entrepreneurship, Dr. Nulkar turned to being an ecologist. At present he is the trustee of the ecological society and a professor at Symbiosis International Centre for management and HRD. So the reader may well guess the topic of this Rendezvous: "Economics and Environment- an uncomfortable relationship".

The expert presentation began with a story of a girl in a city switching on a button in her house on one fine evening. This simple act triggered a phenomenon taking the audience from house to power grid to power plant to mines to non-material destinations like issues of deforestation, health of miners, pollution and more. It's a vicious cycle initiated by rise in

consumer needs.

The presentation then takes us to origin of economics. Man began exchanging direct efforts and indirect efforts which was biotic capital for mutual benefits. With agriculture and inception of the concept of surplus, man's desires rose to gaining of power.

This triggered abiotic capital exchange. With discoveries and inventions, trade, commerce and science advanced with unprecedented pace. Economics started talking about GDP monetary capital and costs obviating the real capital (natural resources) and real cost (waste and pollution). This market hides the ecological truth, said Dr. Nulkar.

Continued on Page 4



**NUMBER OF THE MONTH**

1000: Rajendra Singh of India is named the 2015 Stockholm Water Prize Laureate, for his innovative water restoration efforts, improving water security in rural India, and for showing extraordinary courage and determination in his quest to improve the living conditions for those most in need. Water had been brought back to a 1,000 villages across the state.



FROM HOTEL OBEROI IN NEW DELHI TO VILLAGES OF WESTERN GHATS OF INDIA—WORLD WATER DAY 2015

JOURNAL

LAUNCH OF TERRE YUCON JOURNAL



Six sleepy villages and towns in the water-stressed area of Western Ghats of India woke up early in the morning on the World Water Day to take the strong messages from UN Water Report released by UNESCO in Hotel Oberoi, New Delhi on 20th March 2015. Organized by TERRE Policy Centre, a think-tank and action-hub of India along with local education institute Choundeshwari Education Institute organized out-of-box water-march with students and people from Rahimatpur, Tandulwadi, Jarewadi, Mangalapur, Mugaon and Chinchali.

While some of them now get water from the water-supply schemes from the government, the villagers that morning went up to the natural source of water outside their habitats, filled their decorated pots with water and paraded it around the villages with placards and slogans from the report of UN Water Day. 'Conveying the messages emanating from a UNESCO event in posh Hotel in New Delhi where UN water report was introduced in presence of elites, down to the real world of dusty roads in water-thirsty villages has helped the gritty farmers here to begin their journey towards climate resilient rustic-life in coming century' said Rajendra Shende, Chairman TERRE

Policy Centre. The UN water report highlighted that:

- Some 750 million people, or more than 1 in 10 of the world's population, still remain without access to an improved water supply.

- The world will face a 40 per cent shortfall in water supply in 2030 unless the international community "dramatically" improves water supply management.

- Demand for water is slated to skyrocket 55 per cent by 2050 while 20 per cent of global groundwater is already over-exploited.

- Water is the very essence of life and yet three-quarters of a billion people – mostly the poor and the marginalized – still today are deprived of this most basic human right.

- Climate Change impacts would make the situation worst, particularly in India

Road-side skits and story-telling about conservation of water, worshipping the water collected from nature were some of the activities performed by the students. 'It is not only unfair distribution and consumption of water between developed and developing countries is in question. The unequal and undemocratic consumption among rural and urban India will be the deciding factor in future', said the head of the local government of one of the villages.

STUDY OF GREEN PRACTICES AND EFFORTS FOR SUSTAINABILITY IN I.T. INDUSTRIES IN INDIA



THINK GLOBAL & ACT LOCAL

TERRE magazine for youth



Dr. Gurudas Nulkar launched the journal of TERRE YuCon, the International youth Conference organized by TERRE Policy Centre in the month of February. This conference was on the issues of water, climate and sustainable energy. Participants from India and abroad participated to present their research to the expert jury panel of international professional experience. On 20th April, TERRE launched the water issue of this journal on the occasion of World Water Day which falls on 22nd April.

**RENDEZVOUS WITH
DR. GURUDAS NULKAR**

From Page 2 The dire picture of present market running as a self-regulating system promotes “faster, cheaper and newer” commodities over “safer, healthier and fairer”. The index of monitoring economy, GDP, talks about war but not about the unrest. It conveniently ignores those causes of the events that aren’t conspicuous but are the important ones. Dr. Nulkar stated that we should move from this failing economy towards what has been traditionally preached in India, Gandhian economy or the

one found in our vedas. Moving from consumption based economy towards wellbeing based economy by: reducing wants; reducing stock consumption and regulating flow; decentralization of money; and localizing the demand and supply cycle avoiding the need of irrational trade. This rendezvous has certainly contributed in igniting a thought-process amongst people to bravely move from the pre-convinced notions on economy and environment to more rational and sustainable ones.

**HOLY HOLI WITHOUT
BONFIRE AND WITH
SMRITIVAN**



This Holi, TERRE celebrated the festival of Holi at Smritivan with plantation of 50 trees. Students of MIT institutions, Pune and Entrepreneur Development Institute of India Ahemadabad participated in this initiative of TERRE Policy Centre. They planted the trees in the memory of a fond ideas and persons, as per the concept of Smritivan at Varje.

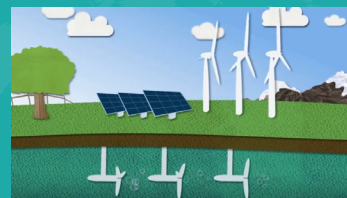
Traditionally, Holi is celebrated in India for two days. First day is celebration around a bonfire. It symbolizes burning of evil and triumph of goodness.

The second day is celebrated with colors, both dry and wet. This time, TERRE Policy Centre modified, or rather enhanced the traditional idea by a new way of celebration. Celebrators planted the trees (contrasting the burning) and water them (contrasting wastage of water in coloring game).

We can preserve our tradition in harmony with nature by participating in such initiatives.

CARTOON

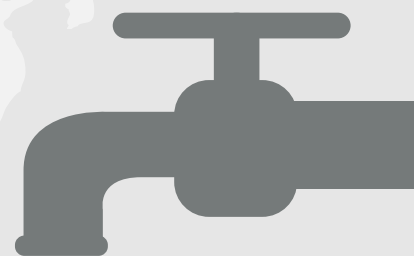




NEWSLETTER

- 85% of the world population lives in the driest half of the planet.
- 783 million people do not have access to clean water and almost 2.5 billion do not have access to adequate sanitation.
- 6 to 8 million people die annually from the consequences of disasters and water-related diseases.
- Various estimates indicate that, based on business as usual, ~3.5 planets Earth would be needed to sustain a global population achieving the current lifestyle of the average European or North American.
- Global population growth projections of 2–3 billion people over the next 40 years, combined with changing diets, result in a predicted increase in food demand of 70% by 2050.
- Over half of the world population lives in urban areas, and the number of urban dwellers grows each day. Urban areas, although better served than rural areas, are struggling to keep up with population growth (WHO/UNICEF, 2010).
- Water availability is expected to decrease in many regions. Yet future global agricultural water consumption alone is estimated to increase by ~19% by 2050, and will be even greater in the absence of any technological progress or policy intervention.
- Water for irrigation and food production constitutes one of the greatest pressures on freshwater resources. Agriculture accounts for ~70% of global freshwater withdrawals (up to 90% in some fast-growing economies).
- About 66% of Africa is arid or semi-arid and more than 300 of the 800 million people in sub-Saharan Africa live in a water-scarce environment – meaning that they have less than 1,000 m³ per capita (NEPAD, 2006).

INTERESTING FACTS ABOUT WATER





Mr. Suresh Prabhu
Railway Minister, India

INDIA'S GREEN RAIL BUDGET

Replace 3,438 railway crossings

Corporate safety plans; ISRO to be involved; 917 road under-bridges and over-bridges to be constructed to replace 3,438 railway crossings with Rs. 6,581 crore

For farmers

State-of-the-art perishable cargo center under completion for farmers

Research Centers

Four Railway Research Centers to start in four universities

Dual Fuels

100 DEMUs to be converted to dual fuels making it more environment friendly and a sustainable solution

Future Sustainability

Investment in Indian Railways is an investment in our future sustainability says Rail Minister Suresh Prabhu.

Noise Levels

Making efforts to get noise levels of locos to international standards

1,000-MV Solar Plants

1,000-MV solar plants to be set-up by developers on Railway Pvt. Land and on railway building at own cost

Environment Directive

We have set up an environment directive in Railway Board, RM

Yoga Training

Yoga training will be given to railway guards

Technology Portal

We intend to introduce technology portal to invite innovative technological solutions, RM.- Supporting the paperless governance i.e. environment friendly governance

20 Percent

We will increase track length by 20 per cent and passenger capacity from 21 to 30 million, RM- Making public transport more efficient

Swach Bharat Abhiyaan

Private agencies to be roped in for cleanliness drive- Support to "Swach Bharat Abhiyaan"

1,330%

1,330% increase in railway electrification over previous year- Reduced fuel consumption and comparatively less pollution.





A leak of one drop of water per second can waste up to how many gallons of water per year?

- A. 2400 gallons / 9085 liters
- B. 500 gallons / 1,893 liters
- C. 7500 gallons / 28,391 liters
- D. None of the above



780 Million People do not have access to clean water

and almost **2.5 Billion** do not have access to adequate sanitation

INFOGRAPHIC

Source :

<http://www.unwater.org/water-cooperation-2013/water-cooperation/facts-and-figures/en/>

शहर GREEN करो

For information on this initiative, please visit : <http://terrepolicycentre.com/shar-ko-green-karo.asp>



NEWS NETWORK

Climate change in the Marshall Islands and Kiribati, before and after – interactive

In the low-lying Pacific atolls of the Marshall Islands and Kiribati rising sea levels have made every high tide a dangerous event. Regular floods wash through villages causing damage to houses, killing crops and poisoning drinking water. <http://www.theguardian.com/environment/ng-interactive/2015/mar/11/climate-change-in-the-marshall-islands-and-kiribati-before-and-after-interactive>



Scientists Urge East Africa Get Ready for Global Warming

As the world gears up for a new global treaty on climate change in December this year, experts warned that millions of people around East Africa are faced with grave risks from changing disease patterns to extreme weather events, and the threat to food and water security. <http://www.voanews.com/content/kenya-climate-chagne-conference/2679132.html>



Shrinking habitats have adverse effects on world ecosystems

An extensive study of global habitat fragmentation -- the division of habitats into smaller and more isolated patches -- points to major trouble for a number of the world's ecosystems and the plants and animals living in them. <http://www.sciencedaily.com/releases/2015/03/150320155644.htm>



Study suggests climate change linked to falling seabird population

The number of seabirds, including gulls, puffins and auklets, has dropped significantly in the Gulf of Alaska and northeast Bering Sea, a possible consequence of warmer <http://www.vancouverobserver.com/news/study-suggests-climate-change-linked-falling-seabird-population>

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