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Centre for Business Sustainability, IIM Lucknow
Prabandh Nagar, Off. Sitapur Road, Lucknow- 226013
E-mail: cbs@iiml.ac.in Phone: +91 522 2736987, +91 2736989

Business Sustainability News — International

Global Apollo programme seeks to make clean energy cheaper than coal

Sir David King calls for £15bn a year R&D spending on clean energy to make it cheaper than coal power globally, in emulation of space race research efforts

By Damian Carrington

Earthrise: Famous image of Earth taken from the Apollo 8 mission on 24 December 1968. Photograph: Alamy

A plan to tackle climate change by emulating the race to put a man on the moon is launched on Tuesday, aiming to channel billions of dollars in research that will give renewable energy commercial lift off.

The Global Apollo Programme aims to make the cost of clean electricity lower than that from coal-fired power stations across the world within 10 years. It calls for £15bn a year of spending on research, development and demonstration of green energy and energy storage, the same funding in today's money that the US Apollo programme spent in putting astronauts on the moon.

David King, UK's climate change envoy. Photograph: Matthew Lloyd/Getty Images for ReSource 2012

The plan is the brainchild of a group of eminent UK scientists, economists and businessmen including Sir David King, currently the UK's climate change envoy, Lord Nicholas Stern, Lord Adair Turner and ex-BP chief Lord John Browne.

King said green energy already had advantages over fossil fuel power in cutting deadly air pollution and reducing the carbon emissions that drive global warming. But he said making clean energy cheaper was important too: "Once we get to that point, we are winning in all the battles."

King, who has visited 60 countries in his climate diplomacy role, said many countries were interested in the Apollo plan, including the UK, US, Japan, China, Korea, Mexico and the UAE. In particular, King said Narendra Modi, India's prime minister and solar energy enthusiast, was keen.

The plan has been discussed by G7 energy ministers and is on the agenda for the G7 heads of state meeting in Germany on 7 June. King said he hoped the Apollo project would launch in November, just ahead of the crunch UN climate change summit in Paris which nations have set a deadline for a global deal.

"Nasa showed how a stupendous goal could be achieved, amazingly fast, if the will and the resources are there," said Professor Martin Rees, former head of the Royal Society and another member of the Apollo group.

The moon landings were spurred by cold war rivalries and Rees said the energy challenge would provide its own motivation: "I find it hard to imagine anything more inspiring for engineers than to provide clean energy for the world."

The Apollo programme aims to double the money being spent globally on research and development of renewable energy, energy storage and smart grids from the current 2% of the world's R&D budget. Nations joining the programme would commit to spending 0.02% of GDP on the R&D and would get a place on a global commission that would coordinate and direct the research to avoid duplication.

Engineers at work at a floating solar power plant in Hyogo Prefecture, western Japan. Photograph: Xinhua /Landov / Barcroft Media

A similar, though smaller, commission already exists to coordinate R&D on semiconductors and has resulted in continuous falls in computer chip costs.

There would be no central Apollo fund and nations would still control how to spend their own money. The UK already spends 0.02% of its GDP on clean energy, as do some other developed nations, but other countries do not and there is no international cooperation to maximise the results.

Lord Richard Layard, an economist at the London School of Economics and member of the Apollo group, said it was barely believable that the world only spent 2% of its R&D money on its "most pressing problem" of climate change and clean energy. He said: "We do not think this problem can be conquered unless we reduce the cost of renewable energy below the cost of dirty energy."

Stern said that electricity from coal-fired power stations only appeared cheaper because the costs of air pollution and climate change were not included. He noted that the IMF recently calculated that fossil fuels benefit from subsidies of $5.3 tn a year, or $10m a minute, half of which derives from the polluters not paying the costs of health damage from air pollution.

Improving technologies for energy storage is a particular focus as this tackle to problem of intermittency of renewable energy that relies on the sun to shine or wind to blow.

Current levels of renewables can be accommodated on national grids, the Apollo group said. But making electricity 100% renewable by 2050 would require affordable energy storage, both on the domestic scale and national scale. Storage technologies being targeted include better batteries, heat storage in water, soil or molten salt, compressed air, flywheels and hydrogen.

Sir David Attenborough, who recently discussed climate change in a meeting with US president Barack Obama, said: "I have been involved in arguments about the despoilation of the natural world for many years. The exciting thing about the [Apollo] report is that it is a positive report – at last someone is saying there is a way we can do things."

Prof John Schellnhuber, a climate scientist and former adviser to German chancellor Angela Merkel called the Apollo plan "truly ingenious" and said it "could well be a tipping point" in tackling climate change.

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Earth is running out of groundwater: Study

Source Name: The Economic Times

Human activity is leading to the rapid draining of about one third of the planet's largest underground water reserves and it is unclear how much fluid remains in them, two new studies have found.

Consequently, huge sections of the population are using up groundwater without knowing when it will run out, researchers said in findings that will appear in the journal Water Resources Research and were posted online on Tuesday.

"Available physical and chemical measurements are simply insufficient," University of California Irvine professor and principal investigator Jay Famiglietti said in a statement.

"Given how quickly we are consuming the world's groundwater reserves, we need a coordinated global effort to determine how much is left," added Famiglietti, who is also the senior water scientist at Nasa's Jet Propulsion Laboratory.

Scientists used data from special Nasa satellites to measure groundwater losses.

In the first paper, they looked at 37 of Earth's biggest aquifers between 2003 and 2013. Eight of these were classified as "overstressed," meaning they were being sucked dry with almost no natural replenishment to offset the usage.

Five other aquifers were determined to be "extremely or highly stressed."

Scientists warned the situation would only worsen with climate change and population growth. The most overburdened aquifers are in the world's driest places, where there is little natural replenishment.

"What happens when a highly stressed aquifer is located in a region with socioeconomic or political tensions that can't supplement declining water supplies fast enough?" said Alexandra Richey, the lead author on both studies."We're trying to raise red flags now to pinpoint where active management today could protect future lives and livelihoods."

"We're trying to raise red flags now to pinpoint where active management today could protect future lives and livelihoods."

Researchers found that the Arabian Aquifer System, providing water for more than 60 million people, is the world's most overstressed source.

The Indus Basin aquifer of northwestern India and Pakistan is the second-most overstressed, and the Murzuk-Djado Basin in northern Africa is third, scientists said.

In drought-striken California, the Central Valley aquifer was labeled as "highly stressed."

The second paper concludes that the total remaining volume of the world's usable groundwater is poorly known and huge discrepancies exist in estimated "time to depletion."

"We don't actually know how much is stored in each of these aquifers. Estimates of remaining storage might vary from decades to millennia," Richey said.

"In a water-scarce society, we can no longer tolerate his level of uncertainty, especially since groundwater is disappearing so rapidly."

<Source>

Finally, An Apollo Program to Combat Climate Change

SustainableBusiness.com News

We've needed an Apollo program on climate change for a long time, and now we are getting one.

The UK-based **Global Apollo Programme to Combat Climate Change** has this goal: Within 10 years, baseload wind and/or solar energy will cost less than coal in every country, and oil and gas too.

The overarching goal is for the world to get 100% of electricity from renewable energy by 2050. We can only get there if the price is irresistible.

Recognizing that country commitments are not enough to keep world temperatures from exceeding 2C, a handful of eminent people have come together to coax them into a mission that rivals Apollo - the race to put a man on the moon in the 1960s.

To get there, founders are calling for countries to invest the same amount spent on the Apollo program - $23 billion a year in today's money for accelerated research, development and demonstration of solar, wind, energy storage and smart grid technologies.

Calling it the "greatest scientific challenge facing the world," they simply want to double the tiny 2% of R&D budgets the world spends each year on this research.

Among the seven founders are: Sir David King, UK's climate change envoy; Lord Nicholas Stern, Professor of Economics and Government at London School of Economics and Chair of the Grantham Research Institute on Climate Change and the Environment; ecologist Sir David Attenborough and Lord John Browne, former CEO of BP Petroleum!

Many countries are interested, they say: US, UK, India, Japan, China, Korea, Mexico and UAE. It's on the agenda for next week's G7 meeting and they plan to launch right before this year's Climate Summit in Paris.

Nations that join the program commit to spend 0.02% of GDP on R&D through 2025, and they get a seat on the global "roadmap committee" that coordinates and oversees the process.

Some countries, like the UK, are spending this amount now, but many aren't, and there is no coordination to maximize results, they say.

Research isn't all that's needed, carbon must be priced, they say. And prices have to come down even further to displace existing fossil fuel infrastructure.

Also in the UK, SolarCentury CEO Jeremy Leggett is asking corporations to contribute 5% of annual profits to the 5% For-Climate-and-Development Club, to eradicate poverty and stop climate change at the same time. Many are showing interest without being solicitied, he says.

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Green Technology Spotlight: Solar-Powered ATM's Dispense Water in Pakistan

SustainableBusiness.com News

Pakistan's goal is to bring clean water to more than 35 million people in the next two years, and they will soon pilot a unique technology to get them there.

It's called a Water ATM (Automated Water Dispensing Machine), and like the ones we use at banks, you just swipe your smart card - but instead of dispensing cash, water comes out of a faucet. Push a button and water starts flowing, push another button and it stops.

Solar-powered and equipped with sensors that measure how much water is available, and a meter that manages how much comes out, the government can track the amount and quality of water dispensed each day in real time, online. The ATM will draw from a water filtration plant below.

Besides giving people a daily ration of clean water, the ATM makes sure none is wasted.

The pilot is expected to benefit 17,500 families who will be allowed to take up to 30 liters of water per day. While the water will be free of charge, communities will pool the money needed to pay for maintenance each month.

A local research organization, Innovations for Poverty Alleviation Lab, developed the ATM and is working with state-owned Punjab Saaf Pani Company (which stands for Clean Water) on implementation.

While the pilot will be in Pakistan's most populous province, Punjab, where 98 million people live and water shortages are a way of life, nearly 14 million people have no choice but to collect contaminated water. Resulting diseases cost the government over $1 billion a year, and with more people moving into urban areas, it is straining what little capacity there is.

The government of Punjab is spending $200 million on the program, says Muhammad Farasat Iqbal, CEO of of Punjab Saaf Pani Company. Apparently, a similar card-based water dispensing system is in use in India.

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Why China's waste pickers are a better alternative to incineration

The informal recycling sector is helping tackle the country's growing levels of rubbish, but people making a living out of sorting waste need support

The daily life of Shanghai's waste pickers - in pictures

By Jennifer Duggan

Informal recycling is widespread in Shanghai, but where the incentive of profit falls, so too do recycling rates. Photograph: Grainne Quinlan

Zhang Jinling is picking cardboard boxes from a trash can on the side of the road in a downtown area of Shanghai. She empties the boxes, folds them and puts them on a trailer hitched to a bicycle. She also buys cardboard from residents in the houses on the same street, purchasing it for 2.5 mao (less than 3p) for a pile. When her trailer is full, she takes the load to a recycling market on the outskirts of the city where she sells each pile for a 1p profit. Markets like these sort waste into different materials and sell it to bigger markets where it ends up at big industrial recycling plants for individual materials.

Jinling is one of hundreds of thousands of waste pickers working in cities acrossChina sorting through other people's rubbish, removing and sorting anything that can be recycled and selling it for a meagre profit. Most people working in this sector are migrant workers from the countryside who come to big cities to try to make a living.

Further down the street, Guan (who didn't wish to give his full name) is buying cardboard from a small fruit shop. He has been doing this job for almost eight years and makes a daily profit of £10.

Guan and Jinling are collecting recyclables in one of Shanghai's most desirable and expensive neighbourhoods but their living standards are very different from the people who live there.

Jinling lives with her husband in a 6 metre square apartment in a compound where thousands of other migrant workers live. "I would prefer not to do this work," she says. "I would rather work for a factory or company."

Unpredictable nature of informal recycling

The government has little or no involvement in recycling in cities, says Chen Liwen, a researcher with with Nature University. "China's recycling is market orientated, there is no government control from the collection to the disposal of materials," she says.

As China has developed rapidly and its citizens become more affluent, increasing amounts of rubbish are being generated. Shanghai, a city of around 24 million people, currently produces 22,000 tons of rubbish a day and the city is running out of landfill space. Liwen says that more and more waste is being generated and an increasing amount of materials that could be recycled are ending up in landfill.

Workers like Guan and Jinling ensure not all materials end up in landfill, but price fluctuations can make the informal recycling unpredictable. If it becomes less profitable for waste pickers to collect and sell a particular material, it's unlikely to be recycled. For example, the price waste pickers get for glass bottles has recently fallen, so without an incentive of profit, glass is increasingly ending up in landfill.

Because of falling prices, the numbers of waste pickers are starting to dwindle. Guan says: "The price is going down and more people are going to work in factory and construction work."

Government involvement

As China's levels of rubbish grows, the government has looked to incineration. . According to local news reports, four new incineration plants are to be opened in Shanghai and city officials estimate that by 2016, 70% of the city's household waste will be incinerated. However, incineration is becoming controversial among the public in China due to environmental concerns and there have been protests against proposed plants. In April, plans for an incinerator in Guangdong province in southern China were scrapped by the local authorities after a mass protest.

Environmental campaigners also say that incineration doesn't deal with the root causes of China's waste problem. "Because you are building more and more incinerators people don't care about waste, they just throw away," says Liwen.

The government in Shanghai and other cities have made some efforts to introduce centralised recycling systems. Last year, Shanghai set a rubbish sorting target of 95% as part of a three year initiative . But despite efforts public awareness of recycling and waste reduction remains low.

Liwen says that the informal recycling system is so widespread and efficient that instead of trying to get rid of it or replace it the government should work with it to improve recycling levels. "I don't think they should destroy the current informal recycling system. What they need to do is to give them more space, to give them support because the current system is very good," she said.

<Source>

Tips:

We have painfully learnt the fact that natural resources are limited and very much affected by what we do. Our actions are responsible for depletion of natural resources and also deterioration in quality of the natural or environmental resources. Now we have the realized the effects of the actions of our past generations. To ensure that our future generations do not experience worse, we need to be aware of the requisites of sustainability. Not only being aware is enough but doing every bit to improve the situation is need of the hour. If we can't improve at least we must do everything to protect the environment from becoming worse. Below here are given some tips which most of people know but many have not brought these in to practice. We humbly request each individual to keep these in practice and make stay of our future generation on this earth comfortable.

1. Buy durable products rather than disposable products.
2. Minimize use of paper napkins. Keep handy a hand towel or cloth napkin to wipe hands.
3. While going for picnics or outings take plastic or melamine plates, cups, bowls, spoons etc which can be washed and reused. Disposable products add to garbage and in the long run prove expensive too.
4. Install an effective water purifier and refill reusable containers instead of buying cases of bottled water. Bottled water not only adds to waste but also proves pretty expensive.
5. Wherever possible use natural light rather than electric lamps. Also ensure to have lights only sufficient enough. Where dim lights affect our eyesight extra bright lights will increase electricity consumption.
6. Ensure that all lights, fans, electrical appliances, computers are switched off when not in use. Especially while going out take extra precaution to switch off all lights and electrical appliances which are not required.
7. Before deciding to purchase new furniture, electrical appliances, gas stoves or any other appliances ensure that it cannot be repaired and made serviceable.
8. If from any store you get a poly bag use it again and again till it can be used. Only after the poly bag is unusable put it in the appropriate garbage bin.
9. Use recycled paper for making rough notes. Reuse envelopes, advertisement leaflets, and previously used paper for notes.
10. Edit all documents on computer screen and not on paper.
11. Use rechargeable batteries, emergency lights, torches etc rather than using zinc-carbon or Alkaline batteries.

Local alliance captures waste energy before it's lost into thin air

A new way of thinking made the difference in joining one of Denmark's largest manufacturing companies and a local district heating company. They built a closed heating and cooling cycle, where no energy goes to waste

By Stine Godsk

The Energicentralen, a join energy exchange station in Bjerringbro, Denmark. Photograph: Grundfos

When Mrs. Jensen in the Danish town of Bjerringbro turns on the heat in her family home in winter, part of it comes from Grundfos, a global pump manufacturer and the town's largest workplace. When Grundfos on the other hand needs cooling for its data centre and factory in the summer, it gets a vast amount of it from the town's groundwater cooling system.

Grundfos and Bjerringbro District Heating Company have built a joint energy exchange station called "Energicentralen," or the "Energy Central." Energicentralen captures, stores and uses cooling and heating in a closed system. The cooling part benefits the Grundfos factories, and the heating benefits the district heating company.

Energicentralen is filled with shiny metal pipes in all shapes and sizes and with a faint smell of detergents and a deafening noise. It is the centre of a public-private partnership gone right.

"To put it very simply: for every single kWh we put into Energicentralen, we get 9 kWh out. Four-and-a-half of them are energy for cooling and 4-and-a-half are energy for heating. Exchanging one to four-and-a-half would be good, but this is actually great," says Klaus E. Christensen, senior project manager in the Grundfos environmental department, Quality and Environment.

A green project with a valid business case

The idea was born in Quality and Environment as a way for the privately owned company to show consideration for the local community and reduce its carbon footprint. After three years, Energicentralen has saved the company 3,700 tonnes of CO2 emissions per year.

What started off as an idealistic idea turned out to be a way for Grundfos to help meet its strategic goals of not emitting more CO2 than in 2008.

"We made a contract about exchanging energy with the town we are situated in. That is it. The technology is not rocket science, and the set-up is not rocket science either," says Christensen. He continues, "The project was born as a green project. Luckily, there have been multiple positive technical side effects as well. What we have done with Energicentralen in Denmark has created precedence for how things are done in the rest of the Group. For example, we no longer establish cooling towers."

No compromises

Cooling towers are not a clever way to create the cooling a manufacturer like Grundfos needs for a long list of processes, according to Christensen. They use a lot of water, make a lot of noise, and you have to use chemistry in the process. You avoid these disadvantages when you create a closed cooling system. On top of that, energy exchange is also cheaper.

Grundfos is represented in more than 55 countries and makes more than 16m pumps a year, so it makes a difference when facility management changes the cooling processes. Christensen admits that it required an effort from the environmental department to convince facility management.

"Trust and confidence are key to a successful integration. Of course, a production like ours cannot make any compromises as regards to the security of supply, and a new set-up needs to be integrated in the internal systems. It is a process that is demanding for everybody, and a process that takes dedication to change."

Nevertheless, Christensen does not see the transaction of cooling and heating as the truly unique thing about the venture.

"The unique thing about this cooperation is that we actually made it," he says. "The timing was good – both partners were looking for a different way of doing things and new solutions. There was support from top management and a willingness to take a risk. There was good personal chemistry between the participants and it all added up in a mutual trust and confidence. That really made the difference."

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4 ways cities can make commutes greener — and easier

By Chesley Hicks

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Cities such as Medellin, Colombia are becoming more climate resilient by using gondolas.

This article originally appeared in 100 resilient cities.

It is estimated that by 2050, two-thirds of the world's population will live in cities. Denser cities and shrinking suburbs promise concrete benefits to the economy, the environment and urbanites' quality of life — but only if cities can support their growing populations with appropriate transportation.

Transportation nourishes and shapes urban centers, and insofar as it helps cities continue functioning and recover in the face of a shock, directly affects their resilience.

From ancient Rome to contemporary Tulsa, cities' survival has always depended on transportation. As they densify, cities' futures depend on smarter, faster and greener transportation that fits their unique geographies, cultures and histories. To do that, transport networks should integrate the varied modes necessary to help a city become more resilient.

Although every city faces different transportation challenges, these examples of successful urban strategies offer useful lessons:

1. Spanning elevations

Some cities — Medellin, Colombia, and Istanbul, Turkey, for example — have to build transportation that accommodates dramatic elevation changes to connect existing and new infrastructure.

Monorails, gondolas, escalators and trolleys may not seem cutting-edge, but applied in an innovative way in these cities, they address essential needs in flexible ways that, in the case of Medellin, helped foster connection, equity and economic assets that contributed to a community transformation.

2. Empowering bikes

After decades of ignoring and downplaying pedestrian transport such as bikes, numerous cities have begun to champion it as an alternative to cars. Although many younger cities were designed without bikes in mind, cycle commuting and bike-share programs are now common in cities and urban planning and health initiatives.

More than 600 cities on five continents now offer bike-share programs, helping reduce reliance on cars and make each city's transport network more robust.

Here are bike-share-program stats from major cities as of December 2013:

- Barcelona averages 10.8 trips per bike and 67.9 trips per 1,000 residents
- Mexico City averages 5.5 trips per bike and 158.2 trips per 1,000 residents
- Montreal averages 6.8 trips per bike and 113.8 trips per 1,000 residents
- New York City averages 8.3 trips per bike and 42.7 trips per 1,000 residents
- Paris averages 6.7 trips per bike and 38.4 trips per 1,000 residents
- Rio de Janeiro averages 6.9 trips per bike and 44.2 trips per 1,000 residents

3. Bettering buses

Bus rapid transit (BRT) uses dedicated lanes and high-tech signaling to make public busses especially efficient. New York City's electric-battery buses have shifted per-mile fuel costs from $1.30 to $0.20–$0.30.

Chicago's "bus on shoulders" program increased ridership 226 percent. Around the globe, from Toyama, Japan, to Phonm Penh, Cambodia, to Santiago, Chile, better busses are connecting urban centers with outer communities, improving quality of life in and outside cities.

4. Moving with data

Commuters in many cities have access to up-to-the-minute data to avoid delays and plan their routes accordingly. Mobile apps offer real-time bus and train schedules, digital maps and carpool and ride-share connections. Many transportation networks let people send SMS messages for status updates.

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Why cigarette butts threaten to stub out marine life

With cigarette filters made up of tiny pieces of plastic capable of causing untold damage to marine life, banning them could be one answer

By Hannah Gould

Approximately 4.5tn of the 6tn cigarettes consumed annually are littered. Photograph: Eamonn McCabe

A torn up love letter, a wedding dress and a loaded handgun. These are just some of the items discovered during the Ocean Conservancy's International Coastal Cleanup initiative (ICC). But these intriguing finds aside, year after year cigarette butts are the most commonly found form of ocean litter.

In 2014, ICC volunteers collected some 2m cigarette butts – a huge amount, but just the tip of the iceberg. Approximately 4.5tn of the 6tn cigarettes consumed annually are littered across the globe.

The majority of cigarette waste that ICC collects from beaches is the result of improper disposal. "Many people, even smokers, are not aware that the cigarette filter is comprised of thousands of little particles of plastic," says Nicolas Mallos, director of Trash Free Seas Program at the Ocean Conservancy in Washington DC. "One solid filter ends up being thousands of tiny fibres that can be released into the marine environment."

While we know cigarettes damage our bodies, we still don't fully understand their health implications for our oceans, beyond that other forms of microplastics and microfibres pose a risk to marine organisms. A study from San Diego State University suggests one smoked cigarette butt in a single litre of water is sufficient to kill both marine and freshwater fish, although how this translates from the laboratory to an actual aquatic setting isn't yet clear.

The vast majority of cigarette butts collected by ICC volunteers are currently sent to landfill due to a lack of recycling infrastructure. US company Terracycle is aiming to divert this waste and convert it into new products. Its Cigarette Waste Brigade programme, which was launched in Canada in 2012 and encourages smokers to recycle their butts, has since expanded into the US, Australia and Japan. A pilot programme is planned to launch in the UK before the end of the year.

Albe Zakes, Terracycle's global vice president of communication, says: "The cigarette filter is made from cellulose acetate, which is actually the largest component of most sunglasses, so that material can really get recycled just like regular plastic."

Because of the stigma around cigarette butts and fear of carcinogens, Terracycle doesn't use its recycled cigarette butt plastic for consumer products, but Zakes says the end result is 100% free of carcinogens, bio-toxins and nicotine. "It's just as clean and safe as a recycled plastic bottle would be," he says.

But if it's possible to turn such a globally widespread waste stream into commercially viable products, then why aren't more doing so?

Getting people to collect cigarette butts is one challenge, but the main hurdle is cost. "From a material standpoint, everything can be recycled, [but] if it costs more to collect and process than the material is worth in the open market, then it's considered non-recyclable and no private companies will do it", Zakes says.

Terracycle is able to recycle many of its materials cost effectively thanks to funding from major companies. For cigarette waste, it partners with Santa Fe Natural Tobacco Company in the US, Imperial Tobacco in Canada and multiple tobacco companies in Australia. These firms sponsor the collection costs, so Terracycle is left only with the processing costs.

For its part, since 1994 the ICC has partnered with tobacco company Altria. It also has partnerships with many global companies, such as Coca-Cola and the Bank of America in order to achieve an engaged global reach.

Partnering with tobacco companies for clean up solutions is nevertheless controversial. Thomas Novotny, professor in epidemiology and biostatistics at the San Diego State University, is concerned that it could be proving a barrier to finding upstream solutions that prevent the problem in the first place.

Several US states have passed paint stewardship laws, which see unused paint taken back by outlets and recycled or redistributed, and Novotny thinks this model of extended producer responsibility could be applied to the tobacco industry.

Ultimately Novotny, who co-authored the paper which found cigarette waste is capable of killing fish, wants to get rid of the filter completely. "The filter is a huge marketing tool; it is not a health device," he says. "If you ask any smoker what they would do if you took away their filter, many of them would say they would quit".

Currently, a legislator in California is seeking to make it illegal to sell or give away filtered cigarettes. It is estimated that it costs the state $41m each year to clean up tobacco butts.

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UN details growing role for business, cities on climate action

By Will Nichols

How will cities and buildings combat climate change by reducing carbon emissions?

Businesses and city administrations are becoming "increasingly significant" actors in the fight against climate change and are set to contribute national-scale emissions cuts, new United Nations research has revealed.

Programs brought in by such non-state actors, a label that includes regional and sector-wide climate change initiatives, could avoid close to 1.8 gigatons of carbon dioxide equivalent (GtCO2e) in 2020, according to a new study by the United Nations Environment Program (UNEP).

Such savings could prove decisive if the world is to meet emission reduction targets likely to be agreed at the Paris climate conference in December.

"Government pledges are currently expected to deliver an impact of between five and seven GtCO2e by 2020, highlighting the significance of the estimated emissions reductions from non-state actors," said Achim Steiner, U.N. Under-Secretary-General and UNEP Executive Director.

The emission reduction impact of corporations alone is likely to reach 0.63 GtCO2e, but with the top 1,000 largest GHG-emitting companies responsible for annual emissions of 10 GtCO2e, or around 20 percent of the global total, UNEP says there is the potential for far greater savings in the future.

Meanwhile, the report argues that action by the world's cities, which produce almost half of all greenhouse gas emissions, are central to tackling climate change.

Three city initiatives analyzed by UNEP demonstrate how urban centers could cut emissions by 1.08 GtCO2e in 2020, while the Climate Group's States and Regions Alliance could bring 0.76 GtCO2e of additional emissions reductions in the same year.

"UNEP research shows that we need to move towards carbon neutrality by mid-to-late century to head to keep global temperature rise to below 2 degrees C," Steiner added. "Meeting this target cannot be reached through government action alone. Initiatives by cities, businesses and industrial sectors to cut emissions can contribute and support national emission commitments, bringing significant savings of CO2 equivalent."

One such corporate initiative is the Climate Group's RE100 campaign, which aims to persuade the world's most influential companies to commit to using 100 percent renewable power within a specified timeline.

Having already attracted the likes of BT, IKEA, Marks & Spencer, H&M, Nestlé, SAP and Unilever, RE100 on Monday signed up U.S. software giant Autodesk as its 20th company.

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BASF summit ponders survival plans for coastal cities

By RP Siegel

Venice, Italy is an example of a city that lives successfully in water.

I recently attended the BASF Creator Space Summit in NYC. The summit, one of several taking place worldwide, is in commemoration of BASF's 150th anniversary.

CEO Wayne T. Smith kicked off the event, saying, "As we celebrate this milestone, we are connecting people with ideas to make meaningful contributions to society in accordance with our corporate purpose: 'We create chemistry for a sustainable future.'"

Resilience for Red Hook

The meaningful contribution for this particular summit was aimed at the question of the future of the Red Hook section of Brooklyn, an area devastated by Hurricane Sandy. Red Hook was selected because it typifies in many ways the kind of vibrant oceanfront community that has tough choices ahead, including the threat of future storms, growing population, economic inequality and the desire to maintain the unique characteristics that give the area its sense of identity and community.

A number of knowledgeable contributors were invited to the event to serve as co-creators. These included architects, city planners, engineers and artists as well as Red Hook community residents.

I participated with a group focused on resilience, with a specific emphasis on the space outside of or between the buildings. Alex Washburn, founding director of the Center for Coastal Resilience and Urban eXcellence at Stevens Institute of Technology, was on the team, as were members of BASF's Center for Building Excellence. Washburn, former NYC chief urban designer, himself a resident of Red Hook, recently published "The Nature of Urban Design: A New York Perspective on Resilience." He emphasized that resilience is needed at all levels — "in materials, in structures, and in communities."

Suggested solutions: Barriers, elevation, floating buildings

The team spent two days developing solutions. A number of ideas emerged that generally fell into three camps.

The first was to develop some kind of barrier system to help shield against future storm surges. The challenge here was to avoid turning the community into a fortress, destroying its character while protecting its assets. A combination of fixed and deployable barriers was proposed, with the idea that the fixed barrier, which would extend out into the water in places, have a bike path atop it, which would provide a recreational and scenic attraction. Red Hook is the only area in NYC with a full frontal view of the Statue of Liberty. Temporary barriers could be made available in the interim as this longer term barrier was put into place.

A second set of ideas collected around the notion of raising the neighborhood to a second story level, gradually moving assets up to the second floor of buildings while shoring up and waterproofing the first floor, in preparation for some time in the future when the area could exist as a city in the water, such as Venice, Italy. This could be supplemented by raised walkways and pedestrian areas that could elevate the "street life" to the second story level, so that people could window-shop at this level or even dine at second-story sidewalk cafes.

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Nature gives us everything free – let's put it at the heart of everyday economic life

By Dieter Helm

With a population increase of 10m predicted in the UK alone, natural capital faces challenges as never before. This is what to do to compensate

Turning concrete areas into green spaces is one way to improve natural capital in a small way. Photograph: Kathy deWitt/Alamy

Natural capital is everything nature provides us for free. It is what our economy is built upon. We add man-made capital in the shape of houses, factories, offices and physical infrastructure, and human capital with our skills, ideas and science.

Natural capital should, therefore, be at the heart of economics and economic policy – but it isn't. As a consequence we abuse nature, drive species to extinction, and destroy ecosystems and habitats without much thought to the consequences. The damage won't go away; as we wipe out perhaps half the species on the planet this century and induce significant climate change, the economic growth we take for granted will be seriously impaired. Put simply, our disregard for natural capital is unsustainable – it will not be sustained.

Just as we try to maintain and enhance our own assets – our houses, cars and our knowledge and skills – so too should the broader economy avoid running down its base of natural capital assets. Some natural assets will be used up – such as the non-renewables like North Sea oil and gas – but even here we should be mindful of compensating future generations for what we will not therefore bequeath to them.

The natural assets that really matter are the renewables – the ones nature keeps on providing us for free, forever – provided we don't deplete them beyond the threshold of sustainable reproduction. We can for example carry on for hundreds of thousands of years harvesting herring from the North Sea, as long as we do not overfish them. The potential value of all those fish forever is enormous.

For the economy as a whole, national accounts need to provide for this capital maintenance as a first call on its revenue. If they did, and if we had a proper balance sheet, then the economic growth declared would be the sustainable one. It would be lower, too. Put another way, by not maintaining our assets, we are living beyond our means – let alone also borrowing from the future to finance the deficit, and making future generations pay for our excessive current consumption.

A sustainable level of economic growth – driven by all the new technologies that keep coming along – would be lower, but we would nevertheless be better off in the long run. We would not then face the consequences of the loss of so much of our natural environment and climate change.

Unlike the climate change problem, natural capital has a big spatial dimension. Climate change is all about a small number of gases in the atmosphere and it does not matter where they are emitted. Natural capital comes at every level, and location matters. It includes the great global biodiversity hotspots, like the Amazon, and it includes everyone's backyard and every park and garden. Everyone can therefore make a difference to natural capital in ways that they cannot to the climate change problem.

Think of some of the things you could do today. If your front garden is paved and concreted over, you could break it up and allow wild flowers to flourish, which in turn would help the bees. So barren is much intensive agricultural land , as it is sprayed with pesticides and herbicides and its soils supplemented with nitrogen fertilisers, that bees often find cities much better habitats than the countryside. You could put away the slug pellets and the weed killer.

But the really big gains come from three policy changes, all of which have an impact on the choices we make. The first is compensation: the idea that if damage is done to our natural capital, there must be compensating increases elsewhere. The second is pollution taxes, paying for the damage caused from carbon, pesticides and other emissions. The third is a nature fund, created from the running down of the non-renewables like North Sea oil and gas.

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Unilever, Patagonia cement their positions as the world's most sustainable brands, says new report

This article titled "Unilever, Patagonia cement their positions as the world's most sustainable brands, says new report" was written by Bruce Watson, for theguardian.com on Thursday 28th May 2015 17.30 UTC

Unilever and Patagonia have cemented their position as the world's most sustainable brands, topping the list of sustainability leaders in a new report released Thursday.

The 2015 Sustainability Leaders Report, produced by think tank SustainAbility and research consultancy GlobeScan, asked 816 sustainability experts in 82 countries which company they thought best integrated sustainability into its business strategy. Unilever drew top honors for the fifth year in a row, while Patagonia ranked second, the same position it occupied last year. The two companies were followed, in order, by Interface, Marks and Spencer, Natura, Ikea and Nestle. Instead of a top 10 this year, the survey yielded a top 11 because of a four-way tie following Nestle: GE, Nike, Coca-Cola and BASF each drew 3% of the vote.

BASF is the only new company to make the top 11, while two companies – Walmart and Puma – fell off from last year's top 10 list. Unilever was lauded by 38% of experts – a 5% jump over last year's numbers.

Related: Are you secretly your company's chief sustainability officer?

Beyond the ranking, the report hints at some of the issues changing the global conversation on sustainability, and offers hints on how companies can plan their sustainability strategies for maximum impact.

For example, it breaks out the top companies by their performance in different regions, illustrating the degree to which the perceptions of sustainability leadership vary depending on where people live. In Asia, for example, India's Tata group is the fourth-highest regarded company, and Shell and Proctor and Gamble both make the top 10. In Africa and the Middle East, 5% of experts identified SABMiller as a top leader. Meanwhile, in Oceania, Westpac came in third, Tesla came in fourth, and HP, Siemens and Novo Nordisk all made the top 10.

Unilever and Patagonia, in fact, were the only two companies to make the leader list in every region. As consumers outside Europe and North America gain market power, it seems likely that companies with market share in other areas will increasingly drive the sustainability conversation.

Finding the heart of sustainability

The other major trend reflected in the report is a growing divide among sustainability experts on the relative importance of a clear, well-defined statement of corporate values versus a business model that integrates sustainability. This year, 26% of experts said that corporate values – including the beliefs of company executives – were the most important driver for sustainability. By comparison, 22% argued that making sustainability part of a core business model was more important.

But the numbers only tell half the story. Last year, 15% of experts highlighted the importance of business models, and 27% of experts highlighted values. In other words, values as the top marker of sustainability leadership has declined by 1% this year, while business model has jumped by 7%.

It seems that, for a growing number of experts, the question is no longer whether companies say the right things about sustainability, but whether or not they've made it part of their DNA.

<Source>

Europe's Cities Say, Gas Won't Save the Climate, Decentralized Energy Will

SustainableBusiness.com News

Europe's oil companies surprised everyone when they called for a carbon tax a few weeks ago, but although that's good news, what they really want is for the world to turn to natural gas as the major climate solution.

Europe's cities wrote their own letter in response, with the title, "Gas will not save the climate, decentralised energy will."

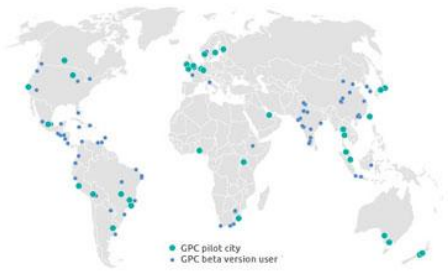
The letter says the energy transition is well underway, led by the world's cities, toward distributed, diverse energy sources.

"Although we support the idea of a well-functioning carbon market, we believe the world's energy would be best used if we stopped focusing on one supposedly salutary source of power, technology or market enabler," the letter says.

All across the world, cities are "creating new production and consumption systems that are not dependent on one source of fossil energy, but a large mix of distributed, sustainable and decentralised ones. Through direct cooperation with citizens, civil society, academics and businesses, cities and regions are encouraging all their territory's actors to take a stake in the energy transition. In a resource-constrained world, they are spearheading new systems of governance where energy is seen as a common good, not a mere commodity. They view energy as a resource we ought to save, beyond one that we can sell."

They point to the more than 6000 European cities that are on track to cut emissions 28% by 2020, through the Covenant of Mayors - well beyond the EU's 20% target.

Cities that measure and report greenhouse gas emissions using a standard protocol:



"Big multinational energy companies are seeing their business models threatened by the ongoing push towards more decentralized and distributed energy systems," Claire Roumet, Executive Director of Energy Cities (which represents 1,000 cities in Europe) told Politico.

"From solar, biomass, hydropower, use of heat from wastewater or from industrial processes, combined heat and power ... There is an ever-growing list of means to heat and power in our cities. All that is needed is the right political will and some creativity," Eckart Würzner, mayor of Heidelberg, Germany, told Politico.

There are now numerous joint efforts by cities, such as Carbon Neutral Cities Alliance, C40 Cities Climate Leadership Group and the City Energy Project in the US.

Read our articles, 100% Renewable Energy Gaining Traction As Worldwide Goal, which lists cities that have that goal, and World Is Moving to Distributed Energy: 165 GW by 2023.

Don't Cut Climate From Trade Deal, Says EU

Members of Europe's parliament wrote their counterparts in the US House, urging them not to pass Fast-Track trade authority without removing the amendment slipped in at the last minute on climate change.

Rep. Paul Ryan's (R-WI) amendment bars President Obama from including any climate change agreements in trade deals.

"Our capacity for showing leadership together [on climate] is enormous," they wrote. "Protection of the environment is a major priority for the people of Europe and the European parliament. Ruling out any action to protect the planet from global warming and climate change would deal a major blow to the prospects of reaching agreement on the TTIP which the parliament is due shortly to consider, and which we have been told should become a 'gold standard' for international trade agreements."

"As the global community prepares for the UN climate conference in Paris this December we do not believe that it is anyone's interests to be seeking to limit or restrict the scope for international agreements to help us make progress on addressing global warming and climate change."

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G7 Announces Climate Targets, South Africa Charges Ahead

SustainableBusiness.com News

At the G7 Summit being held in Germany, world leaders committed to keep global temperature rise under 2C and to work for a global agreement to cut emissions 40-70% by 2050 (from 2010 levels) and zero by 2100.

Very good, except that we need to get to Zero Emissions by 2050, or we may never make it to 2100.

That's what German Chancellor Angela Merkel wants, and she wants it written into a binding agreement. Apparently, Canada and Japan wouldn't agree to it unless it was watered down.

Canada's bigger commitment is to tar sands, and Japan's greater reliance on coal since the nuclear meltdown makes them serious laggards in the G7.

"The two of those countries have been the most difficult on every issue on climate. They don't want any types of targets in there, so I think they are trying to make it as vague as possible at this point," an anonymous source told *The Canadian Press.*

(AP /Jerry Lampen)

We also need to reduce emissions significantly right now.

Taken together, the G7 is looking at merely stabilizing emissions through 2030, despite the desperate need to reduce them now. Only the EU has science-based goals.

"The G7+EU INDCs on the table now show there is an extreme risk of locking in, until 2030, high emissions levels that are inconsistent with holding warming below 2C and to 1.5C. Waiting 15 years from today to increase emissions reductions - and 10 years after the 2020 agreement comes into force - could be very dangerous for the planet," says Bill Hare of Climate Analytics.

Canada and Japan's targets are inadequate, and the US has more work to do.

While they aren't willing to do more at home, the G7 committed to coordinating efforts to increase clean energy in Africa.

Africa Well Along the Way

In March, Environment Ministers across Africa released the Cairo Declaration, with all 54 countries demanding that global warming be limited to 1.5C by 2100.

They want help from the G7, but they also want the world's biggest polluters to do more in their own countries.

In South Africa, solar and wind farms are popping up all over, set to "completely transform rural communities in terms of healthcare, education, job creation and a raft of other interventions. All this while putting green electricity on the grid at affordable prices," says Johan van den Berg, executive director of the South African Wind Energy Association.

One of the major goals is inclusiveness, and every community that hosts a renewable energy project gets equity through a trust. 15% of energy sales go to health care, education and job creation.

An amazing 4.3 gigawatts of renewable energy projects have come online in just the past four years, providing about 10% of the country's electricity, reports *The Guardian*.

Wind energy now costs about half of a new coal-fired power plant, but that wasn't the case in when South Africa committed to build the world's largest coal plant in 2007. Medupi is still mired in cost over-runs and delays, but if it is finished, it will be a major polluter, producing another 4.8 GW of coal-fired electricity.

The South African Renewable Energy Technology Centre in Capetown trains people to run and maintain renewable energy projects and a wind tower factory has just opened nearby.

"On the continent, there really is the opportunity to leapfrog the old centralised large scale fossil fuel power and big grid paradigm. With technology and project prices continuing to drop, and rapid breakthroughs in battery and other storage technologies, I have no doubt that renewables will address all of our power needs in time. This will happen sooner than people think," Evan Rice, director of Cape Town's Greencape, a government funded nonprofit development agency, told *The Guardian.*

Worldwide, out of 5500 GW of energy infrastructure expected to be added through 2030, two-thirds will be renewable and will be in developing countries - a 594% increase, says Pew's Clean Energy Initiative.

The top 10 emerging markets for renewable energy, in this order: Thailand; Bulgaria; Ukraine; Kenya; Peru; Taiwan, Province of China; Morocco; Vietnam; Pakistan; and the Philippines.

<Source>

Nestlé engineers milk factory down to zero water

By Charles Wark

Courtesy of / Nestlé

Last year Nestlé opened its first "zero water" plant in Mexico, which extracts all the water it needs from milk used to manufacture dairy products.

Now, work is underway to transform the Nestlé USA milk factory in Modesto, Calif., into another zero water factory, meaning the plant will not use any local freshwater resources for its operations.

"Technology we have already deployed successfully elsewhere in the world to help address the challenges of water scarcity will improve our water use efficiency, relieving pressure on California's water resources," said Nestlé's head of operations, José Lopez.

Dramatic reduction

The project should save nearly 63 million gallons (238,000 cubic meters) of water a year, equivalent to 71 percent of absolute withdrawals in 2014.

Around $7 million has been invested in the project, due to be completed by 2016.

At the Nestlé USA factories in Bakersfield and Tulare, savings of more than 26 million gallons (100,000 cubic meters) of water each year have been identified, potentially reducing the plants' absolute annual withdrawals by 12 percent compared to 2014 levels.

Planned investments this year in conservation measures to reduce the amount of water used inNestlé Waters's bottling plants in California are projected to save 55 million gallons of water (208,000 cubic meters) a year, a reduction of nearly 8 percent compared to 2014 levels.

A three-phase approach

According to the company, it uses a phased approach to reduce water in its factories. First, engineers look for ways to optimize the processes. Second, they look for opportunities to reuse the water, for example using cooling water in vacuum systems.

And in the third phase, such as in the zero-water factory, they deploy innovative methods to extract water from raw materials and then recycle it.

In California, Nestlé will apply a methodology called "Water Target Setting," which identifies opportunities to reduce water usage but also identifies the most appropriate technology to be implemented.

It's an approach that has been used in more than 80 factories worldwide, identifying opportunities to reduce water usage by 10 percent to 30 percent depending on the location.

This article first appeared at 2degrees.

<Source>

Is This Stick Really a Wind Turbine?

SustainableBusiness.com News

While wind turbines produce clean energy unlike dirty power plants that pollute out of sight, many people aren't thrilled to see them dotting the landscape.

Over the years, there have been many turbine designs that have yet to gain traction, notably vertical turbines. Now, there's a new design that takes it to the limit - turbines that look like sticks in the ground - with no blades at all.

Does this new design look better to you?!

No more worries about noise for people who live nearby. It has no moving parts and is therefore silent. It doesn't have blades, so it can't kill birds and bats. Prototypes are almost as efficient as conventional turbines and are markedly cheaper to build and maintain.

"It will need less material, allowing us to provide electricity to more people at a lower cost, while leaving a smaller environmental footprint. It won't kill birds and it won't make noise. Stop imagining - here comes Vortex!," says the developer, Spain-based Vortex Blades, on its crowdfunding page.

Here's how it works

Instead of capturing energy by the rotating motion of turbine blades, Vortex takes advantage of "vorticity" - an aerodynamic effect that occurs when wind breaks against a solid structure. It begins to oscillate and captures the energy that is produced. It "floats" on magnets, which significantly increases oscillation.

The developers claim they can produce wind energy that costs 40% less than from conventional turbines, when you include land leases, operations and maintenance.

That's because they save 53% on manufacturing and maintenance costs (fewer parts), land leases (they take a quarter of the space).

Within the next year, Vortex will release its first small-scale versions, 4 kilowatt turbine for homes, and a 100 watt turbine that's combined with a 125 watt solar panel and a small battery, comprising a cheap renewable energy package for off-grid use in India and Africa. It can provide energy for three lights, a TV and refrigerator. They hope to build a 1 megawatt turbine by 2018.

"With two or three Vortex and four or five solar panels, by investing 2000-3000 euros you could generate enough power for your home," co-founder David Yanez told Reuters. At 10-feet high, the 100 watt turbine can be installed on the ground or on the roof, costing 300 euros each. Add a battery and you're off the grid.

Bladeless turbines could make the difference in the UK, where the government plans to stop subsidizing onshore wind farms because of the visual impact and potential collisions with wildlife.

The company has raised $1.1 million in public and private investments and says it is close to raising $5 million from a US investor.

So Many Promising Turbine Designs

Power WINDows fits between two buildings

SolarMills combine wind and solar into one device

Shrouded turbine is specifically designed to protect birds and bats from its blades

Turbines that go on the roof of buildings

INVELOX towers produce six times the energy of the largest onshore turbine.

Makani Power, owned by Google, makes an Airborne Wind Turbine that twice the energy of a conventional counterpart by flying in the air like a kite on a small airplane

Altareos Energies's turbine floats in the air

<Source>

Can the plastics industry create a collaborative model for change?

By Doug Woodring

Product manufacturers and brands long have recognized that plastic is one of the most effective and valuable materials in the market, due to its cost, durability and ability to be formed into so many shapes and sizes.

Shutterstock / Pierrre Sabatelli

However, as technology improves and polymer varieties increase, including with nano-materials, so too does consumption, as well as complexity for recovery.

As a result, many also recognize that plastic has an image problem, largely linked to its ubiquitous nature, and to its propensity to be used to make disposable, single-use products. This tends to be further exacerbated by the lack of infrastructure to properly recover, convert and reuse much of that waste in other viable applications, or because of the lack of education or knowledge on how to discard waste materials properly.

As the world's population grows, a rapidly mobile and financially stable middle class is emerging in much of the world. Those people become consumers who want products that the developed world has enjoyed for decades. This inevitably means that waste will grow proportionally. However, resource recovery is rarely given the focus it deserves to prevent impacts on water quality, health and livelihoods.

A lack of resources, or direct focus on the issue from governments, means that our waterways often become the waste-removal mechanism for many of our communities. This practice impacts our collective livelihoods in many ways, including water quality, tourism, health, and the ecosystem we rely on, yet addressing this multi-sourced problem is a complex task.

To address this, because no one pillar of society can fix this issue on its own, innovative and scalable collaborations between industry, governments and the community are starting to take shape in interesting, beneficial ways that benefit all parties involved.

As you might imagine, integrating different stakeholders to work together and take action is a difficult endeavor. Building trust among these groups is paramount, and maintaining an agreed-upon, collaborative agenda is the key in keeping each stakeholder group engaged. This is tough, when ideas easily can get "lost in translation" as delegated tasks are misunderstood or face internal politics.

An appealing trimumverate

Creating alliances is not new, but the benefits they can bring are needed, now more than ever, because usually none of these individual "pillars" can create the scale of positive change needed in our resource constrained world.

Fortunately, the intersection of business, community leaders and NGOs and the government is increasingly gaining prominence when parties are shown the potential for large scale change which is repeatable in many communities.

The triumvirate then becomes an appealing working model. Dealing with plastic pollution, while harnessing waste as a resource, is one of the big opportunities of the coming decades.

The recent study by the University of Georgia's College of Engineering estimated that over 4.8 million metric tons of plastic entered the ocean in 2010 from people living within roughly 30 miles of the coastline. Globally, some 280 million tons of plastic is produced annually, yet estimates suggest that only 10 percent actually is recycled.

Capturing this waste stream presents a significant and untapped business opportunity, as does the redesign of packaging and the thought process around waste recovery and resource maximization.

Waste should have no natural enemies, as few effectively can argue that having more waste is a good thing. However, the old models of simply burying or burning material are no longer sufficient, and these methods leave opportunities for money, jobs, innovations and improved livelihoods on the table.

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Switching to biofuels could place unsustainable demands on water use

Transition away from fossil fuels is underway, but without assessing demands on land and water resources we put the future health of our planet at risk

By Arjen Y. Hoekstra

Decarbonising our economy must go hand in hand with lowering our water footprint. Photograph: © Cultura Creative (RF)/Alamy

As the world moves towards renewable sources of energy, it faces an accompanying challenge: water scarcity. The intensive water use in the coal, oil, gas and nuclear industries is well-documented, but if we want to encourage a faster transition to renewables we must also contemplate the water use of the alternatives.

It is a great challenge to limit the drain on land and water resources now the transition has taken off. Bioenergy, hydropower, and wind, solar and geothermal energy all require substantial amounts of land and water resources. Given limitations to the availability of land and water, what energy scenarios are feasible in the long run?

With fossil fuels we have learned to worry about energy scarcity as a major concern for economic development and national security. In contrast, renewable energy seems inexhaustible: incoming solar radiation, for example, is far beyond what we need. The fact that renewable energy is available into infinity reinforces this idea of limitlessness. This, however, is a misunderstanding: we will replace energy scarcity by land and water scarcity.

Biofuels

Bioenergy production in particular requires vast amounts of land and water. Besides, with current energy-intensive agricultural practices, net energy output is far lower than gross energy production, sometimes even near zero. If only 10% of fossil fuels in the global transport sector were replaced by bioethanol from relatively efficient crops, global water demand would increase by 6-7%.

The production of biofuels at the rate we are used to consuming fossil fuels will require more land and water than sustainably available. Already today we have land and water footprints beyond maximum sustainable levels and bioenergy increasingly competing with food.

Hydropower and the dam debate

Hydropower, accounting for 16% of the world's electricity supply, is regarded as a clean form of energy. However, we cannot simply increase hydroelectric capacity. Dams can heavily impact on riparian ecosystems and societies, and any further damming of rivers should be subject to careful consideration.

Building new dams and reservoirs is often difficult because the required land is generally already in use for other purposes. For the Three Gorges Dam in China, over one million people were displaced. Besides, hydropower can be a large water consumer because of the additional evaporation from the reservoir created, which affects downstream water availability for other purposes. Damming rivers has therefore become a contentious topic.

Solar, wind and geothermal energy

Per unit of energy, the water footprint of bioenergy and hydroelectricity is two to three orders of magnitude larger than that of fossil fuels and nuclear. The water footprint of photovoltaic (PV) and wind energy is one to two orders of magnitude smaller.

Electricity from concentrated solar power has a similar water footprint to fossil fuels, while geothermal can be an order of magnitude smaller or even less. From a water consumption and scarcity perspective, it matters greatly whether we shift from fossil energy to bio and hydro or to solar, wind and geothermal energy.

All existing "green" energy scenarios, called "green" because of their considerable fractions of renewable energy, are based on considerable growth of bio and hydro in the mix, which means that the water footprint of the energy sector will grow sky-high if we follow such scenarios. True green scenarios, with a declining rather than increasing water footprint, must be primarily based on solar, wind and geothermal energy.

The transition to electricity

Solar energy is more efficient than biomass from a land use perspective because PV panels and concentrated solar power systems are more efficient at capturing incoming solar radiation than photosynthesis, thus generating more energy per square metre.

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New Penalty for Polluting: Pay for a Big Solar System

SustainableBusiness.com News

In an innovative move, the EPA has come up with a new "penalty" for pollution - paying for a new, big solar system!

What a great idea.

In this case, the polluters are the City and County of Honolulu, which violated air pollution laws by not collecting and controlling emissions from a closed landfill that spans 215 acres.

They agreed to pay $16.1 million to build a 3.1 megawatt solar system at the city's waste-to-energy plant on open space and on 250,000 square feet of buildings. They will also pay a penalty of $875,000.

Covanta's H-Power plant would look a lot better with solar

Decomposing landfill waste generates methane and hazardous air pollutants and under Clean Air Act, they must not be allowed to release into the atmosphere. A gas collection system has been operating since April 2013, but the deadline was 2002, when the previous system failed.

"If the proper systems had been in place at the landfill, over 343,000 tons of methane, and 6,800 tons of hazardous air pollutants and volatile organics would not have escaped to the atmosphere," says Jared Blumenfeld, EPA Administrator for the Pacific Southwest.

A toxic brew of hazardous gases have been released, such as benzene, chloroform, and vinyl chloride, many of which are known or suspected carcinogens. Methane is a potent greenhouse gas, which the US is trying to control.

"This settlement holds Honolulu accountable for past failures to collect and control toxic gases and greenhouse gas emissions from the Kapaa Landfill, but it also lays the foundation for better environmental stewardship in the future," says John Cruden, Assistant Attorney General for the Justice Department's Environment and Natural Resources Division. "Residents who call Oahu home will realize the benefits of this agreement - which includes clean solar power production and reduced reliance on fossil fuels - for many years to come."

Hawaii Shoots For 100% Renewables

This month, Hawaii became the first state to pass legislation to adopt a 100% Renewable Portfolio Standard, which means utilities will source all electricity from renewable sources by 2045.

The legislation sets these milestones: 30% by the end of 2020, 70% by the end of 2040. It updates the current RPS - 15% by 2015 - which the state easily exceeded. Hawaii gets 21% of electricity from renewables and 12% of residential customers have on-site solar.

Hawaii ranks #9 in the US for solar capacity.

<Source>

Birch water: the so-called superdrink you've never heard of

Birch water is heading for UK and US markets, but the sap can only be harvested once a fortnight each year

By Tess Riley

Sap being collected from birch trees in Latvia. Photograph: Sibberi Ltd

For just two to three weeks of the year, forests across the northern hemisphere fill with a silent burst of activity as hundreds of litres of sap rise daily up through each mature birch tree in preparation for the spring.

Now companies are tapping into this, quite literally, to produce a drink hailed as the next so-called superfood, or "superdrink" – birch water.

Tapping the sap

There's nothing new about birch water. A traditional drink and medicinal ingredient in parts of Canada, China and Eastern Europe among others, birch water is birch sap that has been collected from birch trees as winter comes to an end.

To date, birch water production has been somewhat of a cottage industry, with producers harvesting sap for personal consumption or to sell to a domestic market. Now the growing industry is seeing brands emerge selling Eastern European and Scandinavian birch water to US and UK markets.

"Sourcing birch water is difficult," says Clara Vaisse, co-founder of UK birch water brand Sibberi. "There is no existing birch water industry per se, and thus no big supplier with existing procedures or an English-speaking commercial team. Birch water supply therefore has to come from multiple, local, small-scale harvests."

Producer power

Unlike poorly-paid coconut farmers – harvesters of coconut water, the billion-dollar predecessor to birch water – the farmers Sibberi sources from are paid well for two reasons, says Vaisse: firstly, the trees occur within other forest types, such as oak and pine, so aren't necessarily easily accessed; secondly, the harvest only lasts once a year for a fortnight. This makes mechanising the collection process both impractical and unprofitable, so manual harvesting is paid at a premium.

Latvian birch water farmer Ervins Labanovskis, 35, is positive about the product's prospects: "We have been harvesting birch sap in my family for as long as I can remember, but only during [the] last four years has it also become my business … Currently I would say it creates 50% of my income. But I am looking at this industry as a growing one and there is a high possibility that in a year from now it will be my primary or even only occupation."

Photograph: Sibberi Ltd

Reflecting the nature of the birch harvest, Labanovskis' living situation fluctuates seasonally – during the winter he and his family live in Latvia's capital city, Riga, but in spring and summer they move to the more remote district of Smiltene. They harvest approximately 50,000 litres of birch sap per season, a portion of which goes to Sibberi, although he makes it clear that there is capacity to increase production to millions of litres per harvest if demand is there.

When asked what he thinks the advantages are of a growing birch water industry to the region, Labanovskis points to the additional employment it brings. He currently hires 15 people for two months of the year. These farmers generally have other principal occupations, such as grain cultivation or cattle breeding, but birch trees offer a good side business since the harvest is usually in April, "when winter works are finished and spring works have not yet started."

Sustainability challenges

It is perhaps unsurprising that a raw material that's only available for two weeks of the year has its disadvantages. For a start, local partners such as Labanovskis have to be flexible – ready for a big, short-lived activity peak, although no-one is sure precisely when from year to year.

Likewise, companies must do accurate sales forecasts based on something only available for a fortnight, and in that two-week window harvesters must store a highly perishable product (birch water spoils in four days) to ensure it lasts until next harvest. To do so is expensive, difficult and costly if it goes wrong, not to mention environmentally demanding. Sibberi, for example, keeps its sap frozen at lower than –25C and then unfreezes it along the bottling process.

<ReadMore>

BMW Bites The Bullet On Fuel Cell Electric Vehicles

Source Name: Clean Technica

We've been having a lively discussion about fuel cell electric vehicles over here at CleanTechnica, and along comes BMW to stir the pot. After teasing — and then withdrawing — a concept fuel cell electric vehicle for the 2015 North American International Auto Show in Detroit earlier this year, BMW just let drop that it really, really will have fuel cell vehicles in production by 2020.

Teasing The BMW Fuel Cell Electric Vehicles

The news comes to us from AutoExpress, which got wind of the 2020 FCEV (fuel cell electric vehicle) launch from "sources at BMW." The details are still very thin but based on the timing and an R&D alliance with Toyota, AutoExpress reports that the production cycle favors the next iteration of the BMW i3 electric vehicle line.

That's consistent with some i3 FCEV rumors that Motoring picked up last fall, though at the time Motoring optimistically reported that 2016 would be the go date.

Meanwhile, last year, CleanTechnica reported on some other rumors floating around the Intertubes, suggesting that the BMW i5 could provide a platform for the new FCEV, possibly in 2018. That doesn't seem too likely in light of the new report, but who knows?

To round out the rumor mill, late last year our sister site Gas2.org noted that some BMW officials were pointing at the FCEV refueling infrastructure (or lack thereof) as a major obstacle to development. That makes the prognosis for a production model look a little more bleak and, along those lines, apparently the BMW FCEV concept was not ready for Detroit earlier this year.

BMW & Hydrogen

For those of you with long memories, BMW did introduce a "production-ready" hydrogen car on a demo-testing basis back in 2005, but that vehicle burned hydrogen in a combustion engine. The FCEV thing is a completely different approach (for those of you new to the topic, fuel cells don't burn fuel, they convert it to electricity).

One problem with FCEVs, as we've pointed out previously on CleanTechnica, is that hydrogen is the fuel of choice, and natural gas is the source of choice for producing hydrogen. That opens the whole fracking can of worms, and more worms are in store if a new Natural Gas Initiative in the US pans out.

However, hydrogen can also be produced from sustainable sources using renewable energy, and BMW has begun to explore the renewable biogas angle.

In 2011, BMW embarked on a "Landfill Gas-to-Hydrogen Pilot Project," with technical and funding support from the US Energy Department and the South Carolina Research Authority. The project has also been highlighted as a best practices model by the US Environmental Protection Agency.

As of 2013, the project was focusing on cost-effective ways to remove impurities from the biogas stream in preparation for hydrogen production. Here's what BMW had to say about that:

…The objective of generating renewable hydrogen from methane is proving to be a possible option for BMW and will be transformational for the fuel cell industry.

BMW is also all over biomass and biogas for on-site energy generation at its production facilities. Aside from South Carolina, another notable example is the company's plant in Rosslyn, South Africa.

Enough Sustainable Hydrogen To Go Around?

BMW's biogas initiative brings up an interesting point about sustainably sourced hydrogen, which is that FCEVs are far from the only market for biogas. With competing demands, it's not a given that enough sustainable hydrogen will be around to supply a growing FCEV market — assuming that the FCEV market will grow.

Helpfully, back in 2014, the National Renewable Energy Laboratory (NREL) produced a hydrogen market study called "Renewable Hydrogen Potential from Biogas in the United States," which addresses exactly that point.

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How the apparel industry is cleaning up textiles

By Amanda Cattermole

The industry is increasingly cleaning up chemicals at the beginning of the supply chain, including in textile dyes and on the factory floor. High-pressure cotton dyeing equipment is shown above.

Since 2013, Greenpeace's "Detox" campaign against apparel companies successfully has catalyzed new approaches to eliminate hazardous chemicals from products and supply chains. It's not just activist pressure, but also the desire within the industry to do good, that is driving the reduction of hazards in everything from children's clothing to sportswear.

Efforts to reduce hazardous chemicals and environmental pollution in the manufacturing supply chain include the Sustainable Apparel Coalition's Higg Index, the Outdoor Industry Association'sChemicals Management Module and the Zero Discharge of Hazardous Chemicals' Roadmap to Zero.

Restricted substances

Traditionally, such efforts have centered around Restricted Substance Lists, which have been used in the textile industry since the late 1990s. They contain restricted chemicals that are usually, but not always regulated. These chemicals can be used in manufacturing and be present in consumer products, as long as the amount is not greater than the allowable limit.

The RSL is a tool to help brands meet regulatory compliance requirements and is typically implemented in three steps:

1. Establish the allowable limit in the product.

2. Train and educate manufacturers to implement the RSL.

3. Verify through product testing.

Because restricted chemicals may be used in manufacturing, there is always the possibility that hazardous chemicals may end up in discharge water.

A fundamental shift to 'input chemistry'

Today, however, a sea change is placing greater emphasis on managing input chemistry rather than treating effluent. Hazardous chemicals are eliminated at the beginning of the supply chain before they enter the manufacturing facility. This prevents the need to clean up waste water and toxic pollution.

Some tools, such as bluesign, have been available for several years, while others are just being introduced, and some chemical companies are seizing the opportunity to lead in the marketplace.

The initiatives below are gaining wider acceptance and use:

Bluesign

The bluesign system is a standard for environmental health and safety in the manufacture of textiles. It was developed in Switzerland 15 years ago and is gaining momentum with chemical suppliers, manufacturers and brands.

Bluesign works with chemical suppliers to ensure their formulations meet strict requirements. Production sites are audited and a set of guidelines must be met prior to a chemical supplier selling "bluesign certified" formulations. Approved bluesign partners regularly report their continuous improvement and progress in energy, water and chemical usage, and are subject to on-site audits. Many large global chemical suppliers including Huntsman, Archroma, CHT and Dyestar are bluesign partners and produce bluesign-compliant formulations.

Bluesign chemicals are available for all stages of textile production, from spinning to garment manufacturing. This enables brands and manufacturing facilities to make smarter and safer choices.

Bluesign assesses and assigns chemicals to one of three categories:

1. Blue: safe to use

2. Gray: special handling required

3. Black: forbidden

The bluesign system helps factories manage "gray" chemicals and replace "black" chemicals with safer alternatives.

Manufacturing Restricted Substance List

An MRSL differs from a Restricted Substance List (RSL) because it restricts hazardous substances potentially used and discharged into the environment during manufacturing, not just those substances that could be present in finished products. The MRSL addresses any chemical used within the four walls of a manufacturing plant, including those used to make products and clean equipment and facilities.

The Zero Discharge of Hazardous Chemicals group developed and published an MRSL with input from key stakeholders including brands and chemical companies. ZDHC developed one MRSL for the apparel industry. This benefits brands, manufacturers and chemical companies because they only have to adhere to a single set of criteria with the same chemical restrictions, limits and test methods.

Chemical companies are in the process of developing a list of MRSL-compliant formulations that adhere to the strict limits placed on a given chemical formulation rather than the finished product.

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75% of World Emissions Now Covered By Climate Targets

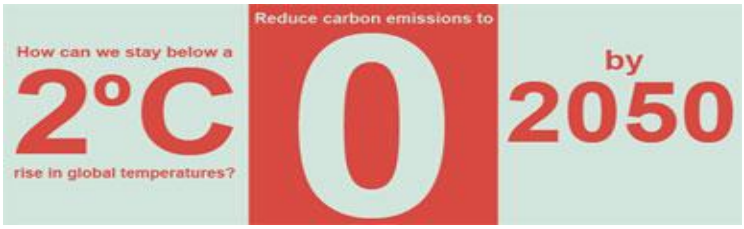
SustainableBusiness.com News

75% of world emissions are now covered by national climate targets, but that still falls short of keeping world temperatures under 2C.

Right now, we are on track to reach about 4.8C by 2100 - an unlivable planet.

The 2015 Global Climate Legislation Study comes out of Grantham Research Institute on Climate Change, where theApollo Program on Climate Change is being incubated.

The good news is researchers believe we are now at the point where we can be more confident of pledges countries make at this year's Climate Summit, says lead researcher Michal Nachmany. "While collectively these pledges are unlikely to be consistent with the international goal of avoiding global warming of more than 2C, the existence of national legislation and policies should provide the opportunity for countries to strengthen the ambition of their emissions cuts after the summit."



In 1997 - when the Kyoto Protocol was signed - there were 54 climate laws, but now there are 804 in 98 countries. And the number has doubled since 2009, when there were 426 laws. Countries that have passed these bills produce 93% of global emissions.

In fact, the number of climate laws and policies has been doubling about every five years, showing that international climate change negotiations are indeed leading to national action in most countries, they say.

75 countries plus the European Union have policies that limit emissions and 64 countries have policies to help them adapt to climate change impacts.

47 countries, including the 28 member state European Union, have introduced carbon pricing through a carbon tax or cap-and-trade system.

The study will be presented this week in Bonn, Germany, where a climate summit is taking place. Delegates are trying to whittle down 80 pages of negotiations text they ended up with after the last meeting in Lima, Peru.

The reason we need such steep, difficult emissions cuts is because the world has waited far too long to take action. Had we acted at the first Rio Summit in 1992, it would have been fairly easy.

<Source>

How to outsmart waste

By Tom Szaky

This is an excerpt from Outsmart Waste: The Modern Idea of Garbage and How to Think Our Way Out of It , with permission of Berrett-Koehler Publishers.

The art of upcycling


Shutterstock / Phaijittra

The key difference between upcycling and reusing waste is that with upcycling the original intention of the object changes. For example, if a painter uses a painted canvas for a new painting, he is reusing the canvas. But if instead that same painter takes the canvas apart, uses the wood to make a frame and uses the fabric to make a purse — that's upcycling.

Upcycling is not a new idea

The idea of upcycling isn't all that new. People have been upcycling for thousands of years. In fact, before the Industrial Revolution (and before processes typically needed for recycling became readily available), reuse and upcycling were common practices. There were no landfills or incinerators to speak of, and the idea of "disposable goods" simply didn't exist in the way it does today. If your pants wore out, the remaining material could be used as cleaning rags or to make another piece of clothing. If a leg broke off your kitchen table, the wood that originally made the table could be used to make a shelf.

The concept of waste is a luxury, and this is perhaps why upcycling is more commonplace in poor countries than in rich ones. If you don't have the resources to buy new objects, you will fulfill your needs by looking at what is available and using that — getting quite creative in the process.

Leave your assumptions at the door

The best way to wrap your head around upcycling is to stop looking at objects as waste. Take a tip from nature and look at your "waste" as a valuable material — an output whose initial intention doesn't need to determine its current purpose. Look at what that object is but try to ignore what it was. In fact, try to pretend that you don't even know what it was made for in the first place.

For example, from the point of view of upcycling, a chip bag is not food packaging; it's a flexible plastic film. It is a waterproof, colorful, thin and easy-to-tear material with very high tensile strength. The more obvious applications for such a material are weaving and sewing, but the possibilities are endless.

Take another example: a bicycle chain. If you didn't know it was made as a key component of a bicycle, you would be freed to see it without that lens — as a heavy-duty metal chain that connects to itself and can easily be made into smaller sections. Jewelry, pots, clocks and a host of other upcycled objects only begin to scratch the surface of the once-a-bicycle-chain's uses.

Or how about a vinyl record? If you didn't know that these objects were made to play music (which may be the case with many younger people), you'd just see a black plastic disc about the size of a Frisbee. If you did some experimenting, you'd find that it can be molded after applying a little heat with a hair dryer. What once might have showered bedrooms and dance clubs with music can now be easily formed into a bowl, a plate, or a clock. This list goes on and on and is really limited only by our imagination.

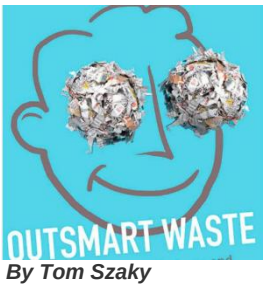
The business of upcycling

People have been upcycling for as long as new objects have broken or, recently, gone out of fashion, but the field is really just picking up from a commercial perspective. In the past decade, socially conscious organizations have made upcycling their business. This first began with various nongovernmental organizations (NGOs) in poorer countries such as Mexico and the Philippines.

Beginning in September 2004, the People's Recovery, Empowerment, Development Assistance (PREDA) Foundation, a charitable organization that was founded in the Philippines in 1974, began producing, selling and shipping items made from upcycled juice pouches — a waste stream just as common in the Philippines as in the United States.

PREDA trains people to collect used juice pouches (including many students, helping their schools earn money in the process), pays them for their efforts and teaches them about the environment. After the collected pouches are cleaned and sanitized, PREDA makes them available to women who produce handcrafted items. Since 2004 PREDA has sold thousands of upcycled products worldwide.

Mitz, named for a Nahuati word meaning "for you," was founded in 2003 (a year before PREDA) by Judith Achar. She started Mitz to fund Casa de Niños de Palo Solo, a Montessori school in Mexico that has provided community service for low-income students since 1979.



Searching for ways to develop the community and have its members share in the work, Judith brought together a group of mothers to manufacture everyday articles from materials thrown out by local schools and business. The primary products are handwoven bags made from various food-packaging wrappers.

By Tom Szaky

Upcycling as an industry is not confined to places such as Mexico and the Philippines; people in more-developed regions of the world are also getting into the business. In 1993 graphic designer brothers Markus and Daniel Freitag were on the lookout for a messenger bag. Inspired by the colored truck tarps that they saw on the highways in Switzerland, they started FREITAG, a highly successful company that now makes various upcycled bags available all around the world.

But the list doesn't stop with truck tarps and messenger bags. Chaba Décor upcycles wood from demolished boats and buildings to make picture frames and other items for home decor. Ecoist, similar in function to Mitz, weaves candy wrappers into fashionable bags. Global Exchange upcycles old magazines into bowls, flip-flops into doormats, soda cans into wallets and much more.

The Greenshop upcycles print blankets, billboards and inner tubes to make pet collars, laptop covers and notebook folders. New York-based in2green creates cotton apparel, blankets and totes using yarn made from T-shirt clippings. Transglass makes beautiful vases and other glass pieces from old wine bottles.

Whit McLeod repurposes oak wine casks and barrels to make unique furniture. Trash Amps upcycles soda cans and Chinese-takeout boxes into portable speakers for MP3 players and guitar amps. Upcycle Products repurposes large food barrels into rain barrels and composters. And my company, TerraCycle, a global leader in upcycling, makes everything from cookie-wrapper kites to wine barrel composters.

The list of upcycled products is at least as long as the list of waste product materials that can be used in their construction (and the companies doing it). Fortunately, you don't have to be a company or an NGO to leverage the benefits of upcycling yourself.

Leveraging upcycling as an individual

It takes something of a do-it-yourself (DIY) mentality to successfully upcycle at home. Add that to your newfound perspective on waste and, voilà, you are ready to outsmart waste at home by upcycling. Upcycling at home is even more environmentally friendly than having an upcycling company do it because you avoid the environmental impacts that come with transporting waste to the upcycling company and then transporting the upcycled product back to you.

The key to successful at-home upcycling is to first separate out your garbage. Try to keep the organics and the inorganics separate. Even if you don't compost, consider having one garbage can for organic waste and one for inorganics. This simple act of separating also will make it easier in the event that you do eventually start composting.

Once you've started to separate your garbage, consider cleaning it out before putting it into your garbage can, only now your "garbage can" isn't really a garbage can anymore — it's a "raw material storage unit." With this in mind, try to organize it as you would raw materials in a workshop. After you've removed the yogurt from the yogurt cups and the chocolate from the candy wrappers, try to organize the waste into three basic categories.

Flexible packaging: Everything from chip bags to candy wrappers to the notorious plastic shopping bag — if you can crumple it, it fits in the flexible-packaging category. If you keep the material types together (chip bags with chip bags and plastic bags with plastic bags), you can actually fuse them together by putting them between pieces of waxed paper and running a warm iron over them. The resulting material then can be sewn, without tearing, into totes, wallets, lunch boxes and just about anything you can imagine.

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Climate Change Poses a Brewing Problem for Tea

By Brian Kahn

A myth ties the origins of tea to an errant gust of wind that blew tea leaves into a Chinese emperor's hot water more than 4,700 years ago.

Since that lucky first brewing, tea has become the second most popular beverage in the world (behind water, of course). The industry has grown into a $20 billion behemoth that sells everything from pedestrian PG Tips to luxurious Yunnan golden tips.

Tea pickers in Assam, India.Credit: Roger Burks/flickr

Yet that industry and the farmers that rely on it for their livelihoods could be in hot water as the climate changes. Coffee's struggles with a changing climate are well-documented, but the impacts on tea are just coming into focus. Early research indicates that tea growing regions could decline in some parts of the world by up to 40-55 percent in the coming decades and the qualities, particularly for high end teas, could also change.

"Crystal-ball gazing, there certainly is the case that some countries growing tea might not be growing tea in the future or certainly growing less," Ann Marie Brouder, a sustainability advisor at Forum for the Future, said.

Planting a tea bush is a decades-long investment, one not easily moved or replaced. That means to prepare for future changes, farmers and companies need to act if not now, then soon if the tea in your mug is going to be there in the future.

"Tea bushes are consistently planted for 60 years so it's the same bush you're plucking every year rather than say a crop of wheat. It's more responsive to the climate rather than the weather," Ellie Biggs, a geographer at the University of Southampton studying tea in India, said.

A Spring Day in Yunnan

On late spring mornings, you'll find farmers across China's Yunnan province following trails worn by years and years of footsteps in the pre-dawn light. Their pink rain ponchos stand out in the misty hillsides covered in vegetation.

Their destination? Small plots of tea bushes tucked away in clearings among the oak-dotted hillsides where the first flush of spring has sent two fresh leaves spreading out to the edge of each branch. The tea harvested in spring and again in fall is a vital source of income for farmers in Yunnan province, one of China's least developed provinces.

When the time is right, farmers will process those twin tips into some of the finest tea in the world, fetching more than $100 per pound for the highest quality teas (or $1,000 a gram for even higher grades if you're a collector with money to spend). And the timing is everything, right down to the hour.

A farmer in Yunnan walks in the mist to their tea garden.Credit: Selena Ahmed

"The flavor can change from morning to afternoon because of (shifts in) the concentration of amino acids and chemistry. It's a really a micro kind of thing," said Bob Heiss, an author and co-owner of Tea Trekker.

Yet background climate shifts are starting to play a role in altering tea quality in Yunnan on much more than a micro scale.

"In the last 10 to 15 years, the price of these small scale organically produced teas has skyrocketed in China," Rick Stepp, an anthropologist at the University of Florida, said. "Right as that is occurring, they're seeing some of the effects of climate change. Climate is changing the way people produce tea, it's changing the quality of tea and people are noticing the change in quality."

Stepp is part of a consortium of researchers whose goal is to explore the hitherto unexplored impacts of climate change on the Yunnan region's famed teas.

Their early findings suggest that average daily precipitation has declined during the wet season and increased during the dry season, though there are large differences across Yunnan. By mid-century, under a high greenhouse gas emissions scenario, climate models indicate that trend could reverse with a slight overall decrease in rain during the dry spring tea harvest and a slight increase during the monsoon harvest.

In a preview of what's to come, recent wet monsoon conditions led to a 50 percent increase in the quantity of tea produced, but a 50 percent decrease in some of the compounds that give Yunnan teas their distinct flavor, in essence diluting the tea.

Colin Orians, a biologist at Tufts University who is helping lead the project, is spearheading the chemical research. And Orians, Stepp and other researchers involved will also be sitting down for the occasional cup of tea (no crumpets, though) to observe how those chemical changes translate to something everyone can understand: the taste of tea.

Tracking year-to-year changes won't necessarily reveal the chemistry of climate change, but it will create a key baseline to measure future changes against and provide farmers and tea buyers with another piece of information on what to expect in a given year.

Beyond climate data, Stepp and Orians have also been interviewing farmers about their perceptions of rainfall. The majority of farmers they've interviewed so far have noticed that rains have become more unpredictable and temperatures have risen over their lifetimes, with the former having the largest impact on tea quality. Some of that could be tied to deforestation across the border in Burma, but rising greenhouse gas emissions also have a likely role.

A World of Change

More than 600 miles separates Yunnan from the Assam region of India and the landscapes couldn't look any more different. Vast tea plantations stretch across the Brahmaputra River floodplain, with shade trees frequently breaking the flat horizon to protect workers and tea plants from the scorching tropical sun.

The lower elevation and tropical latitude ensure that Assam is warm and humid almost year-round, with the Indian Monsoon providing a blast of torrential summer rain. The warm climate means that Assam tea, which accounts for 17 percent of all global tea production, sits right on the edge of tea's growing range where rising temperatures are already being felt.

"Tea in China is mostly upland so your optimal temperature is between 13°-30°C (55°-86°F)," Biggs said. "Here, because it's lowland tea, that upper temperature threshold is being crossed more consistently than it ever has in the past."

A tea picker in Assam, India.Credit: Akarsh Simha/flickr

Biggs is working with researchers at the Tocklai Tea Research Institute (TRI) in Johrat, India to examine what aspects of climate change will have the greatest impact on tea yields. Heat is the most obvious tie for the region, but a shift in the Indian Monsoon is also messing with plants.

Recent research shows that the Indian Monsoon is being punctuated by more intense wet spells, which can waterlog plants causing root rot.

Biggs and her colleague in Assam, Niladri Gupta, are also analyzing data on temperature and humidity and comparing it to tea yields in a given season to tease out what climate factor is playing the biggest role in affecting yields now and what the future might hold.

From there, they can make specific recommendations on how to cope with those climate impacts in the future, particularly for smallholder farmers that produce about a third of Assam's tea and might not have the resources of large corporations also producing tea in the region.

"In Assam, India, unpredictable rainfall and dealing with that unpredictability is what many tea producers say is the critical factor," Brouder, the advisor at Forum for the Future, said.

The Future of Tea

Beyond Assam, Brouder said that climate change turned up as the No. 1 concern for tea growers based on surveys she's conducted with growers, buyers and traders as part of project called Tea 2030. Their worries are based on recent fluctuations in growing conditions as well as early efforts to project future changes to tea-growing regions.

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Decade of drought: a global tour of seven recent water crises

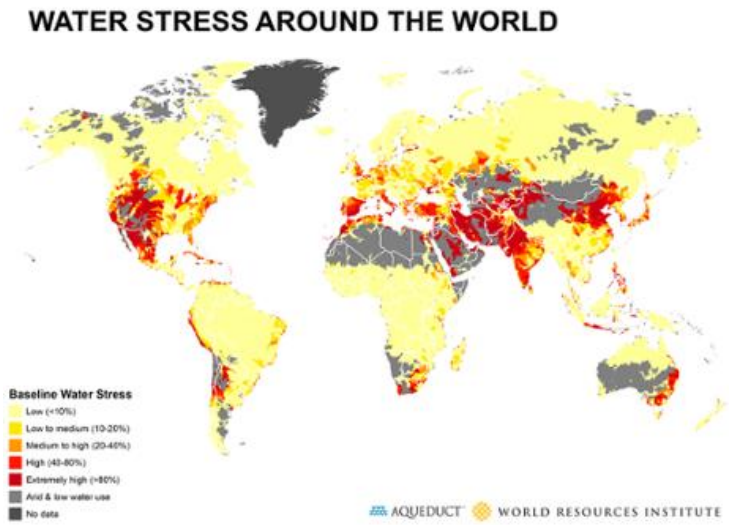
Projections for water stress in 2020, 2030 and 2040 indicate that the global picture is likely going to get worse. Photograph: Sam Panthaky/AFP/Getty Images

Water is one of the critical natural resources and the most mismanaged. Water scare regions are more prone to cascading impacts of drought. The problem is worse for countries that depend heavily on agriculture. - **Editor – ThinktoSustain-Marketspace**

This article titled "Decade of drought: a global tour of seven recent water crises" was written by Charles Iceland, for theguardian.com on Friday 12th June 2015 10.58 UTC

Every inhabited continent, to varying degrees, has areas where there is extremely high water stress. These are areas where more than 80% of the local water supply is withdrawn by businesses, farmers, residents and other consumers every year.

These so-called stressed areas are also the ones most vulnerable to episodic droughts. With chronic overuse of water resources, it only takes a string of years with bad rainfall or poor management decisions to plunge a region into crisis and chaos. Here's a look at seven extreme droughts that have occurred in the past decade.



Map of water stress around the world Photograph: WRI

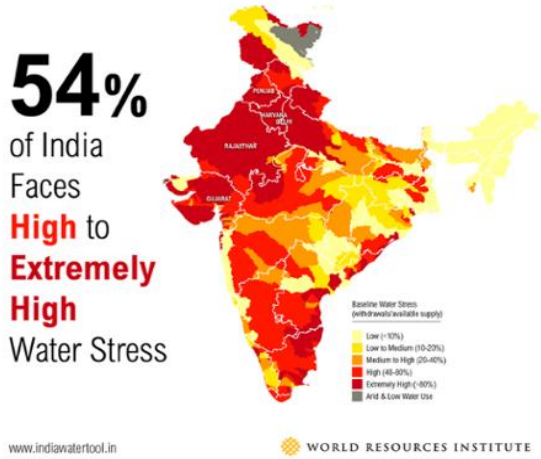
Australia's one-in-a-thousand-year drought

Australia's "millennium" drought began in 1995 and continued country-wide until late 2009. Reservoir levels fell precipitously, as did crop production and industrial water use. A number of cities, including Melbourne, Sydney and Perth, built desalination plants in an effort to partially drought-proof themselves, while other areas pursued grey-water recycling projects. Between 2001 and 2012 the federal government provided $4.5 billion in assistance to drought-affected farmers and small businesses.

In 2010 and 2011, following quickly on the heels of the drought, Australia experienced its worst flooding in half a century, as an area of Queensland larger than the size of France and Germany flooded, affecting 200,000 people and costing at least $10 billion in damage.

Spain imports water by ship

Drought in Spain's north-eastern region of Catalonia grew so severe in 2008 that Barcelona began importing water by ship from France. About 70% of Spain's water goes to agriculture, and much of it is wasted through a combination of inefficient irrigation systems and water-thirsty crops unsuitable for the arid climate. Other critics say low water prices are the culprits as they result in profligate water use and low investment in water-efficient infrastructure.



Water stress in India mapPhotograph: WRI

Northern India's groundwater loss can be seen from space

Twin satellites from Nasa's Gravity Recovery and Climate Experiment (Grace) are able to detect changes in the Earth's gravity field brought about by changes in the way water is distributed, including in groundwater storage. Nowhere on Earth are groundwater declines greater than in northern India; Nasa found that large-scale irrigation caused 108 cubic km of groundwater loss in Haryana, Punjab, Rajasthan and Delhi between 2002 and 2008. The study's lead, Matt Rodell, observed that "the region has become dependent on irrigation to maximise agricultural productivity. If measures are not taken to ensure sustainable groundwater usage, the consequences for the 114 million residents of the region may include a collapse of agricultural output and severe shortages of potable water".

In July 2012, roughly half of India's population – about 670 million people or 10% of the world's population – temporarily lost power following a massive grid failure. Some experts laid the blame on the severe drought affecting northern India. Low rainfall restricted the amount of power delivered by hydroelectric dams, and farmers used more power than usual to run water pumps to irrigate their crops.

The dark side of China's boom

Much of northern China is relatively dry – not unlike California and the rest of the western United States – yet it has also traditionally produced significant amounts of wheat and other grains thanks to flood irrigation. Add skyrocketing water use by industry, energy and municipalities to this inefficient system and hydrologists warn that China's future is in danger of drying up.

Government officials are starting to take action. Water is now one of China's public policy priorities, and the central government recently launched a "three red lines" policy to improve efficient water use and to place caps on water demand. Yet it remains unclear whether these policies are sufficient to overcome the country's vast water challenges.

Mesopotamian nightmare

From 2006 through 2011, Syria suffered its worst drought and crop failure in recorded history. The Grace satellite data revealed "an alarming rate of decrease in total water storage in the Tigris and Euphrates river basins, which [at the time] had the second fastest rate of groundwater storage loss on Earth, after India". While many other factors – political, social and religious – have contributed to the Syrian military conflict, experts argue that "the decrease in water availability, water mismanagement, agricultural failures, and related economic deterioration contributed to population dislocations and the migration of rural communities to nearby cities. These factors further contributed to urban unemployment, economic dislocations, food insecurity for more than a million people, and subsequent social unrest".

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World has no choice but to decarbonise: UN climate chief

Source Name: The Economic Times

BARCELONA: Responding to climate change in the next 15 years is the world's "mega development project", given the need to invest trillions of dollars in infrastructure, creating jobs and economic stability, the United Nations' top climate change official said on Tuesday.

"It makes fundamental economic sense" for countries to push forward on tackling climate change because of the benefits it will bring in terms of food, water and energy, as well as employment," Christiana Figueres told a carbon market conference in Barcelona.

This, together with the speed at which businesses are acting on climate change and efforts to put a price on carbon, mean "a decarbonised world is now irreversible, irrefutable," the head of the U.N. climate change secretariat told the conference.

"We are going to do it, because frankly we don't have any other option," she said.

Decarbonisation refers to shifting from fossil fuels to renewable energy sources, and improving energy efficiency, in order to cut planet-warming emissions to a net zero.

Rachel Kyte, the World Bank's special envoy for climate change, said to decarbonise economies, "we will need to begin with extraordinary ambition at the end of this year" in Paris where countries are due to agree a new global deal to tackle climate change.

Experts say the national plans countries are now compiling for that deal are unlikely to add up to the reductions in greenhouse gas emissions needed to keep global warming to an internationally agreed limit of 2 degrees Celsius.

MARKET MECHANISMS NEEDED

Market mechanisms, such as carbon taxes and emissions trading schemes, would be key in mobilising a global response on a big-enough scale, Kyte said.

"Every country will need to manage an orderly transition to low-carbon growth and resilient development," she said, adding that carbon pricing would be one necessary element of that transition.

On Tuesday, the World Bank said in a report that emission trading schemes were worth an estimated $34 billion on April 1, up from $32 billion in 2014, while the value of carbon taxes around the world amounted to about $14 billion.

Countries introducing such initiatives include developing nations such as China, Mexico and South Africa.

Putting a price on carbon would be the foundation for unlocking investment in low-carbon economies "with hope for jobs and competitiveness - not a picture of sacrifice and of loss and giving things up", Kyte said.

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Renewable energy from evaporating water

Source Name: ScienceDaily

In the June 16 online issue of Nature Communications, Columbia University scientists report the development of two novel devices that derive power directly from evaporation -- a floating, piston-driven engine that generates electricity causing a light to flash, and a rotary engine that drives a miniature car.

When evaporation energy is scaled up, the researchers predict, it could one day produce electricity from giant floating power generators that sit on bays or reservoirs, or from huge rotating machines akin to wind turbines that sit above water, said Ozgur Sahin, Ph.D., an associate professor of biological sciences and physics at Columbia University and the paper's lead author.

"Evaporation is a fundamental force of nature," Sahin said. "It's everywhere, and it's more powerful than other forces like wind and waves."

Last year, Sahin found that when bacterial spores shrink and swell with changing humidity, they can push and pull other objects forcefully. They pack more energy, pound for pound, than other materials used in engineering for moving objects, he reported in a paper published in Nature Nanotechnology, which was based on work Sahin had started as a Scholar in Residence at the Wyss Institute for Biologically Inspired Engineering at Harvard University.

Building on last year's findings, Sahin and his Columbia colleagues sought to build actual devices that could be powered by such energy.

To build a floating, piston-driven engine, the researchers first glued spores to both sides of a thin, double-sided plastic tape akin to that in cassette tapes, creating a dashed line of spores. They did the same on the opposite side of the tape, but offset the line so dashes on one side overlapped with gaps on the other.

When dry air shrinks the spores, the spore-covered dashes curve. This transforms the tape from straight to wavy, shortening the tape. If one or both ends of the tape are anchored, the tape tugs on whatever it's attached to. Conversely, when the air is moist, the tape extends, releasing the force. The result is a new type of artificial muscle that is controlled by changing humidity.

Sahin and Xi Chen, a postdoctoral fellow in his lab, then placed dozens of these tapes side by side, creating a stronger artificial muscle that they then placed inside a floating plastic case topped with shutters. Inside the case, evaporating water made the air humid. The humidity caused the muscle to elongate, opening the shutters and allowing the air to dry out. When the humidity escaped, the spores shrunk and the tapes contracted, pulling the shutters closed and allowing humidity to build again. A self-sustaining cycle of motion was born.

"When we placed water beneath the device, it suddenly came to life, moving on its own," Chen said.

The spore-covered artificial muscles function as an evaporation-driven piston. Coupling that piston to a generator produced enough electricity to cause a small light to flash.

"We turned evaporation from a pool of water into light," Sahin said.

With its current power output, the floating evaporation engine could supply small floating lights or sensors at the ocean floor that monitor the environment, Chen said, speculating that an improved version with stickier plastic tape and more spores could potentially generate even more power per unit area than a wind farm.

The Columbia team's other new evaporation-driven engine -- the Moisture Mill -- contains a plastic wheel with protruding tabs of tape covered on one side with spores. Half of the wheel sits in dry air, causing the tabs to curve, and the other half sits in humid environment, where the tabs straighten. As a result, the wheel rotates continuously, effectively acting as a rotary engine.

<ReadMore>

EVA, An Electric Taxi Designed For Singapore

Source Name: Clean Technica

Today’s electric vehicles are aimed primarily at regular consumers, rather than the commercial fleets that make up a big chunk of automakers sales. A team of scientists and engineers from TUM Create and NTU is taking a different approach to EVs, developing a purpose-built electric taxi called the EVA with 200 kilometers (124 miles) of driving range and a 15-minute charging time. More specifically, it was developed with Singapore’s hot and humid tropical climate in mind, and with the comfort and versatility riders require.

There are a lot of challenges to developing an electric car that can operate in a place where the average summer temperatures hover around 32℃/90℉. For one, the battery pack itself needs to be kept cool, especially when plugged into a fast-charging system that can add 200 km of range in just 15 minutes. The EVA also needs to keep customers cool throughout the day, with the air conditioning essentially always operating at full blast. To maximize efficiency, the TUM Create team put the cooling system into the roof, so the cool air falls down onto the passengers, assisted by in-seat cooling systems. That’s just one of the clever solutions integrated into the EVA.

A large Tesla-like touchscreen tablet sits in the center of the front console, and the passenger’s front seat can fold down into a car seat. The trunk area is deep and wide, allowing for a lot of cargo to come along for the ride. It will also come with its own smartphone app, allowing for the taxi to be hailed, music selections, and payment. TUM Create is no novice to EVs, having already developed an electric rickshaw of sorts, and NTU recently unveiled a pair of 3D printed electric cars ripped from the script of Bladerunner 2.

While major automakers are trying a one-size-fits-most approach with electric vehicles, perhaps a niche-specific solution is a better way to go about it. Nobody really knows how long it will take before battery prices become affordable for the masses, or when charging times will truly be equivalent to petrol-powered vehicles. Until then, though, targeted electric vehicles like the EVA could play an important role in showcasing the potential for EVs to be an effective replacement for the gas guzzlers we’ve sadly grown accustomed to.

<Source>

Beijing Adds Another Electric-Car Incentive: Rush-Hour Access To Any Road

Source Name: Green Car Reports

To get more of its residents to switch to electric cars, the Chinese capital of Beijing has not only offered incentives, but also privileges.

When the city severely restricted new-car registrations to cut pollution, it gave electric cars priority for the remaining slots.

Now, the government is offering electric-car drivers another notable perk.

Electric cars will be made exempt from a policy restricting the number of vehicles on Beijing roads during rush hour, reports The Wall Street Journal (sub. required).

The exemption will be in effect from June 1, 2015, to April 10, 2016, the Beijing Traffic Management Bureau said.

Under the current policy, which has been in place since 2008, cars with odd and even license-plate numbers are banned from Beijing roads during rush hour on alternate days.

The policy was intended to combat both intense traffic jams and to reduce the city's notoriously high levels of air pollution.

City officials say vehicle emissions account for roughly one quarter of PM2.5 particulate matter--the kind most likely to cause lung damage--in Beijing's air.

The traffic policy is the latest in a series of efforts on both the local and national level to get more Chinese drivers into electric cars.

While sales picked up last late last year after the renewal of government subsidies, they are still reportedly below the levels officials want to see.

Fewer than 5,500 Beijing residents applied for the more than 10,000 license plates reserved for electric cars in the first four months of this year.

Yet over the same period, nearly 6.2 million residents applied for the 36,757 plates reserved for gasoline cars.

The national government wants half a million "new-energy vehicles"--including electric cars, plug-in hybrids, and hydrogen fuel-cell cars--on its roads by the end of the year.

But just 50,000 of the roughly 20 million new cars sold in China last year fit into any of those categories.

That may be down to China's lack of charging infrastructure.

Even with government subsidies and preferential treatment, the many Chinese who live in huge apartment towers are unlikely to embrace electric cars en masse until they are sure there will be places available to recharge them.

China's charging network is less developed than those of other countries pursuing electric-car adoption. Stations are few and far between, and thus far there has been no concerted effort to expand the network.

<Source>

Wooden Computer Chips Might Lead to Biodegradable Gadgets

Source Name: Gizmodo

Are you a human? If so, you probably threw away at least one electronic device last year, piling onto 92 billion tons of e-waste in 2014. Luckily, we're a step closer to gadgets that could be more biodegradable: Computer chips made almost entirely out of wood.

Here's the problem: Most phones, tablets, and other portable gizmos are made out of stuff that isn't biodegradable and is toxic to the environment. Plus, gadgets go obsolete so quickly, prompting folks to rapidly chuck older versions. But using a wood-based material to build the bulk of a computer chip could lead to less harmful devices in the future.

Scientists at the University of Wisconsin, Madison teamed up with the U.S. Department of Agriculture's Forest Products Laboratory to fashion the new semiconductor chip. The paper was published today in Nature Communications.

See, most of a computer chip is composed of a "support" layer that cradles the actual chip. The research team replaced that support layer's non-biodegradable material with something called cellulose nanofibril (CNF), which is flexible, wood-based, biodegradable-all things that can make a device way less hazardous.

"Now the chips are so safe you can put them in the forest and fungus will degrade it," says Professor Zhenqiang Ma, who led the team. "They become as safe as fertilizer."

A possible roadblock was the fact that wood can expand or shrink based on how much moisture it sucks in from the air. The fix? Glaze the CNF film with an epoxy coating, a substance that makes CNF more resistant to water. In addition to wicking away moisture, the coating also made the CNF smoother.

The result: a sustainable "green chip" that's cheaper and less toxic than the materials currently used in electronics. Every little bit helps when we're piling landfills with thrown out phones, especially when dangerous chemicals in existing computer chips, like gallium arsenide, can leak into the ground. Perhaps this new technology could lead to, say, entire phones being made out of wood-based materials, creating a landscape of responsible electronic devices.

But if you'd prefer to just melt your Macbook and use the liquefied laptop to sculpt a giant urn, that's cool too.

<Source>

Concrete That Heals Itself

Source Name: Clean Technica

Concrete and bacteria are not often seen as sharing the same construction armchair, that is, unless you happen to be discussing concrete that heals itself.

Henk Jonkers from Netherlands-based Delft University of Technology has created bioconcrete, a product that can heal its own cracks and faults. Jonkers says he originally began work on the bioconcrete when he was approached by a concrete technologist who wondered whether the safety of concrete could be improved using a biological solution. This manufacturing query turned out to be the right question asked at the right time. Concrete hardens as it ages but it can also develops cracks.

According to Jonkers, a microbiologist, the cracks that form in concrete are not just unpleasant to look at, they can eventually lead to structural failures.

“The problem with cracks in concrete is leakage,” said Jonkers. “If you have cracks, water comes through—in your basements, in a parking garage. Secondly, if this water gets to the steel reinforcements—in concrete we have all these steel rebars—if they corrode, the structure collapses.”

It has taken Jonkers and his team three years to produce this self-healing prototype, needing to overcome the most obvious obstacle: finding bacteria that can survive the harsh environment of concrete.

“It’s a rock-like, stone-like material, very dry,” said Jonkers. To address this dry hardship, the team picked bacillus bacteria for its hardiness and longevity. The bacteria and its food source, calcium lactate, are packed into tiny capsules that dissolve when water enters the concrete cracks. Once released, the bacteria consume the calcium lactate, causing a chemical reaction that creates limestone, which then fills in the gaps.

A lakeside lifeguard station in the Netherlands was used as the site for the first application of bioconcrete. The test for the prototype turned out to be positive.

“It is combining nature with construction materials,” said Jonkers. “Nature is supplying us a lot of functionality for free—in this case, limestone-producing bacteria. If we can implement it in materials, we can really benefit from it, so I think it’s a really nice example of tying nature and the built environments together in one new concept.”

For over 2,000 years, concrete has been used as a popular building material, dating back to when the Romans built the Pantheon. It is now a standard material for everything from road surfaces to roadway infrastructure items, such as sidewalks, curbs, and gutters.

The bioconcrete is mixed just like regular concrete, but with an extra ingredient — the “healing agent.” It remains intact during mixing, only dissolving and becoming active if the concrete cracks and water gets in.

Concrete is extremely alkaline and the “healing” bacteria must wait dormant for years before being activated by water. Jonkers chose bacillus bacteria for the job, because they thrive in alkaline conditions and produce spores that can survive for decades without food or oxygen. “The next challenge was not only to have the bacteria active in concrete, but also to make them produce repair material for the concrete — and that is limestone,” Jonkers explains.

In order to produce limestone the bacilli need a food source. Sugar was one option, but adding sugar to the mix would create soft, weak, concrete. In the end, Jonkers chose calcium lactate, setting the bacteria and calcium lactate into capsules made from biodegradable plastic and adding the capsules to the wet concrete mix.

When cracks eventually begin to form in the concrete, water enters and open the capsules. The bacteria then germinate, multiply and feed on the lactate, and in doing so they combine the calcium with carbonate ions to form calcite, or limestone, which closes up the cracks.

<Source>

Located near Delhi, India, the station is the first for the country to be opened - powered by the sun

9 Jun 2015 | **By Stuart Radnedge**

India's first solar-powered renewable fuelling station, supplied by Air Products, was inaugurated today.

An event was held to mark the occasion with chief guest Shri Piyush Goyal, Union Minister for Power, Coal and New and Renewable Energy in conjunction with Shri Upendra Tripathy, Secretary, Minister of New and Renewable Energy, in attendance.

Part of a mass public transport bus fuelling and vehicle demonstration programme, the SmartFuel® station generates 100% renewable hydrogen from solar energy via an electrolyser.

It is located at the Solar Energy Centre near Delhi and part of a project managed by the National Institute of Solar Energy (NISE).

The project was also implemented by India's University of Petroleum and Energy Studies (UPES) and funded by the Ministry of New and Renewable Energy (MNRE) of the Government of India.

"As a member of industry, Air Products' is proud to be involved in a programme that has received such crucial validation and support from public sector, educational institute and the regulatory authorities," commented Ravi Subramanian, Business Development Manager-Asia, HES.

"This project is an important, progressive step towards unlocking the potential of hydrogen as sustainable transportation fuel and alternative energy source not just for India but the rest of the world."

UPES is executing this project and it is entirely funded by MNRE. "Although this is a demonstration project, this will be a major stepping stone for India to move towards the hydrogen economy," says Dr. Niranjan Raje, former director of Indian Oil and the Principle Investigator for this project.

With the addition of this SmartFuel® station, Air Products now has three hydrogen fuelling stations operating in India. Air Products India installed, and in January 2012 commissioned, a hydrogen fuelling dispenser in Pragati Maiden, Delhi to serve a fleet of hydrogen powered auto rickshaws.

The three-wheeled hydrogen-powered fleet transports visitors at the Pragati Maidan, where many large public exhibitions are held. Air Products was also a key player in the opening of India's first hydrogen/HCNG fuelling station several years ago at a research and development center in Faridabad, south of New Delhi.

Worldwide, Air Products is the leading supplier of hydrogen to refineries to assist in producing cleaner burning transportation fuels, has vast experience in the hydrogen fuelling industry. In fact, several sites today for certain hydrogen fueling applications are fuelling at rates of over 75,000 refills per year. Use of the company's fuelling technology is increasing and is over 1,000,000 hydrogen fills per year. The company has been involved in over 180 hydrogen fuelling projects worldwide. Cars, trucks, vans, buses, scooters, forklifts, locomotives, planes, cell towers, material handling equipment, and even submarines have been fueled with trend-setting Air Products technologies.

<Source>

DDA approves cycle-sharing policy for Delhi

Source Name: The Economic Times

DDA today approved cycle-sharing policy for the national capital to promote use of bicycles for last-mile connectivity and reduce pollution and vehicular congestion in the city.

Cycle-sharing scheme, popular in European countries, allows sharing of a bicycle between multiple users. Unlike 'rent-a-cycle' scheme, where the hired cycle has to be returned by the first user only, the sharing system allows the same cycle to be used and returned by multiple users.

Lieutenant Governor Najeeb Jung, in his capacity as the Chairman of the Delhi Development Authority, today gave the approval during the 51st meeting of the Governing Body of Unified Traffic Transportation Infrastructure Planning and Engineering Centre (UTTIPEC), DDA's urban planning arm.

"Today, even for 1-2 kms we are forced to use motorbikes or cars and this adds to the pollution and congestion in the streets and therefore promotion of cycling and pedestrian infrastructure is vital to reduce pollution as well as congestion," Jung said.

The sharing system is set to have a mobility card (smart card) that the users will be able to use in the Metro or the DTC cluster buses, and also in shops for any other transactions, the DDA said.

The card shall be linked to individual's identity and the use of bicycles shall be monitored by an operation control centre.

DDA will implement the policy in coordination with other urban local bodies (ULB).

"As per the decision, land-owning agencies like PWD, DDA, municipal corporations etc will provide NMT (non-motorised transport) lanes and related infrastructure. The safety and mobility of cyclists and pedestrians will also be ensured so that the city moves towards having safe cycling infrastructure in the streets and at intersections," the DDA said.

ap h_2 India

The housing authority said, "It was decided that all stakeholder should come forward and help by giving space for cycle stations or providing advertisements revenue rights or space for operations control centre, depots, workshops, among others."

The policy is to incentives participation by private sector in promoting cycle sharing and cycle renting in the city, it said.

DDA had proposed a cycle sharing project in Dwarka, as part of its initiatives to improve the quality of life in the city through eco-friendly measures.

The urban body had in April held consultations with six operators from across the country and discussed technology issues along with other details related for operationalisation of the cycle sharing project in Dwarka sub city, which was built by the DDA.

In today's meeting, a presentation on the 'Dwarka Cycle Sharing System' was made by the Centre for Green Mobility (CGM), a non-profit organisation partnering with DDA in preparation of the plan and providing technical assistance.

The cycle sharing system in Dwarka, on the lines of the policy will enable implementation of 100 kms of shaded cycle tracks and pedestrian walkways along with 180 cycle stations spread over 30 sqkm of area, in a network that will have 2,500 cycles.

<Source>

BS-IV emission norms to be applicable across India from April 2017

Source Name: The Economic Times

Sale and registration of any new vehicle not complying with BS-IV emission norms will not be allowed anywhere in the country from April 2017. Road transport ministry has issued a draft notification making BS-IV norms mandatory across the country in a phased manner starting this October.

"The mass emission standards for BS-IV shall come into force all over the country in respect of four-wheeled vehicles manufactured on or after April 1, 2017, said the notification.

Already, BS-IV is applicable in almost all major cities including Delhi-NCR, Mumbai, Chennai, Kolkata and Hyderabad. As per the roadmap prepared by the government, BS-IV emission norms will be applicable from this October in Jammu and Kashmir except Leh and Kargil districts, Punjab, Haryana, Himachal Pradesh, Uttarakhand and most districts of Rajasthan and Uttar Pradesh.

Similarly, the norms will come into force from April 2016 in Odisha, Kerala, Karnataka, Telangana, Union Territories of Daman and Diu, Dadra and Nagar Haveli and Andaman and Nicobar Islands. Same is the deadline for Thane and Pune districts in Maharashtra, and Surat, Valsad, Dangs and Tapi districts in Gujarat.

Though this will not apply for transport vehicles plying on inter-state permits, national permits and all-India tourist permit, the draft notification said such exemptions will not be allowed from April 2017.

"This is a positive development as the entire country will be covered under this plan. At present, one can buy a vehicle and register it in a district that is not covered under BS-IV regime and can ply it in cities where the norm has become mandatory. But what we can foresee is that the sale of BS-III vehicles will be much more in the next two years across the country as BS-IV vehicles will cost a little more," said S P Singh of IFTRT, a Delhi-based think tank on transport issues.

<Source>

Indian Railways successfully test Solar possibilities with experimental coach

Source Name: RailNews

A coach fitted with solar panels is paving the way for clean power operated trains in India. The Daily Mail has reported that the coach, which captures 17 units of electricity on average each day from its rooftop panels, is currently undergoing trials successfully.

Arun Arora, Divisional Railway Manager, Delhi said the Indian Railways will decide on converting entire trains to solar power depending on the report on the success of the trials.

An estimate places the savings from such an initiative at Rs1.24 lakh per coach each year. Studies have reportedly shown that solar powered trains can reduce consumption of diesel by 90,000 litres a year and also cut carbon dioxide emission by more than 200 tons.

The introduction of solar panel powered coaches will reduce load on diesel-powered engines which have conventionally been supplying power to coaches to meet their internal electricity requirements that include lights and fans.

The railways has stated that fuel bills form the second biggest component of its expenditure after salaries. In 2013-14, it spent Rs 28,500 crore, or 22 per cent of the total expenditure of Rs 1.27 lakh crore, on fuel.

Each standard railway coach affords 40 square meters of rooftop on which 18 standard solar panels can be accommodated. In the trial coach 12 solar panels covering 24 square meters have been installed.

According to the current plan, solar panels are to be provided on alternate coaches which would supply electricity to the neighbouring coach when they require power.

Railways has been considering introduction of clean energy sources as part of its infrastructure, particularly since the government revised its renewable energy target to 175 gigawatts of installed capacity by 2022.

Trains in Delhi division are already using dual fuel engines — diesel and CNG — and are saving both fuel and money.

Besides railways, metro companies have also shown keen interest in introducing solar panels to partly meet requirements of their operations.

Recently the Nagpur Metro and Kochi Metro companies were in the news for their solar proposals.

<Source>

UK firm to test green cooling system in India

Source Name: BusinessLine

A British company plans to start testing a pioneering technology – an engine powered by liquid nitrogen – in India next year, and begin manufacturing them in the country in the next five years.

Dearman Engine Company, which uses a piston engine run on liquid nitrogen, to provide zero emission cold and power, will be testing a refrigerated truck using this technology in the UK later this year, and plans field trials internationally, including India, by next year.

Target production

"We are looking at 1,000 to 1,500 engines in those countries by 2017, and to be in manufacturing, producing 10,000 a year by 2018. By 2019, we will be looking at manufacturing, and assembly with partners in those markets," said Professor Toby Peters, CEO of Dearman Engine Company.

The company has been in talks with the National Centre for Cold Chain Development (NCCCD) , set up by the Centre in 2012 to develop India's fledgling cold chain network (a network of refrigerated trucks, warehouses, and other storage units) – as well as logistics companies, and engine makers – about creating an environmentally-friendly solution to India's growing need for cold technology.

While in the short term the company is focusing on refrigerated transport, it plans to expand into other fields where it could provide cooling and auxiliary and backup power.

"Around 2 million people globally die every year because of a lack of cold chains," says Peters, who estimates that around 25 per cent of vaccines produced in India don't make it to their end point, because of lack of refrigerated transport and storage.

"About 40 per cent of food is lost post harvest before it gets to the end point."

The company uses an engine, driven by the expansion of liquid nitrogen or liquid air, to transmit power and cold, without releasing the participate matter, for example, diesel engines.

Preference for India

While the company hopes to deploy the technology globally, Peters argues that India represents special opportunities, with its currently limited cold chain network set to expand rapidly under the helmsmanship of the NCCCD, set up by the government three years ago.

"There is a huge growth in middle classes in India and Asia and their lifestyles are going to be built on cold," he says. "India has the NCCCD, which puts it way ahead of what we are doing in the UK. India can now either develop a cold chain in an unstructured way based on diesel or in a systematic, clean way."

Dearman's technology, he says, would be cost-effective too — in the UK, the cost of running the cooling for refrigerated trucks will roughly be a third cheaper using the Dearman technology than diesel.

<Source>

India aims for world's first Solar Train

Source Name: Energy Next

Inspired by Switzerland's solar impulse project, Harsh Vardhan, Science and technology minister, announced the concept of solar trains in India. The idea is to power trains through solar energy acquired by the solar panels installed on the roof of the trains. The train will also use thermal power.

Vardhan explained that the aim would be to showcase the world, solar trains which can be used like moving solar power plants too.

National solar energy expert Gon Chaudhuri told, "A unique feature would be that when the train is stationary, 100% of the power will be exported to the grid. So it is like a mobile solar power plant".

The project is still under conceptualisation and the demos are being done. First the project will be applied on goods train and if the experiment will prove successful it will be taken forward to other trains. It is said that the installation of solar panels will help meet 15 per cent of the energy requirement.

On an average a train will be able to generate 150KWh of power for consumption by the train operator. Since the train will be moving it won't let dust cover the solar panels. Dust proves a major deterrent in solar energy production and decreases efficiency.

Chaudhuri also said that projects like solar impulse may not prove practical in the longer run but a solar train has ample of scope. He also informed that this would be first such initiative where a standing body is generating electricity and pushing it to the grid.

<Source>

Urban forestry scheme to combat climate change

Source Name: The Economic Times

The environment ministry will launch an urban forestry scheme on June 6 which will involve afforesting degraded forest lands in and around 200 cities. On the occasion of World Environment Day, environment minister Prakash Javadekar said the forestry scheme will act against climate change by creating a carbon sink and against air pollution in cities. The scheme will include a "smriti van" service where any resident can plant a sapling in memory of his or her loved one by paying Rs 2000 to the state forest department.

The ministry is also considering starting tree surveys in cities which can be conducted by residents and college or school students. A plan is being worked to create small nurseries of about 1000 to 2000 plants in government schools where there is some extra space.

The urban forestry scheme will be launched in Pune where a 70 ha degraded forest land is made available. About 4,000 saplings of native varieties will be planted in a phased manner. "Delhi has forests but there are several cities with only gardens. All 199 corporations have been asked to send us details of space availability," said Javadekar who said that he hopes the Compensatory Afforestation Fund Management and Planning Authority (CAMPA) bill will be passed in the parliament that will make available RS 35,000 crores to each state. A part of the fund can also be used for urban greening projects.

Apart from the new forestry scheme, Javadekar said waste management rules 2015 (for e-waste, biomedical waste, solid waste and plastic waste) have been uploaded on the ministry's website. "We urge people to send their comments on these draft rules," he said.

The ministry is also making arrangements for people to send their pictures of planting saplings to the ministry so that they can be uploaded somewhere, to give credit to people who will take part in the initiative. On June 5, PM Modi will kick off a plantation drive by planting a sapling at 7, RCR, cricketer Virat Kohli and wrestler Sushil Kumar will plant saplings at Paryavaran Bhavan in Delhi. Similar programmes will be held in most of the states led by sportspersons.

<Source>

Online buy-sell platform saves carbon emissions: Report

Source Name: BusinessLine

In a unique way of spreading the message of environment conservation and protection, the online trading platform, OLX.com on Friday explained how the online purchases of second hand goods reduced carbon emissions.

"Every time one sells on OLX, the life of that product gets extended ensuring more judicious use. Every time one buys on OLX, one less item gets produced, lowering carbon-di-oxide (CO2) emissions," OLX India informed marking the World Environment Day on June 5.

In an exclusive report prepared by OLX in association with Ahmedabad-based Centre for Environment Education (CEE), it was found that in the last one year, OLX India directly curbed 2.4 million tonnes of CO2 emissions.

"That is equivalent to 40 per cent of Indian domestic aviation sector's carbon footprint. It is also equal to the CO2 emissions 110 million trees save annually, and equivalent to keeping all petrol vehicles in Delhi off its roads for a whole year," the report said.

Amarjit Singh Batra, CEO, OLX India said, "The report covered OLX transactions for the financial year 2014-15. All stages in the life-cycle of a product until it reaches the user were taken into account for some of the most traded product categories on OLX. Inclusion of all product categories traded on OLX, as well as, the use and disposal life-cycle stages, would have resulted in a significantly larger CO2 equivalent."

Kartikeya V. Sarabhai, Director, CEE, "Extending the life of a product is an essential strategy towards sustainability. In India we have an old tradition of passing on goods. Transforming this tradition to the internet age and making it commercially viable is a wonderful example of leapfrogging to a sustainable lifestyle."

Similarly, taking a step towards green future, real estate player, RE/MAX on Friday announced a Tree Plantation League (TreePL), where financial reward will be given to those planting highest trees during the next one year. Recognising the fact that real estate has encroached into the green areas of the city, the company has roped-in participants from developers, builders, owners of plotted lands to school children for tree plantation throughout the year.

<ReadMore>

An Inexpensive Green Vehicle

Source Name: Indian Express

A PESCE (P.E.S. College of Engineering, Mandya) student has designed an affordable and eco-friendly electric car that runs at just 20 paise a kilometre.

K T Prakash, a final year automobile engineering student, was driven to invent this car because of the urgent need to reduce pollution and save scant resources like petrol. Prakash put his heart and soul into making the IndoElectra, which he says can be made available for just Rs 76,000.

Although he worked independently on the project, with no financial assistance from anyone, Prakash gives full credit to the faculty members of the automobile engineering branch, to his parents and friends who encouraged him and stood by him through the process.

Technical specifications of the two-seater car:

- The IndoElectra can seat two people and is light in weight. It runs on an electric motor of 200 watts and has a battery of 12 volts.
- The car has expanding internal brakes and an independent suspension at the front and the rear. A tubular chassis connects the front and the rear suspension areas.
- The car can reach a maximum speed of 42 km an hour with a 160kg payload on level roads. When fully charged, it can run up to 50 km. Electric power costs around Rs 10 for a single charge of the battery (three units).
- The car is easy to drive because of the absence of a gear-shifting mechanism. And the lightness and smaller size of the car makes it easy to drive on city roads.
- Unlike other cars which emit tailpipe pollutants like carbon-monoxide, greenhouse gases, hydrocarbons and sulphur-dioxide, this car has no emissions.
- To upgrade the car, Prakash is working on a hydraulic operating system and a more effective braking system. He is also working to spruce up the interiors to increase passenger comfort.

Future project

Prakash is also modifying the current design to create a four-seater electric car at a low cost that will be low maintenance and more economical than petroleum powered vehicles.

About his four-seater project, Prakash says, "In India, we are facing so many fuel and pollution related problems. Not all of us can afford the expensive electric cars available in the market. The petrol money needed for a two-wheeler can now be used to run this eco-friendly electric car because it is safer to drive. The running cost is also less and it is compact and easy to handle in congested urban areas."

IndoElectra was Prakash's dream project and he worked for five months on the fabrication and re-engineering of the components.

Simultaneously, Prakash along with a team of students is studying the process of extracting ethanol from scum juice which is obtained by sugarcane crushing units. And he hopes it can be used as an alternative to conventional fuel.

Prakash believes that if the government provides funding, technical as well as industrial support, then the dream of mass-producing his car could turn into a reality.

Fine print

A closer study of the car shows the need for an upgraded suspension system. The travel range for a single battery charge could be improved.

Better safety and comfort for passengers could be developed. IndusElectra could be the perfect amswer to the eternal quest for cheaper commuting options.

<ReadMore>

Delhi Metro starts buying solar energy at ☐6 per unit

Source Name: BusinessLine

To establish its green credentials, the Delhi Metro Rail Corporation (DMRC) has started procuring solar energy at about ☐6 a unit, claiming that the tariff will remain at the same level for the next 25 years.

Commercial power

The move comes at a time when DMRC is saddled with high electricity costs at about ☐7/unit. The concept of the same tariff level for 25 years, though common for solar energy, has led to a situation where DMRC is paying lower tariff, albeit after including government subsidy.

Interestingly, DMRC has also started selling solar power from its residential colony at a commercial rate of ☐9/unit to the grid during day time, which is higher than ☐6/unit at which it is being procured.

During day, there is not much use for the power generated in the common areas of the residential units, Anoop Kumar Gupta, Director (Electrical), DMRC, told BusinessLine.

Agreements inked

"We have entered into about five-six power purchase agreements (PPAs), all of which have a pre-defined tariff for 25 years. We have entered into the PPAs to procure electricity ranging from ☐6.94 to ☐5.85," said Gupta, indicating that the prices have been falling progressively. In the last one year, DMRC generated 6 lakh units of electricity from solar panels. Its annual consumption is 685 million units in 2014-15.

"We get the solar panels installed at a no-cost basis and only pay for the power procurement. The power producers are selected through open bidding," he said. The players include Sukam, Purushottam, etc.

While solar power tariffs average between ☐ 5.5/unit to ☐ 7/unit in the country, the Central Electricity Regulatory Commission has notified the generic "levellised" generation tariff for solar power at ☐7.04 a unit for 2015-16.

Earlier this month, ACME Solar commissioned five projects with a combined capacity of around 100 MW. The tariffs in the 25-year PPAs for these plants were around ☐5.77 a unit without any viability gap funding.

Similar projects

Last month, Azure Power commissioned a 100-MW plant in Jodhpur, Rajasthan from which power would be sold to the Solar Energy Corporation of India at ☐5.45 a unit, but this was with a viability gap funding.

Incidentally, the Indian Railways is also trying to procure solar power at ☐5.5/unit and is even experimenting with solar panels on train roofs to supply power for lights and fans.

<Source>

5th International Conference

On

Fuel Cell and Hydrogen Technology 2015 (ICFCHT2015)

1-3 September 2015

Kuala Lumpur, Malaysia

The Fifth International Conference on Fuel cell and Hydrogen Technology is being organized by University Teknology Malaysia, University Kebangsaan Malaysia and BPPT (training partners in the Ministry of Education), Malaysia between 1-3 September 2015 at Prince Hotel & Residence, Kuala Lumpur. The conference is expected to be interesting and useful as it is on very interesting and relevant subject. ICFHT 2015 is expected to provide an opportunity to peer in to cleaner, more efficient and more reliable power for our future. The major tracks of the conference include: Fuel Cells for Mobile and Stationary Systems, Sustainable Hydrogen Production Technology, Storage, Distribution & Refueling, Hydrogen Sustainability and Economic Viability and Hydrogen Safety. Delegates from many countries are expected to attend the conference.

Plenary speakers in the conference are Mr. Daryl Wilson, *Hydrogenics, Canada,* Prof. Dr. Wolfgang Arlt, *Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany, Prof. Dr. Eric Croiset, University of Waterloo, Canada,* Prof. Dato' Ir. Dr. Wan Ramli Wan Daud, *UKM, Malaysia and* Prof Dr. Mohamed Bououdina, *University of Bahrain.*

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4th International Conference on Sustainability and Management Strategy (ICSMS-2015)

4th and 5th September, 2015

Nagpur, MAHARASHTRA

With a vision to carry forward this discussion on strategies for business sustainability, Centre for Sustainable Growth and Development, Institute of Management Technology (IMT) Nagpur is organizing its 4th International Conference on Sustainability and Management Strategy (ICSMS) in collaboration with California State University, San Bernardino (CSUSB) and National Environmental Engineering Institute (NEERI), Nagpur. This conference is being organized at the institute campus of IMT Nagpur on 4th and 5th September 2015. This Conference focuses on areas related to management which are in immediate need of aligning business practices with sustainability concerns.

This conference aims at sharing research and experience based knowledge among researchers, academicians, policy-makers, representatives of government agencies and departments, industry professionals, representatives of NGOs, consultants, students and practitioners on contemporary field. There are two special tracks viz. Sustainable Business Models and Sustainability reporting. The other themes of the conference are: Sustainability initiatives in IT, Competitive advantage through sustainability, Environment and sustainability, Sustainability reporting, Sustainability adoption in production and manufacturing, TQM and sustainability, CSR, Ethics and corporate citizenship, Sustainable innovations, Environmental and sustainability management accounting, Business Strategies for sustainable development, Organizational development for social sustainability, Sustainable globalization and implications for strategic corporate and national sustainability, Public policy, environment and sustainability, Economy and sustainability and Green marketing.

<ReadMore>

2015 3rd International Conference on Renewable Energy and Environment (ICREE 2015) is the premier forum for the presentation of new advances and research results in the fields of theoretical, experimental, and applied Renewable Energy and Environment. This conference is scheduled to be organized on 5th and 6th September 2015 in Shanghai, China.

The conference will bring together leading researchers, engineers and scientists in the domain of interest from around the world. Topics of interest for conference are pertaining to Wind Energy Applications, Hydropower Applications, Photovoltaic Technology, Solar Thermal Applications and Geothermal Applications.

Delegates from all corners of the world are expected to attend the conference. Keynote speakers at the conference are Prof. Barry Jones, California Polytechnic State University, USA and Prof. ROUEL S. ROQUE, Touro University Nevada, U.S.A.

<ReadMore>

14th International Conference on Clean Energy 2015

Sept 27th to Oct 1st 2015

Saskatoon, SK, Canada

The 14th International Conference on Clean Energy (ICCE 2015) is taking place as part of the STEMfest in Canada in 2015. STEMfest is an international festival of science, technology, engineering and mathematics and includes a series of conferences and community events. This event is scheduled to take place between September 27th and October 1st 2015.

It is anticipated that delegates will have an opportunity to join hundreds of academic researchers and professionals from around the world who explore the latest trends and topics in all aspects of clean energy, whilst in the main exhibition hall over 180 exhibitors will talk with visitors and 10,000 school students whilst they learn about clean energy, careers of the future, and the importance of science, technology, engineering and mathematics.

Topic of interests include important topics like Advanced refrigeration and air conditioning technologies, Air Pollution, Alternative Fuels, Artificial Photosynthesis, Biofuels, Carbon tax, Energy efficiency and management, Energy storage, Environment quality and security, Geothermal energy, Green design and manufacturing, Green energy, Hydrogen and fuel cell technologies, Low carbon technologies, Ocean energy, Renewable energy management and environmental impact, Smart and sustainable cities and Sustainable environment & health.

Among speakers also feature renowned personalities like Prof T. Nejat Veziroglu President, International Association for Hydrogen Energy, Prof Hong Tan Liu, University of Miami, USA, Professor Gap Soo Chang University of Saskatchewan, Canada, Professor Ned Djilali, Professor & Canada Research Chair, University of Victoria Canada, Dr Leijin Guo, Xi'an Jiaotong University, China, Prof Dr Ugur Atikol, Director of the Energy Research Center Eastern Mediterranean University, N. Cyprus and Rhonda Smysniuk Director International Relations & Consortium/ Carbon Capture and Storage Initiatives, SaskPower, Canada.

<ReadMore>

The Times of India, Delhi dated May 28, 2015

Treated drain water, solar power for new high-rises, says DDA VC

Over 24L Housing Units To Come Up By 2022; DDA Harnessing Tech For Infra

Risha.Chitlangia
@timesgroup.com

New Delhi: The choice is between planned and unplanned development to meet the city's housing needs, says DDA vice-chairperson Balvinder Kumar to silence critics of the land pooling policy. While some urban planners say it will put strain on the infrastructure, DDA says it is easier to provide basic amenities like water, sewer and electricity in planned areas as compared to unauthorized colonies.

The land pooling policy, notified by the Union urban development ministry on Tuesday, will result in a housing boom as 24-25 lakh housing units will come up in the next few years. DDA officials say that areas under this policy will witness coming up of highrises which will be at least 5-16 storeys high. According to a rough estimate, DDA plans to develop 2.5 lakh housing units in an area of 1,000 hectares. There is 20,000 hectares of land available in the city which can be urbanized, say officials. They say these projects will come up only by 2022 as developers will be given seven years to complete the work.

CHECKING UNPLANNED GROWTH

DDA VC says choice between planned & unplanned development. **Easier to provide basic amenities in planned areas rather than illegal colonies**

Policy for solar power generation to be implemented

Najafgarh drain water will be treated to provide drinking water. Same model to be followed elsewhere.

Housing projects under land pooling to be constructed on green building, zero-discharge principle

Rainwater harvesting for storing treated water in large reservoirs

DDA to appoint consultants who will help in creating facilities for basic amenities

Experts say such sudden and rapid growth will worsen the water and power crisis in the city. Citing Dwarka's example, people say the new planned areas will face a similar crunch in water, power and other basic amenities. "Almost over a decade after developing Dwarka sub-city, DDA had failed to provide adequate water. It was only after seven years of struggle that Dwarka residents managed to get water supply from Delhi Jal Board. For over a decade, DDA used to supply just 2-3 mgd of water as against a requirement of 15-16 mgd," said Rejimon CK, former president and founding member of Dwarka Forum. Even now, a majority of societies there are dependent on ground water.

DDA officials admit that supplying water and electricity in these areas will be the main challenge. "We can let Delhi grow in an unplanned manner as people will construct houses to meet their requirement or we can provide planned development. Today, technology is available to meet the water and electricity requirement. We will appoint project management consultants who will assist us in developing infrastructure for this," said Balvinder Kumar. The government is struggling to regularize 1639 unauthorised colonies which had come up in absence of a proper housing policy. Land pooling will limit the scope of unauthorised construction.

The water problem is acute in Najafgarh, Dichaon Kalan, Nangli Sakrawat, Baprola, Bakkarwala etc where the main project are likely to come up. It may sound bizarre but DDA plans to treat the Najafgarh drain water to meet the demand in an area where the water table is quite low.

"We will treat the Najafgarh drain water. It will be used for drinking and other purposes," says the VC. Reservoirs storing rainwater will also fufill the demand. For power, he once again cites technology, saying solar energy will be harnessed.

The Economic Times, Delhi dated May 29, 2015

An energy efficient home for the future nomads

This portable house prototype is packed into a compact form and can comfortably accommodate two adults

gizmodo.in

If life in a future megacity isn't for you, your hour of escape is almost ready. Especially if you don't mind living in a 14x7x7-foot pod. Ecocapsule, which calls itself 'the first truly independent micro-home', is a new, tiny smart home powered entirely by the sun and the wind.

It can serve as your beachfront cottage, stylish mountaineering tent or modern day yurt. You can take it just about anywhere, hitched to the back of your electric car which, by the way, the Ecocapsule's 9700 Watt-hour battery will happily charge for you.

The capsule has membrane water filters installed into its upper surface, which remove bacteria from rainwater before funneling it to a designated tank beneath the floor. The walls are padded with high performance thermal insulation, helping to reduce energy requirements and maintain a comfortable indoor temperature. It's even got a proper loo, for those who are averse to going in the woods.

Ecocapsule is powered by a dual power system

It offers household facilities in off-grid locations

The design is simple, modern and elegant — pretty much what you'd expect for a pod that looks like it wants to be the prototype for future living habitats on the moon or Mars.

The company has not revealed a price yet, but if you live outside of Slovakia where the smart home's architects are based, be prepared to pay extra for shipping onto the retail cost. Still, that's a small price to pay if you're planning to forsake your city utility bills forever.

The Times of India, Delhi dated May 29, 2015

Heat and dust raise Delhi's air toxins to critical levels

AQI In 'Severe' Range, Ozone Too Very High

Jayashree.Nandi
@timesgroup.com

New Delhi: Day temperatures dropped marginally on Thursday but there was hardly any relief for weather-beaten Delhiites as toxins in the air rose alarmingly due to a cloud cover trapping pollutants. The capital's air quality index (AQI) breached the 'severe' level, going from 219 (poor) on Wednesday to 410 in one of the sharpest single-day spikes in recent months.

FULL COVERAGE: P 4

Fine particle pollution (PM2.5) that AQI measures wasn't the only threat lurking in the capital's air. Over the past week, when torrid weather made headlines, levels of the highly toxic ozone (O3) gas were also very high, often double the safe standard of 50 parts per billion.

While PM2.5 are minute particles that can enter deep inside a person's lungs, exposure to O3 can immediately trigger respiratory distress. It can aggravate lung diseases such as asthma and chronic bronchitis and inflame the airways, causing permanent lung damage in some people, depending on the exposure.

"Together, ozone and PM-2.5 can play havoc with health. Those exposed to the pollutants, even for a short time, can suffer respiratory problems," said Dr Sandeep Salvi, who heads Chest Research Foundation, Pune. He said asthma and chronic obstructive pulmonary disease patients were at high risk.

Rise in O3 levels was a direct result of the searing temperatures in Delhi. Experts said O3 would continue to be high till there's rain in the capital. UV levels in Delhi too are way above safe standards.

The AQI, meanwhile, unexpectedly rose to 'severe' levels for the first time since the winter.

▶Have fruits & fluids, P 4

WHAT'S CAUSING THE SPIKE?

Steep fall in air quality due to dust storm on Thursday morning and cloudiness through the day, which trapped pollutants

AQI	Wednesday	Thursday	Ozone levels more than twice the safe limit due to high heat
	219 (poor)	410 (severe)	

PROTECT YOURSELF

Eat fruits and leafy vegetables | These have antioxidants that strengthen body's defences

Drink plenty of fluids PM2.5 and ozone affect respiratory tract. Fluids protect airways by keeping them moist

Avoid rush hour travel Vehicular emissions cause PM 2.5 and ozone levels to rise. If you have to go out in peak traffic hours, try to travel in an AC vehicle

Stay indoors Asthma, COPD patients should minimize exposure. PM2.5 and ozone are known to trigger attacks

Use sunscreen High ozone can cause skin damage. Sunscreen helps reduce effects

Fruits, more fluids way to beat effects of ozone

▶Continued from P1

PM2.5 reading were as high as 250 micrograms per cubic metres, more than four times the safe standard.

Scientists said the dust storm on Thursday early morning led to PM10 (coarse pollution particles) and PM 2.5 levels to peak dramatically.

"The levels of PM 2.5 were extremely high after 5am because of the storm. Usually the PM10 levels peak after dust storms but this time the levels of fine particles also went up," said Gufran Beig, project director of System of Air Quality Weather Forecasting and Research (SAFAR) under the ministry of earth sciences (MoES). The Central Pollution Control Board's air quality bulletin, which monitors areas that SAFAR doesn't, showed air quality in both Delhi and Faridabad to be in the 'very poor' category, a level lower than 'severe'.

O3 levels have been consistently high for the last seven days around Delhi University (north campus), Dheerpur and Aya Nagar, with a peak of 120 ppb at Dheerpur. The area around Pusa recorded the minimum O3 levels of about 60-70 ppb.

"The temperature in Pusa is also about three to four degrees lower which may have brought down O3 levels. O3 levels go up in the urban heat islands where concrete spaces, vehicular and air conditioner exhausts cause temperatures to rise," an expert said.

"Ozone is created in conditions of high temperature and direct sunlight, accompanied with high levels of oxides of nitrogen (NOx), carbon monoxide (CO) and other volatile organic compounds (VOCs). They peaked this week probably since temperatures were extremely high," added Beig.

Experts said modifying one's diet and taking more fluids can help fight the health consequences of ozone and PM2.5 exposure. "Fruits and green leafy vegetables contain antioxidants that help fight pollutants by improving the body's defense mechanism," said a senior doctor.

High vehicular emissions are a major contributor to O3 pollution in the city "Ozone is a very harmful gas. It not directly emitted from any source. Gases from other sources such as NOx and VOCs act as catalysts when there is strong sunlight and heat. The major source of NOx is vehicles. If the government has to control ozone, it has to immediately take action to bring down vehicular emissions," said Anumita Roychowdhury, head of Centre for Science and Environment (CSE's) clean air programme.

SAFAR along with the Indian Meteorological Department (IMD) recently launched the Ultraviolet (UV) index for Delhi which basically tells people what is their exposure to UV rays on a certain day and whether it is in the no risk, medium risk or high risk categories. SAFAR on Thursday said the UV index for Delhi was 7.2 while the safe range is 1 to 4.

CSE's climate researchers said more heat waves were expected as globally temperatures had risen by an average of 0.8 degrees in the past 100 years. Night-time temperatures were rising too, with Ahmedabad and Delhi recently reporting 39 and 36 degrees Celsius, respectively, at night, they said.

HC alarmed over poor air quality

New Delhi: Alarmed over a CSE report on poor air quality inside its premises, the Delhi high court on Thursday castigated its panel for not doing anything on the issue.

Referring to the report which said PM levels in the main lobby were 2.5 times the safe standard, a bench of Justices Badar Durrez Ahmed and Sanjeev Sachdeva said it was "unacceptable" that hundreds of people coming to court every day are at risk. PTI

DELHI BREATHING POOR AIR

HIGH OZONE LEVELS IN LAST 7 DAYS

Date (2015)	TempC (max)	Dheerpur (in ppb)	CRRI	Delhi University	IITM Delhi	IMD Aya Nagar	IMD Lodhi Road	Noida	T3 Airport
May 22	43.6	89.1	57.9	94.6	44	85.6	71	52	56.6
May 23	44.5	75	45.2	78.4	34.5	70.9	70	55	50.6
May 24	43.5	103.8	80.2	97.1	40	82.4	78	59	61.8
May 25	45.5	78.6	39.7	79.3	39	67.8	76	55.7	42.4
May 26	45	112	44.2	73.3	38.5	66.4	84	49.3	40.7
May 27	41.8	98.4	78.7	115	38	104.1	88	68.5	97.1
May 28	41.1	94	74	109	40	99	82	65	96

Standard: 50ppb (parts per billion)

The Times of India, Delhi dated May 30, 2015

What IIT scientists are not telling govt about air pollution

Anumita Roychowdhury

There is something cyclical about the air pollution debate in Delhi almost like the seasonal cycle of air pollution itself.When air pollution control slows down and the courts step in to demand action against the killer pollution, especially toxic vehicular fumes, the city gets swamped with 'scientific facts' to prove that all other pollution sources matter more than the vehi cles. Instead of science becoming an enabler, it confounds action.

The stark evidence of this is the recent effort to counter the orders of the National Green Tribunal to ban 10-yearold diesel vehicles. A group of scientists from Indian Institute of Technology , Delhi, has shared scientific papers with the ministry of road transport and highways to argue that vehicles are a small part of the particulate problem and, therefore, action against a small number of old vehicles will have no impact. More than the specific issue of ban ning of old vehicles, which can be addressed with detailed strategies, this tendency to understate the gravity of vehicular pollution and its health risk has raised serious concern over scientific guidance.

What did our scientists fail to tell our government?

Firstly, the level of confusion is so high today because the pollution inventory and apportionment studies that assess relative contribution of different sources are looked at in isolation and not within a coherent framework of health protection. What ultimately should drive policy is not just what source is emitting more but which source is likely to lead to a greater exposure to health damaging pollutants.Globally , studies show vehicles contribute from a quarter to close to half of the particulates in cities. It is inexplicable why the ministry affidavit or the IIT papers have not included other studies and evidence that show high contribution of vehicles not only to particulates but also to other toxic pollutants and health risks. Comprehensive action on all sources does not mean lax action on vehicles.

Secondly, our scientists do not say that people are exposed to much higher health damaging pollutants than what occurs in ambient conditions. With each breath we in hale three-four times more pollutants than the ambient air concentration. Exposure to vehicular fumes is highest on road and up to 500 metres from there. The majority in our cities lives in that zone.

Thirdly, people are exposed to a mixture of pollutants whose combined effect has

serious health impact.The benefits are greater when pollution sources are regulated for multi-pollutants. Delhi's air is thick with particulate matter, nitrogen oxides, ozone and air toxins. There is merit in NGT's focus on diesel emissions which is a multipollutant mixture classified as a class one carcinogen for its strong link with lung cancer.Exposure to toxins should be eliminated. Fourthly , our air quality policies are cut off from the reported reality in the health sector. India is experiencing a rapid health transition, with a large and rising burden of chronic diseases, estimated to be more than half of all deaths and years lost to illness. Cancer, stroke, and chronic lung diseases are now major public health problems that are strongly influenced by air pollution.

Delhi has exhausted all soft options. Next generation air pollution control is about hard decisions. The city needs an implementation strategy before this winter to reduce traffic and vehicles, cut dieselisation, scale up integrated public transport, facilitate walking and cycling, tax polluting modes, decide to implement Bharat Stage IV nationwide in 2015 and Euro VI in 2020 and put controls on other pollution sources. Our scientific community has an obligation to speak out on public health and enable the government to take strong action to reduce the health risk.

(The writer is executive director, research and advocacy, at Centre for Science and Environment)

WHO: Air pollution is world's top environmental health risk

'Causes 1 In 8 Deaths Globally'

Sushmi.Dey@timesgroup.com

Air pollution is the world's biggest environmental health risk, causing at least one in eight deaths around the globe, the World Health Organization (WHO) has said.

The assessment was reac-

FULL COVERAGE: P 2 & 18

hed at the first ever discussion on air pollution and its health impacts at WHO's World Health Assembly, which concluded in Geneva last week. Delegates at the assembly adopted a resolution to address the health impacts of air pollution.

The new estimation significantly increases the threat posed by air pollution and has dire health implications for countries such as India, where the pollution load is high and public health infrastructure underdeveloped.

WHO had last year ranked Delhi as the most polluted among 1,600 cities across the world — worse than Beijing — which had previously held the dubious tag.

WHO's assessment points to a huge surge in disease burden and deaths due to air pollution exposure. Deaths due to air pollution, which include outdoor as well as indoor pollution, have increased four-fold across the globe over the past decade, the latest data shows.

While the total number of deaths due to air pollution is pegged at 8 million every year, China and India are by far the worst affected countries. Of the 8 million deaths globally, 3.7 million are from outdoor or ambient air pollution, the data shows.

▶Can cause cancer, P 2

'DELHI IS A GAS CHAMBER'

Bad air can cripple heart, cause cancer

▶Continued from P1

Around 88% of premature deaths due to air pollution exposure occurred in low- and middle-income countries, and the greatest number in the western Pacific and south-east Asia regions.

Latest studies by WHO and other international agencies show that apart from development of respiratory diseases, exposure to air pollution leads to severe risk of cardiovascular diseases like strokes and ischaemic heart disease. Moreover, stronger links of air pollution and cancer have been established in recent studies.

MANY PERILS

According to International Agency for Research on Cancer (IARC), outdoor air pollution is carcinogenic to humans. The agency, specializing in cancer research, has found evidence that exposure to outdoor air pollution causes lung cancer as well as there is association with an increased risk of bladder cancer.

"Air pollution is already known to increase risks for a wide range of diseases, such as respiratory and heart diseases. Studies indicate that in recent years, exposure levels have increased significantly in some parts of the world, particularly in rapidly industrializing countries with large populations," IARC said.

The latest resolution, passed during the 68th World Health Assembly, called for all countries to develop air quality monitoring systems and health registries to improve surveillance for all illnesses related to air pollution. WHO also asked its member countries to promote clean cooking, heating and lighting technologies and fuels; and strengthen international transfer of expertise, technologies and scientific data in the field of air pollution.

Experts say policies and investments supporting cleaner transport, energy-efficient housing, power generation, industry and better municipal waste management would reduce key sources of urban outdoor air pollution.

In rural areas, reducing outdoor emissions from household coal and biomass energy systems, agricultural waste incineration, forest fires and certain agro-forestry activities can lead to a potential reduction in air pollution.

The WHO assessment says, "Reducing outdoor air pollution also reduces emissions of CO2 (carbon dioxide) and short-lived climate pollutants such as black carbon particles and methane, thus contributing to the near- and long-term mitigation of climate change."

At its next assembly, WHO will propose a roadmap for an enhanced global response by the health sector that reduces the adverse health effects of air pollution.

The Times of India, Delhi dated June 02, 2015

The Times of India, Delhi dated June 02, 2015

Feeling breathless in 'gas chamber' Delhi

Some Are Getting Ready To Escape, Others Want To Fix It, But Both Expats And Indians Agree That The City's Air Is Terrible

TIMES NEWS NETWORK

New Delhi: As the Centre and state governments in NCR dither on fixing air quality, the capital's image is taking a beating and its residents are paying the price of bad air with their health. After TOI published a piece by Gardiner Harris, South Asia correspondent of The New York Times, on his decision to return to the US due to the harm Delhi's air has done to his eight-year-old son, Bram, many other expatriates in the city also said they found their quality of life "severely compromised" here.

TOI got many responses on Monday, and most people complained that air pollution had forced them to cut back on outdoor sports and activities like jogging and cycling. Chris

Carlisle, senior manager with an automobile company in Okhla, said that he wears a mask while cycling. "I cycle a lot but always wear a mask. The air quality bothers me. I have noticed that the air quality index (AQI) in winter goes up to 10 times the safe standard. During Christmas last time, it was 600. You can definitely feel it when it's high and you have to stay indoors."

INTREPID: Chris Carlisletraves trafficand toxic air on his bicycle n GK-1 on Monday

Like Harris, Genevieve Chase and her husband have also decided to move back to the US after living in Delhi for three years. Her children, aged 10 and 12, have not developed any chronic problem but she is wa ry of expos ing them to dirty air. "We have decided not to elon gate our stay because our kids are not as active here compared with how they are in places with cleaner air. As a public health professional, I feel very strongly about it." She keeps her children indoors whenever the air quality index shoots up.

Harris writes in his piece that he had considered moving back after his son's first hospitalization for asthma in Delhi but was pushed to ask for a change of location when his inhaler became ineffective. "It was a tough decision but I told my bosses that I will have to move back. My stint here was the best job I ever had. My sons have their best friends here but we asked ourselves, what are we doing? Lung problem is an invisible disease but it can't be neglected," Harris told TOI.

Some termed Harris's remarks an exaggeration. Vanessa Asvin Koumar, a French student in Jawahar lal Nehru University , said, "Paris is also polluted. It's normal for any big city to face such problems of urbanization."

But most comments reflected anger and shock. "I grew up in Delhi in the 1970s and 1980s. The air had started to get bad then, but nothing like it is now. What are we doing to ourselves? No regard for anything except getting rich," said one.

> I'm not sure if I qualify to comment as an 'expat', having lived in Delhi for 30 years. But the pollution has gotten worse, and it's not just the foreigners, but everybody who's noticed it. My wife (artist Olivia Fraser) is asthmatic and she feels that strongly. However, we don't live in Delhi but on the outskirts on our farm in Mehrauli, but we've installed air purifiers there too, as have many of our friends, both Indian and expat. Winters, when that thick polluted fog descends, is the time when we feel it worse
> —WILLIAM DALRYMPLE

Some blamed Harris for bringing his children to Del hi: "I seriously doubt your ca reer advancement was worth the impact on your son's health." Another wrote: " was born in India. Have lived here in the US for most of my life. As much as I want my two young children to know their `motherland', I will nev er expose them to the health risks posed by living there."

Indians also vented their anger: "It seems that Modi's catchy slogan `Swachh Bharat' has not moved beyond his wishful populist mind," wrote one. However, some saw a conspiracy behind Harris's piece. Government sources said the West wants to portray India as a major contributor of greenhouse gases (GHG) before climate negotiations.

But Harris said, "My son didn't get asthma from cli mate change. Some 1.5 mil lion Indians die annually from polluted air, not climate change."

Keshav Varma, who was World Bank's director for east Asia from 1997 to 2009 said the Chinese government had done a lot to clean up Beijing's air. "Delhi is a gas chamber but most people don't understand how pollu tion is harming their health," Varma added.

Delhi's air also figured in expat group discussions "There's that permanent `diesel' smell in the air. And it (Delhi) does try and balance it with some green areas but needs so much more, and so much more investment in the Metro and local electric trains," wrote a member in a British expat group discussion.

David Housego, former journalist who lives on the 27th floor near the Noida Expressway, said pollution bothered him when he lived in Delhi. "I sympathize with anyone living in Delhi. Indeed, it's the first thing you feel, the traffic and the air pollution." Vivien Massot, a French economist who has been in Delhi for five years, said he can feel the smog and pollution in Delhi much more than in Paris. "It's very visible and you can feel it too. But it has not made me sick yet. It could be because I am less exposed to the traffic fumes: my house is only a few minutes away from my office in Lajpat Nagar."

Experts said moving out isn't an option. "We have to recognize that people have to live here to demand their right to good health. The government has the duty to protect all. Every third child in Delhi has impaired lungs, what other reason do we need to act against air pollution?" said Anumita Roychowdhury, head of CSE's Clean Air campaign.

No concrete step has been taken to counter Delhi's air problem so far. National Green Tribunal proposed banning diesel vehicles that are more than 10 years old because of high PM2.5 (fine, respirable particles) emissions but the Centre filed an application opposing it. NGT will give its final judgment on a petition seeking policy action on the issue in July.

Deccan Chronicle, Hyderabad dated June 05, 2015

GLOBAL WARMING BLURS WEATHERMAN'S VISION

IMD'S FORECAST OF SOUTHWEST MONSOON OFF THE MARK; SCIENTISTS SAY INACCURACY SINCE GLOBAL WARMING NOT FACTORED IN

AMAR TEJASWI | DC
HYDERABAD, JUNE 4

The monsoons are expected to hit Kerala within the next two days, much later than what the Indian Meteorological Department had initially predicted.

Scientists claim there is a huge gap between the accuracy of prediction of the monsoon that can be achieved and what is currently being achieved.

Researchers say that the failure of climate models to accurately predict is due to global warming.

Climate models are used by meteorological agencies to predict future weather events, most importantly, the southwest monsoon.

However, meteorological researchers now say that failure of climate models to accurately predict the onset of the monsoon and drought years is due to their failure to factor in global warming events like the central-Pacific El Nino-Southern Oscillation, boreal spring Arctic Oscillations and changes in the North and South Pacific Ocean triggered by global warming.

A joint study by meteorological researchers from the ministry of earth sciences, institutions in China, the US and South Korea, found a "considerable gap between Indian Summer Monsoon Rainfall (ISMR) prediction skill and predictability."

The study said that monsoon prediction accuracy could be increased by as much as 41 per cent.

"While the dynamical models are steadily improving, the skill of the best model is still significantly below potential limit of predictability," stated the study by Bin Wang and Jian Liu at International Pacific Research Centre and the department of meteorology, University of Hawaii in *Nature* journal.

Scientists say the decrease in accuracy concurs with the last three decades when there has been a 0.4°C rise in average temperature due to global warming. Over the last 92 years, existing models have predicted drought and flood years but the extent of damage is often underestimated.

There have also been two false alarms.

EXPERTS SPEAK

- METEOROLOGICAL RESEARCHERS NOW SAY THAT FAILURE OF CLIMATE MODELS TO ACCURATELY PREDICT THE ONSET OF THE MONSOON AND DROUGHT YEARS IS DUE TO THEIR FAILURE TO FACTOR IN GLOBAL WARMING EVENTS LIKE THE CENTRAL-PACIFIC EL NINO-SOUTHERN OSCILLATION, BOREAL SPRING ARCTIC OSCILLATIONS AND CHANGES IN THE NORTH AND SOUTH PACIFIC OCEAN TRIGGERED BY GLOBAL WARMING

RAINS HIT CITY, MONSOON SOON

- MANY AREAS IN THE TWIN CITIES RECEIVED HEAVY RAINFALL LATE ON THURSDAY NIGHT, BRINGING DOWN THE NIGHT TEMPERATURE
- POWER SUPPLY GOT SNAPPED IN MANY AREAS WHILE SOME ROADS WERE SWAMPED.
- THE MONSOON IS EXPECTED TO HIT KERALA IN 48 HOURS, THE MET DEPARTMENT SAID. IT HAD FIRST PREDICTED MAY 31 AS THE DATE OF ONSET.
- IMD SAYS THERE IS AN INCREASE IN THE RAINFALL IN KERALA AND MONSOON COULD HIT ANY TIME
- MONSOON TO REACH AP, TS AFTER JUNE 10
- RAIN WAS REPORTED FROM BENGALURU, AND GOA. THE IMD SAID THESE WERE PRE-MONSOON RAINS.

Erratic rains hit crops, dals to pinch pocket

KANIZA GARARI | DC
HYDERABAD, JUNE 4

The production of pulses like *channa*, *dals*, split grams, *moorig*, etc. has suffered due to the unseasonal rains and hailstorms in March. Production has been reduced by 5 million tonnes, states a recent study conducted by Associated Chambers of Commerce and Industry of India.

The production, when compared to March 2014, is lower by 17 million tonnes. The setback is both, in terms of quality and quantity.

D.S. Rawat, secretary general of Assocham said, "Rain-damaged crops can't be stored for long. There is going to be a glut of damaged *channa*, mustards, chickpeas, oats and many other Rabi pulses in the market. This might give a deceptive, but temporary respite on the availability but shortages will soon surface."

The recommended intake is 50 to 60 gms per day, per person, but the availability in the market is 30 grams per day, per person. This low availability has increased the prices in the retail market of split pulses like *channa dal*, *tur/arhar dal*, *urad dal*, *moong* and *masoor dal* by 20 per cent.

The prices of most split pulses have shown a rising trend since January 2015 and the prices continue to rise. The present market rates show that *tur/arhar dal* is priced at ₹100 to ₹120 per kg while *moong dal* is between ₹100 to ₹120 per kg and *masoor dal* at ₹85 per kg.

Agriculturist D. Ravindra said, "There is a growing concern that the prices will further rise because the Kharif pulses, *urad* and *moong*, which are widely consumed, will depend on the rain. There has been erratic production of these pulses since the last two years because of insufficient rains."

The Kharif production has been 25 to 30 per cent lower compared to Rabi crops. The yield has reduced because of bad seed quality, less water and also climate change, due to which production is less by 800 kg per hectare.

Simply put, pulses have become a luxury for the middle class, and even the weaker section of the population which is dependent on *dal* as a source of protein.

Low production of pulses to affect all

DC CORRESPONDENT
HYDERABAD, JUNE 4

Consumers and farmers are suffering due to low production of pulses. Consumers are hit by rising prices and farmers are reluctant to grow pulses next season.

B Saxena, a business development manager of an agricultural company providing seeds and technology to farmers, said, "The production of pulses must be made sustainable where growth can be increased by 25 to 30 per cent. This will help meet consumers' demand and also help the farmers to get the best price."

Pulse cultivation also helps to fix nitrogen in the soil, thereby enriching it. A senior government official said farmers growing pulses should be rewarded in order to motivate them.

The government machinery also needs to be activated so that farmers are not at the mercy of middlemen.

A senior officer said the government needs to bring about changes so that the farmers are confident about growing pulses.

HUNGRY NATION

- PER CAPITA CONSUMPTION IN URBAN HOUSES FELL FROM 12 KG IN 1999-2000 TO 9.6 KG IN 2009-2010. IN RURAL HOUSE, CONSUMPTION FELL FROM 10 KG TO 8 KG
- AVAILABILITY IN INDIA IN 1951 WAS 61.7 GM PER DAY PER PERSON WHICH HAS REDUCED TO 31.6 GM PER DAY, PER PERSON IN 2010.
- **TOTAL PRODUCTION DOWN BY 17 MILLION TONNES IN MARCH 2015.**

- *CHANA* MAKES UP 50% OF TOTAL PRODUCTION OF PULSES. THIS YEAR, HOWEVER, LOWER SOWING IS GOING TO RESULT IN LOWER YIELD.
- *Tur* or *arhar dal*, is the second most popular dal consumed. Production has been good, so there is little to worry this year.
- The overall estimated demand is 22 million tonnes and imports may have to be made:
- Dry peas from Canada, the US, France and Ukraine.
- Chickpeas from Australia, Russia, USA, Canada, Myanmar and African countries.
- Urad from Australia, Myanmar and China.
- Masoor from Canada, Australia, Turkey and Uzbekistan.

The Times of India, Delhi dated June 05, 2015

CM breathing air thick with ozone

In Civil Lines, Where He Stays, Level Of Toxic Gas Too High On Most Days

TIMES NEWS NETWORK

New Delhi: Chief minister Arvind Kejriwal, who suffers from a chronic cough, may be getting exposed to high levels of ozone, a highly irritating gas. The ozone level in Civil Lines, where Kejriwal lives, is more than twice the safe standard and falls in the 'poor' category of the National Air Quality Index (NAQI). Centre for Science and Environment's (CSE) recent analysis of ozone levels recorded by Delhi Pollution Control Committee's (DPCC) real-time air quality monitoring stations in April and May reveals a strong build-up of the toxic gas in certain areas.

Ground-level ozone is not emitted by vehicles or industries but forms when oxides of nitrogen (NOX) and a range of other gases—primarily from vehicles and other sources—are exposed to each other in sunlight. High temperature and still air increase the formation of ozone. "Unlike particulate matter which can be contributed by vehicles as well as other sources, ozone is formed when NOX catalyses with other gases. Vehicles are a primary source of NOX. We need to control vehicular emissions urgently to address ozone as well as particulate matter levels," said Anumita Roychowdhury, head of CSE's Clean Air programme. CSE also said ozone hasn't spared neighbourhoods of the "rich and powerful" such as Lutyens' Delhi and Civil Lines.

In Delhi, Civil Lines had the maximum number of days when the ozone standard was breached. The eight-hour average peaked at 250 micrograms per cubic metre—2.5 times the safe standard. In April and May, the gas exceeded the safe limit on 92% and 97% of the days, respectively. Its concentration was very high in R K Puram and Punjabi Bagh and on Mandir Marg. In R K Puram, the eight-hour average touched 240 micrograms per cubic metre.

In Lutyens' Delhi and around AIIMS, where DPCC doesn't have monitoring stations, CSE analyzed the air with portable equipment. At Lodhi Estate, the ozone level frequently breached the one-hour standard, while near AIIMS the peak one-hour average was 266 micrograms per cubic metre between 12 noon and 1 pm. CSE researchers said DPCC should carry out regular monitoring in sensitive areas as well as in Lutyens' Delhi.

According to CSE, ozone is included in the daily smog and health alert programmes in countries like Mexico, the US and China. In Mexico City, the elderly, children and those suffering from respiratory and cardiac problems are advised to stay indoors when levels go up. The US-based National Research Council, part of the National Academies of Science, has recommended that local health authorities keep the harmful effects of ozone in mind when advising people on polluted days. The US is also tightening its ozone standards. CSE researchers quoted a study by the University of Southern California published in The Lancet which found that children who played were at greater risk of developing asthma in high-ozone areas.

IN THE DANGER ZONE

Source: DPCC, CSE

Ozone levels were measured by DPCC and CSE in different parts of Delhi in April & May

RK PURAM

Eight-hour average of ozone reached 240 microgramme/cubic metre, almost 2.5 times higher than the safe standard of 100 microgramme/cubic metre

2.5 times higher

100µg/m³ 240µg/m³

Percentage of days beyond safe level was 60% in April and 75% in May

May: In May, 13% of days were 'poor' and 16% 'worse than poor'

Studied against the newly released air quality index (AQI), April— with many rainy days—had 3.5% of the days as 'poor'

CIVIL LINES

- Civil Lines, where chief minister Arvind Kejriwal now lives, has fared the worst in terms of number of days exceeding the ozone standard
- Eight-hour average peaked to 250 microgramme/cubic metre—2.5 times the standard
- In April, 92% of the days exceeded the safe level, in May it was 97%. Almost every day, the ozone level crossed the standard
- As per NAQI classification, poorly polluted days rose from 22.7% in April to 41% in May
- Percentage of days classified as worse than poor rose from 4.5% in April to 27.6% in May

PUNJABI BAGH

- No. of days not meeting the standard was very high

APRIL 73% MAY 84%

MANDIR MARG

- Recorded one of the worst peak levels—close to three times the standard
- In April, 85% of the days exceeded the standard; it was 89% in May

LUTYENS' DELHI

- CSE's own monitoring device has found that during the day, peak one-hour averages often crossed the standard at Lodi Estate
- Near AIIMS, it has been recorded at 266 microgramme/cubic metre between 12 noon and 1pm
- Researchers say DPCC should carry out regular monitoring in sensitive areas as well as in Lutyens' Delhi

The Times of India, Delhi dated June 06, 2015

New wetland off Barapullah to curb pollution in Yamuna

Ponds Will Treat Waste Water; Biodiversity Park Also In Works

Risha.Chitlangia
@timesgroup.com

GREEN GROWTH To clean the Yamuna, DDA plans to develop wetlands and a biodiversity park on the floodplain

THE PLAN | Wetlands will be developed to treat water of Barapullah drain before releasing it into the river

300 acres

Location: **Mouth of Barapullah drain near the sun dial**

- Interconnected channels & marshes will be created through which drain water will flow and get treated before release into Yamuna
- Grass & aquatic plants will be planted in the wetlands for natural treatment of water and stabilizing the earth as water table is quite high in the area
- A biodiversity park, between DND flyover and Kalindi Kunj bypass, will be developed near Okhla Bird Sanctuary
- Treated water will then be released into the Yamuna

MORE MEASURES

100 CCTVs to be installed at 25 locations along the Yamuna to ensure that people don't dump debris on the riverbanks. Two control rooms & quick reaction teams to be set up

DDA IS CONSTRUCTING DHALAOS AT 20 LOCATIONS FOR PUJA MATERIALS

Plans to install units for recycling these items

New Delhi: In a bid to curb pollution in Yamuna, the Delhi Development Authority has decided to develop a wetland on the floodplains to treat the water of Barapullah drain before it is released into the river. Also in the works is a biodiversity park near Okhla bird sanctuary. The wetland project will start in a month's time.

DDA vice-chairperson Balvinder Kumar inspected both sites along with DDA officials and environmentalists on Thursday. The wetlands will come up at the mouth of Barapullah drain near Sun Dial. The development agency plans to divert the untreated water through channels to interconnected ponds and swales where it will be naturally oxidized and cleaned with help of aquatic plant species including algae and then released into the river. The wetlands will be developed on both sides of the drain.

Barapullah is one of the most polluted drains in the capital, carrying waste from all of south Delhi's colonies. Taking serious note of growing pollution in Yamuna, the National Green Tribunal has directed civic agencies and the Delhi government to take appropriate measures.

"We have over 300 acres of land near the mouth of Barapullah drain where were can develop the wetlands. At present, people are illegally carrying out agricultural activity here. I have directed the land department to immediately stop the farming and begin work on the wetland project," Kumar said.

The idea is to construct ponds at different levels so that the partially treated water can keep flowing through the successive swales until the process gets over. "We will plant grasses and other native river species here which will help in the treatment of water through a natural process. This will also restore the ecosystem," said Kumar.

The land owning agency will require help from South Corporation as the drain belongs to the municipal body. "We will write to South Corporation in this regard. We plan to rope in experts for the project," said a DDA official.

The biodiversity park is another project which DDA is keen to start work on. This will be its third biodiversity park project. "It will be located between DND flyover and the under-construction Kalindi bypass. It's a huge area and we must work out a plan to develop it," he said.

Officials say it will take at least six-eight months to develop the wetlands. As for the biodiversity park, the project is in a nascent stage.

DDA is taking several other measures to bring down pollution in the river. Following NGT orders, the Authority has started work on installing 100 CCTV cameras at 25 strategic locations to monitor dumping of debris and waste on riverbed. These cameras will be connected to two control rooms.

The Authority has also constituted a quick response team for manning floodplains and constructed 20 dhalaos where used puja offerings can be dumped. It is also exploring the possibility of installing waste recycling units near the banks for such material.

1st eco-friendly police stn at Maurice Nagar

Anandita Singh Bhada | TNN

New Delhi: Paintings and graffiti on its floor and walls, bio-toilets, energy-reduction technology, solar panels and LEDs—welcome to India's first eco-friendly police station at Maurice Nagar. Revamped and inaugurated on Friday, the police station took the lead to spread the message "Save Environment" on the World Environment Day.

The police station uses various techniques like bamboo furniture, Eric palm plantation, recycled paper and a bio-toilet.

"At this police station, the officials are dedicated to make environmental friendliness an operating philosophy," said the Delhi Police commissioner B S Bassi.

"There is a solar panel installed. All the LEDs have been removed and only five-star energy rating fans are used," said DCP, north, Madhur Verma.

They have also devised a way to keep the rooftop cool. "Earthen pots are placed on the rooftops and sprinklers are fixed at the centre," an official said.

Arjun Khera

COOL CONCEPT: Pots placed on roof keep the temperature down

The Times of India, Delhi dated June 07, 2015

Norway votes to divest from coal

Move To Prevent Country From Compounding Environmental Damage: Experts

John Schwartz

Norway's $890 billion government pension fund, considered the largest sovereign wealth fund in the world, will sell off many of its investments related to coal, making it the biggest institution yet to join a growing international movement to abandon at least some fossil fuel stocks.

Parliament voted on Friday to order the fund to shift its holdings out of billions of dollars of stock in companies whose businesses rely at least 30% on coal. A committee vote last week made Friday's decision all but a formality; it will take effect next year.

The decision — which could seem paradoxical, given that Norway is a major producer of oil and gas — is certain to add momentum to a push to divest in fossil fuel stocks that emerged three years ago on college campuses. The Church of England announced last month that it would drop companies involved with coal or oil sands from its $14 billion investment fund, and the French insurer AXA said it would cut some $560 million in coal-related investments from its portfolio.

AFP

The move comes after the Church of England announced last month that it would drop companies involved with coal or oil sands from its $14bn investment fund, and the French insurer AXA said it would cut some $560 million in coal-related investments from its portfolio

Members of the Rockefeller family, whose fortune derives from Standard Oil, also pledged last year to remove fossil fuel investments, beginning with coal, from their philanthropic Rockefeller Brothers Fund. There is no question that the decision by various funds to sell fossil fuel stocks has little or no impact on the vast market capitalization of most companies. For that reason, the divestment movement has long been dismissed by many institutions, especially oil companies, as symbolic.

But divestment decisions from funds like Norway's are important because they require, as a first step, discussions that once seemed taboo, said Bob Massie, a longtime climate activist and a founder of the Investor Network on Climate Risk, an organization of institutional investors affiliated with the business environmental group Ceres.

"It lays the groundwork for the transformation of cultural and political views in a major topic that people would rather avoid," he said. "This requires people to say, 'What are we going to do? What are our choices? What do we believe in?'." Massie, who was involved during the 1980s in the South African divestment movement and who wrote a well-regarded history of it, said that in both cases, "There's a mysterious process by which an 'unthinkable, ridiculous' proposition becomes 'possible.'

Jamie Henn, a co-founder of 350.org, a group that promotes divestment, said that coal was the most environmentally damaging fossil fuel, and that the various divestment decisions "send a clear political signal that we think will hasten the industry's inevitable decline — and push governments to take broader action."

Norway's decision underscores its ambivalence about fossil fuels. The fund itself is nicknamed the 'oil fund' as its wealth comes from the nation's oil and gas revenues. But proponents of the move say that it helps prevent Norway from compounding the environmental damage that its own production causes by investing in environmentally destructive companies. NYT NEWS SERVICE

The Times of India, Delhi dated June 08, 2015

G7 vows to stand up to Russia on Ukraine

Greek Bailout And Climate Top Agenda At Summit

Reuters

US President Barack Obama meets women dressed in Bavarian attire in Kruen, Germany, where the G7 leaders met on Sunday for a summit overshadowed by Greece's debt crisis and violence in Ukraine

Kruen (Germany): Leaders from the Group of Seven (G7) industrial nations backed a tough line towards Moscow at the start of a summit in the Bavarian Alps, with US President Barack Obama urging the gathering to stand up to Russian aggression in parts of Ukraine.

Host Angela Merkel greeted Obama in the idyllic Alpine village of Kruen under blue skies, surrounded by locals in traditional dress, drinking beer and eating white sausage and pretzels.

The German chancellor was hoping to secure commitments from her G7 guests to tackle global warming ahead of a major United Nations climate summit in Paris in December. The German agenda also foresees discussions on global health issues, from Ebola to antibiotics and tropical diseases. But the crises in Ukraine and Greece seemed likely to overshadow the discussions at Schloss Elmau, a luxury Alpine hotel near the Austrian border.

European Commission president Jean-Claude Juncker, speaking before the start of the summit, voiced exasperation with Greek Prime Minister Alexis Tsipras, who has dismissed the latest aid-for-reform proposal from international creditors as "absurd". Athens is running out of cash and will default on its debt, a move that could end up pushing it out of the euro zone, if it fails to reach a deal with its European partners and the International Monetary Fund (IMF) in the coming weeks.

Juncker reaffirmed that a so-called "Grexit" was not an option being considered, but said this did not mean he could "pull a rabbit out of a hat" to prevent it. Obama said leaders would discuss the global economy, trade partnerships and "standing up to Russian aggression in Ukraine", as well as threats from violent extremism and climate change.

Both he and Merkel highlighted the importance of the German-American relationship, damaged in recent years by revelations of US spying in Germany, including the bugging of Merkel's cell phone.

"My message to the German people is simple: We are grateful for your friendship, for your leadership," said Obama, using the traditional Bavarian greeting "Gruess Gott" to a crowd gathered in the village square in Kruen. "We stand together as inseparable allies in Europe and around the world." REUTERS

The Times of India, Delhi dated June 09, 2015

G7 warns Russia of more curbs, vows climate action

Elmau Castle (Germany): World leaders on Monday warned Russia it would face stepped-up sanctions for its "aggression" in Ukraine, as they wrapped up a G7 meeting also pledging strong action to fight climate change.

At a luxury retreat nestled in the picture-perfect Bavarian Alps, the leaders of the most powerful countries also tackled threats to global security posed by Islamist extremism and risks to the world economy from Greece.

For the third time, Kremlin strongman Vladimir Putin was barred from a G7 summit due to what US President Barack Obama termed his "aggression in Ukraine", as the Group of Seven top powers closed ranks against Russia. "We ... stand ready to take further restrictive measures in order to increase cost on Russia should its actions so require," said the leaders in a joint communique after the two-day huddle.

"We recall that the duration of sanctions should be clearly linked to Russia's complete implementation of the Minsk agreements and respect for Ukraine's sovereignty," the leaders added, referring to a peace deal struck in Belarus capital. Sanctions could also be "rolled back" if Russia lived up to its commitments, the communique said.

Reuters

OPEN DISCUSSION: Merkel holds a tete-a-tete with Obama outside the Elmau castle in Kruen, Germany, on Monday

Nothing new in G7 tough line: Kremlin

Russia said on Monday it saw nothing new in the tough line taken by leaders of the G7 on Moscow over sanctions and suggested there were differences among its member states. "Yes, we paid attention to the latest declarations on sanctions. These are not new theses," Kremlin spokesman Dmitry Peskov told reporters. "We also drew attention to the fact that among the participants of this meeting there are nuances in their approaches. Some talk about the need for dialogue with Russia and the impossibility of solving serious problems without this dialogue, so we continue watching closely." REUTERS

The leaders also sought to thrash out other threats to global security over a lunch of Thai chicken soup, trout and a peach dessert with almonds. In an unusual move, the G7 leaders invited the heads of countries threatened by jihadi groups, including the leaders of Nigeria and Iraq, both battling deadly insurgencies.

Meanwhile, ahead of a crunch year-end UN climate summit in Paris, the leaders stressed that "deep cuts in global greenhouse gas emissions" were required with "a decarbonisation of the global economy over the course of this century". The G7 reaffirmed the goal of limiting global warming this century to 2° Celsius from pre-industrial levels. AGENCIES

Environmental Ethos In Vedic Times

Kamla Nath Sharma

Today, the natural resources of the earth are being mindlessly exploited globally far beyond need, resulting in a poor state of their regeneration and causing irreversible damage to the planet. This year's World Environment Day theme – 'Seven billion dreams. One planet. Consume with care' – therefore, is highly relevant.

Starting from space, a Vedic mantra, 'prithivy apah tejah vayuh akashat' depicts sequential primal appearance of the five basic gross substances, called 'panch mahabhuta' – namely, space, air, fire or energy, water and earth – from which all universal matter is created.

Water has enjoyed the highest social and religious status in ancient Indic culture. Prayers in all four main Vedas refer to water as nectar, honey, source of life, protector of earth and environment, cleanser of sins, generator of prosperity, and ambrosia. Sages in Yajur Veda pray thus, "O Water, thou art the reservoir of welfare and propriety, sustain us to become strong. We look up to thee to be blessed by thy kind ambrosia on this earth. O water, we approach thee to get rid of our sins." Rivers were considered divine and worshipped as goddesses and people were ordained to use their life-sustaining waters most judiciously and with greatest reverence.

Today, we have lost sight of the fact that the resources are finite. Of all of earth's water, only 0.007% is accessible for human use. Today, globally more than 1.1 billion people have inadequate availability of water.

In Vedic cosmology, Prithvi or earth symbolises material base as mother and the Dyaus, upper sky or heaven, symbolises the unmanifested immortal source as father, which together and between them, provide paryavaran, the environment.

An Atharva Veda hymn says, "Mata bhoomih putroham prithivyaah," reminding us of our responsibility not only towards our motherland but also to Planet Earth. The mantra refers to earth differently as 'bhoomi' and 'prithvi' implying that while my motherland is my mother, i am also a child of Planet Earth.

The Yajur Veda addresses Prithvi as a guardian, praised for being benevolent to humankind, and is prayed to for continued protection: "O Earth! Fill up your broad heart with the vital healing air, waters and flora. May the benevolent life-giving air circulate for a bountiful Earth." Another prayer says, "Pleasant be you to us, O Earth, without a thorn be our habitation. May your development grant us bliss and sustenance."

the speaking tree

In hymns of the Rig Veda, seers seek blessings of the sun and wish every part of the earth to be prosperous and mountains, waters, and rivers to be propitious. The importance of vital healing air, fresh unpolluted waters and healthy flora on earth was recognised and wished for in the hymns of the Atharva Veda.

Nature and its seasons are governed by cosmic laws of integration and balance, called 'Rit' in the vedas. Keeping an eye on Rit, human activities can be directed to global sustainable development. A hymn of the Yajur Veda says, "O learned people, fully realise your conduct towards different objects of the universe." But, in today's world we are misusing scientific and technological breakthroughs to indiscreetly and greedily exploit natural resources, thereby causing imbalances that make it difficult to maintain natural harmony.

Ancient Indic philosophy always wished for everyone to be happy and free from ailments, "Sarve bhavantu sukhinah, sarve santu niraamayaah" – Let everyone be well and happy – and pleaded for an all-inclusive holistic development on the planet for harmony. "Saa no bhoomirvardhayad vardhamaanaa" as in the 'Bhumi Sukta' of Atharva Veda.

(The writer is chairman, Aqua Wisdom and was formerly secretary, International Commission on Irrigation and Drainage (ICID), New Delhi)

The Times of India, Delhi dated June 11, 2015

Sun, LEDs can make city safe at night

Greenpeace Recommends Energy-Efficient Solar Streetlights To Get Rid Of 700 Dark Spots

TIMES NEWS NETWORK

New Delhi: There are more than 700 dark spots in Delhi. Of these, 177 are in the outer district, followed by 98 in the west and 56 in northeast. Even New Delhi has as many as 23 dark spots, reveals a report prepared by Greenpeace, in collaboration with National Institute of Urban Affairs (NIUA), a think tank.

It says Delhi, which faces the problem of dark spots, is using a technology that consumes more energy. It further says solar LED streetlights can electrify the dark spots at a much lower cost, which is estimated to be less than Rs 10 crore.

The report, "Sustainable streetlighting", is part of Greenpeace's "safe city" campaign that proposes solar LED streetlighting to check crime against women and promote clean energy options. There are more than five lakh streetlights in Delhi. Dark spots are caused either due to a lack of streetlights in a particular area or glitches in the existing ones, including non-functioning bulbs, problem in power supply, heating up of the high-pressure sodium vapour (HPSV) lamps, among others.

The report recommends that funds be sourced from various heads in the Union Budget 2014. It says funds can be collected from power reforms, Nirbhaya fund—which has about Rs 1,000 crore—women and child development, safety for women in public transport that has about Rs 50 crore, etc.

The report says CCTVs can, at best, help capture crime scenes, whereas the aim should be reduction in crime statistics and improvement in safety on roads and public spaces. This can "only be achieved through proper illumination of all the dark spots with efficient utilization of sustainable power-...power purchase costs are escalating, no efficient or standardized monitoring techniques are available and various issues have mushroomed to hamper efficient working of discoms of Delhi. The only feasible solution can be looking at the sun for energy and completely taking streetlights off the grid".

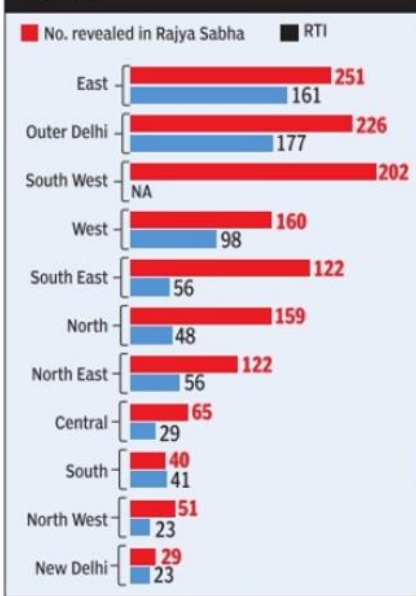
Solar streetlights consume 146kw/h compared to conventional HPSV lamps that consume 332.15kw/h.

Pujarini Sen, Greenpeace's climate and energy campaigner, said, "Implementing solar streetlight systems in all of the 700 dark spots will cost the government less than Rs10 crore. In addition, the programme will help meet Delhi's renewable purchase obligation target by over 6%.".

According to the environmental NGO, it had submitted its report to Delhi Dialogue Commission on April 27. On April 9, ministry of home affairs had suspended Greenpeace India's registration for violating FCRA norms and blocked its national accounts because of which it couldn't release the report. However, after the recent relief by the high court allowing Greenpeace India to use its fund, the NGO has urged the Delhi government to implement these recommendations.

LED THERE BE LIGHT

WHAT ARE DARK SPOTS?
Areas of complete darkness of a minimum of **50 sqm** after dusk.



Costs & benefits

- Installation cost of solar LED streetlights ₹9.61cr (approx)
- Backup power of 10-12 hours
- Most solar streetlights are designed with three days autonomy when charged fully
- Better colour, comes with intelligent sensors
- Uses zero grid electricity
- Has a pay-back of six years
- Such lights consume 146kw/h compared to conventional high-pressure sodium vapour (HPSV) lamps, which consume 332.15kw/h

The Times of India, Delhi dated June 12, 2015

Haryana to keep Yamuna flow steady

Jayashree.Nandi
@timesgroup.com

New Delhi: The Yamuna's condition may improve soon, but only slightly. The National Green Tribunal on Thursday directed the Haryana government to maintain a flow of at least 10 cumecs of water at Hathnikund barrage, in compliance with an earlier Supreme Court order.

Based on a committee's recommendations, the apex court in 1998 had ordered that 10 cumecs of water be released into the river all round the year. But the river's needs are so much more.

A principal committee appointed by NGT has recommended that the Yamuna requires 2,000-2,500 cusecs to maintain ecological flow.

Since Haryana controls the water that flows at Hathnikund, it will now have to ration other needs—drinking water, irrigation, requirements for industries and other infrastructure—and ensure that a minimum of 10 cumecs supply is maintained. As of now, hardly anything is being left for the river.

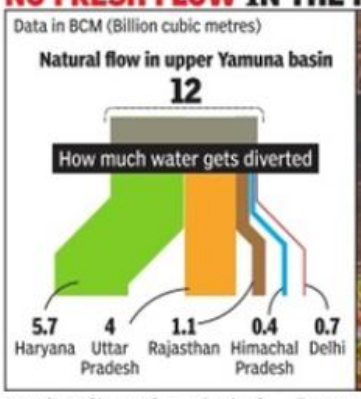
"Haryana was releasing only about 160 cusecs but now it will have to release 10 cumecs or 360 cusecs. Ten cumecs is actually a nominal amount. It may only meet needs up to Panipat," said Manoj Misra, petitioner. Misra is, however, relieved that the first step has been taken; now the bench headed by NGT chairperson Swatanter Kumar has directed a principal committee headed by Shashi Shekhar who is also the secretary, ministry of water resources, to hold a meeting on June 22 in which several measures including waste water reuse, rainwater harvesting, efficiency in irrigation and rationing water needs for agriculture will be discussed.

While the rationing will have to be done by the Haryana government, representatives of Uttarakhand and Rajasthan governments were present and consulted. The direction will come at a cost as all the states will have to revisit the allotments they had made for various anthropogenic needs.

Meanwhile, Delhi Pollution Control Committee and Delhi State Industrial and Infrastructure Development Corporation have informed that 1,200 industries have been issued notices for not discharging effluents into the conveyor belt for treatment. The bench has warned that they will be shut down within a week if they don't comply.

NO FRESH FLOW IN THE RIVER

Data in BCM (Billion cubic metres)



The Times of India, Delhi dated June 17, 2015

Foul air killing up to 80 Delhiites a day, claims study

Clean Up Can Prevent 4 Lakh Deaths In India

Jayashree.Nandi
@timesgroup.com

PAYING WITH LIVES

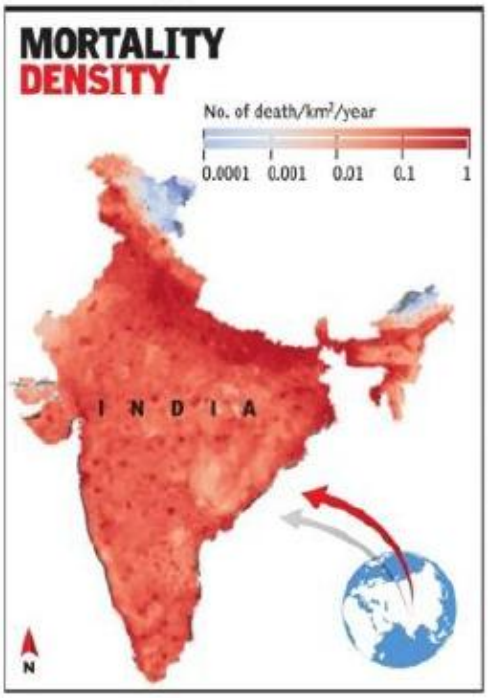
- Air pollution **killing 10,000 to 30,000 people** in Delhi each year, finds study
- **85% of deaths** could be **avoided** if city's air is cleaned up to WHO standards
- Clean air could **save 4 lakh lives** each year in India
- Taking no action would lead to **20-30% more deaths**

Air pollution from respirable particulate matter (PM2.5) could be responsible for 10,000 to 30,000 premature deaths annually in Delhi — up to 80 deaths daily — authors of an international study released on Tuesday indicated. Scientists who conducted the study, published in Environmental Science and Technology journal, said most deaths were due to heart attacks and strokes, and not very many because of respiratory diseases.

The study, Addressing Global Mortality from Ambient PM2.5, found more than 45% of these premature deaths avoidable if Delhi met the national ambient air quality standard for PM2.5. In fact, if Delhi were to meet WHO standards, as much as 85% of these deaths could be avoided, the experts said.

▶'Deaths may go up', P 8

'Air pollution deaths may go up by 30%'



▶Continued from P 1

Across India, as many as 4 lakh premature deaths per year could be prevented if the WHO standards were met. If no action is taken to bring down the current PM2.5 levels, deaths from air pollution would increase by 20% to 30% in India, the study warned.

Scientists arrived at the potential to prevent premature deaths in Delhi assuming that the annual mean PM2.5 level here was about 150 micrograms per cubic metre, about four times the national standard and 15 times the WHO guideline.

The study is authored by Joshua S Apte from the University of Texas, Julian D Marshall from the University of Minnesota, Aaron J Cohen from Health Effects Institute and Michael Brauer from University of British Columbia.

It found as many as 2.1 million deaths per year could be prevented globally if air quality met the WHO guideline of 10 micrograms per cubic metre.

An earlier study called the Global Burden of Disease (GBD) had estimated that high levels of PM2.5 particles, which can get lodged in the lungs and enter the bloodstream, were responsible for 3.2 million deaths globally. The current study uses a high-resolution global model to estimate how many deaths can be prevented, and in which parts of the world, using data from the GBD as well as following the methods of the GBD study.

"The number one killer from air pollution, particularly PM2.5, is not respiratory diseases but ischemic heart disease and strokes," co-author Apte told **TOI**.

About 1.4 million premature deaths can be avoided in China and India alone if air quality met the WHO guideline, the study found.

Authors of the study said making small reductions in PM2.5 concentrations would not help prevent a majority of deaths. The PM2.5 levels need to be maintained as per WHO guidelines or even lower. "If you do a little bit to reduce pollution you don't get anywhere near what you get if you reduce the levels in a major way," said Marshall.

Researchers found mortality rates can be substantially reduced even in places with a lower PM2.5 level, indicating that even low PM2.5 levels can cause mortality. "We were surprised to find the importance of cleaning the air in not just the dirtiest parts of the world which we expected to find, but even in cleaner environments like US, Canada and Europe," added co-author Marshall.

The study found mortality in China due to air pollution as well as annual mean levels to be much higher than India. This, experts said, was because groundlevel air pollution data was much more robust and easily available in China.

Deccan Chronicle, Hyderabad dated June 18, 2015

DANGER | AHEAD

Indus Basin aquifer of northwest India, Pakistan is second most overused

Groundwater from largest basin depleting rapidly

Washington, June 17: The Indus Basin of northwestern India and Pakistan is the second-most overstressed groundwater basin in the world and is suffering rapid depletion from human use, scientists have found.

Two new studies led by University of California — Irvine using data from Nasa Gravity Recovery and Climate Experiment satellites have found that a third of the world's biggest groundwater basins are in distress.

Civilisation is rapidly draining some of its largest groundwater basins, yet there is little to no accurate data about how much water remains in them, researchers said.

The result is that significant segments of the planet's population are consuming groundwater quickly without knowing when it might run out.

The researchers found that the Arabian Aquifer System, an important water source for more than 60 million people, is the most overstressed in the world suffering rapid depletion with little or no sign of recharging.

The Indus Basin aquifer of northwestern India and Pakistan is the second-most overstressed, and the Murzuk-Djado Basin in northern Africa is third.

California's Central Valley, utilised heavily for agriculture and suffering rapid depletion, was slightly better off but still labelled highly stressed in the study. "Given how quickly we are consuming the world's groundwater reserves, we need a coordinated global effort to determine how much is left," said UCI professor and principal investigator Jay Famiglietti, water scientist at Nasa. For the first study published in the journal *Water Resources Research*, experts examined the planet's 37 largest aquifers between 2003 and 2013. The eight worst off places were classified as overstressed, with nearly no natural replenishment to offset usage. — *PTI*

OVER EXPLOITED

- The eight worst off places were classified as overstressed, with nearly no natural replenishment to offset usage. Another five aquifers were found, in descending order, to be extremely or highly stressed

- Total remaining volume of the world's usable groundwater is poorly known, with often widely varying estimates

Deccan Chronicle, Hyderabad dated June 18, 2015

Pope says global warming is killing animals, planet

Vatican City, June 16: Pope Francis will this week warn that global warning threatens the future of the planet and say there is both an urgent need and moral imperative to reduce fossil fuel consumption, Vatican sources said on Tuesday.

A landmark Church statement on the environment, due to be officially released on Thursday, places the leader of the world's 1.2 billion Catholics firmly in the camp of those who say climate change is mainly man-made at a critical time in the global debate over what, if anything, can be done to slow or reverse it.

Pope Francis

The papal intervention, seen as a potential game-changer by Green groups, comes six months before international leaders gather in Paris to try and seal a global deal on steps to reduce carbon emissions.

Pope Francis will outline his views in the form of an encyclical, a statement of fundamental principles designed to guide Catholic teaching on a subject that is issued as a letter from the pope to bishops around the world.

But he will also make it clear that his appeal is addressed to everyone on the planet and that he sees a link between defending the environment and delivering social justice. — *AFP*

The Times of India, Delhi dated June 18, 2015

Now, fuel made from algae can help jets fly

Tokyo: Researchers have developed a new method to convert squalene, which is produced by microalgae, to gasoline or jet fuel.

The study was part of a project by Japanese researchers that attempts to make use of oil-producing algae in wastewater treatment.

The new method, developed by professor Keiichi Tomishige and Dr Yoshinao Nakagawa from Tohoku University, and Dr Hideo Watanabe from the University of Tsukuba, used a catalyst with cerium oxide support and ruthenium metal particles.

Squalane was treated with this catalyst and hydrogen to produce smaller hydrocarbons. The carbon-carbon bonds located between the methyl branches were selectively dissociated, and branched alkanes were produced without the loss of branches.

Branched hydrocarbons are good components for gasoline and jet fuel because of the high octane number, low freezing point and good stability. The conventional catalyst, the combination of platinum and strong solid acid, produces a very complex mixture of products and was reusable four times without the loss of performance. PTI

Nasa sounds red alert on dipping groundwater

21 Of The World's 37 Largest Aquifers Have Crossed Tipping Point; 13 In Most-Troubled Category

Todd C Frankel

The world's largest underground aquifers – a source of fresh water for hundreds of millions of people — are being depleted at alarming rates, according to new NASA satellite data, that provides the most detailed picture yet of vital water reserves hidden under the Earth's surface.

Twenty-one of the world's 37 largest aquifers — from India and China to the United States and France — have passed their sustainability tipping points, meaning more water was removed than replaced during the decade-long study period, researchers announced on Tuesday. Thirteen aquifers have been put into the most troubled category, signaling a long-term problem that's likely to worsen as reliance on aquifers grows.

The NASA data is the first detailed assessment which vindicates scientists' concern that major aquifers are indeed struggling to keep pace with demands from agriculture, growing populations, and industries.

"The situation is quite critical," said Jay Famiglietti, senior water scientist at NASA's Jet Propulsion Laboratory in California.

Underground aquifers supply 35% of the water used by humans worldwide and its demand increases in times of drought. Rain-starved California is currently tapping aquifers for 60% of its water use as its rivers and above-ground reservoirs dry up, a steep increase from the usual 40%. The aquifers under the most stress are in poor, densely populated regions, such as north-west India, Pakistan and North Africa, where alternatives are limited and water shortages could quickly lead to instability.

The researchers used NASA's GRACE satellites for the study, spanning from 2003-2013, to take precise measurements. The satellites detected subtle changes in the Earth's gravitational pull, noting where the heavier weight of water exerted a greater pull on the orbiting spacecraft.

The world's most stressed aquifer — defined as suffering rapid depletion with little or no sign of recharging — was the Arabian Aquifer, a water source used by more than 60 million people. THE INDEPENDENT

AP

PYONGYANG PARCHED: North Korea has been hit by its worst drought in 100 years, the state-run news agency said on Tuesday, adding 30% of the paddy fields have dried up. This has sparked fears of food shortage in the country

Deccan Chronicle, Hyderabad dated June 19, 2015

PAPAL | SUGGESTION ■ **Environmental damage linked to inequality; warnings can't be ignored: Pope**

Pope asks rich nations to stop climate change

Vatican, July 18: Pope Francis on Thursday urged the world to act quickly to prevent "extraordinary" climate change from destroying the planet, saying rich countries must bear responsibility for creating the problem, and finance a solution.

In a near 200-page document, the leader of the world's 1.2 billion Catholics blames human greed and consumerism but also business and political figures for the situation "Our Sister, mother Earth" now finds itself in.

"This sister now cries out to us because of the harm we have inflicted on her by our irresponsible use and abuse of the goods with which God has endowed her," he writes in the long-anticipated Encyclical.

Arguing that environmental damage is intimately linked to inequality, he says doomsday predictions can no longer be dismissed.

Pope Francis

"The earth, our home, is beginning to look more and more like an immense pile of filth." Activists hailed the charismatic Argentinian pontiff's intervention as a potential game-changer in the debate over what causes global warming and how to reverse it.

● The US presidential candidate Jeb Bush, a Catholic, said the Pope's guidance would not affect his policies should he be elected. "I don't go to mass for economic policy or for things in politics," he said.

"Everyone, whether religious or secular, can and must respond to this clarion call for bold urgent action," said Kumi Naido, Greenpeace's international director.

Environmentalists hope the message will increase pressure for binding restrictions on carbon emissions to be agreed at global talks in Paris at the end of this year.

Christiana Figueres, the top United Nations climate change official, said Francis' call "should guide the world towards a strong and durable universal climate agreement in Paris."

But climate change sceptics dismissed the document's argument that the phenomenon is primarily man-made and that humanity can reverse it through lifestyle changes including an early phasing-out of fossil fuels. — *AFP*

The Times of India, Delhi dated June 20, 2015

Bagging the sun's energy

Reabestwe Mashigo

Reabetswe Ngwane and business partner Thato Kgatlhanye personify the buzzphrase social entrepreneurship. They have designed schoolbags, through their company Rethaka, that do more than carry books—they help children read them too.

Rethaka recycles plastic bags —easy to come by across the South African landscape—turning them into school bags which have built in solar power packs. These packs are charged all day in the sunlight while the children are at school, and are fully charged when the sun goes down providing much need light for doing homework. Thato Kgatlhanye came up with the idea and unsurprisingly the young woman was named first runner up at last year's (2014) Anzhisha Prize. The prize, now in its fifth year, awards young entrepreneurs from Africa.

Reabetswe Ngwane and Thato Kgatlhanye with their ingenious invention

"We currently have eight employees who are responsible for the entire process from the collection, washing and sorting of the plastic bags, through to the final stitching and delivery of the Repurpose Schoolbags," said Ngwane.

Even for those who are lucky enough to never have a shortage of lights, perhaps this is a way for anyone anywhere to conserve energy—after all sunlight is free and clean—the buzzwords of the future of energy globally.

The Times of India, Delhi dated June 20, 2015

Electricity from your garden

Christian ZÜrcher, Tages-Anzeiger, Niederglatt (Switzerland)

The table in the garden of a family home in Niederglatt, not far from Zurich, looks like many a garden table – simple design, chromium steel, matt finish. But there's a difference: one leg reveals a cable that runs along the ground and ends up in a power point. The table leaf is black and turns out to be made of glass, covering a set of solar panels. "My solar table – an energy-producing piece of furniture," says Markus Weingartner, an engineer, father of two, hobby innovator and furniture creator. The "solar table" generates 280 kilowatt-hours of electricity a year, enough to cover 30% of a person's energy consumption or to power an e-bike for 70 kilometres every day.

The Swiss authorities did not warm to Weingartner's concept for a long time because unlike rooftop panels, the electricity generated by the table is fed directly into the private grid through a power point. It does not have to be sold into the public grid and then repurchased, and it can be used instantaneously. "Most people don't even know that this is now possible," Weingartner says. Although the Federal Inspectorate for Heavy Current Installations (ESTI) took a lot of convincing (Weingartner: "It was a battle") it eventually sanctioned the idea.

This made Switzerland only the second country after the Netherlands to allow such a feed-in.

Railway adventure

Originally, railways were Weingartner's abiding passion. He studied electrical engineering, joined ABB, the Swiss-Swedish engineering group, and began developing railway software programmes. He moved to South Africa for several years to help develop the country's railway network. Upon returning to Switzerland in 2005, Weingartner redirected his professional career by adding a post-graduate diploma in photovoltaics. ("I'd been interested in this area since I was 18," says Weingartner, who is now 49.) He founded his own business for solar installations and employs five people. He calls it his "routine business". He broke out of the routine in 2013, when he designed his solar table because he anticipated a change:

"Ten years from now we won't be seeing a lot of solar panels on small roofs anymore." Although solar technology becomes ever cheaper, he says, installation costs will remain high while feed-in tariffs (i.e. compensation rates) will fall. For an individual, installing rooftop panels will become less and less viable. "The trend goes towards large-scale installations and cost-efficient solar parks."

Weingartner, who also builds solar panels for flower pots and side or coffee tables, sees a niche market for his solar furniture: "Ecology-minded people can do something for the environment without needing to obtain a building permit and having to spend 30,000 francs on a solar installation." So, is the table, which costs CHF 3,400, also a mission statement?

"Possibly," Weingartner says, but he prefers to paint a broader picture. He uses phrases like

"The sun is a democratic source of energy" or "The electric grid is today's energy internet".

Anybody can feed into the grid and purchase from it, it has become a "free market". While energy producers once pretty much cornered the market with their power plants, photovoltaics now gives many people the opportunity to become electricity suppliers. In short: for Weingartner, the solar table is the first step on his family's path to "energy self-sufficiency".

At least that's the idea, his vision. The reality is different: Weingartner's solar table is hardly a bestseller. He has sold some 30 pieces so far, but he needs to sell at least 300 to cover his expenses – high in the hundred thousands. It's difficult to find his furniture on the internet, let alone in the social media. "There's room for improvement," he concedes. Nor have any of the big furniture chains, such as IKEA, Interio or Micasa, added his invention to their product lines. Weingartner knows why: "The margins are too low." Micasa's Service Centre told "Tages-Anzeiger": "We take suggestions from customers on board and evaluate them on a supply-and-demand basis."

This leaves the furniture and garden shows. Weekend after weekend Weingartner carts his solar furniture around Switzerland. The experience is not encouraging: "People stop, have a look, say 'Wow, what a super idea' and amble off." So, is the willingness to invest in renewable energy overestimated or eroded by double standards? Weingartner wouldn't put it that harshly, but says: "It's what people do that counts, not what they say."

The dream market

Florian Stahl teaches marketing at the University of Mannheim in Germany and knows a thing or two about launching innovative products. "It takes time to market new ideas and inventions," he says, because human beings are basically tradition-bound and it is difficult to sell them change. "The important thing here is communication. You have to convince people that the product is the same, but better." Small companies find this difficult, he says, because they lack the resources for broad-based advertising campaigns. An alternative would be guerrilla marketing via social media or trying to sharpen the distribution process – either direct distribution to the end-seller (Stahl: "In this case rather difficult") or via production licences (Stahl: "Probably the best solution"). Weingartner sees some merit in the licensing option since he considers himself more of an innovator than a furniture maker. "In future, we will also offer a do-it-yourself solar table."

He has a longer-term vision as well: he wants to travel around India in ten years' time and see lots of furniture connected to power points – "now that would be it!"

For more information Website: http://energiemoebel.ch/

The Times of India, Delhi dated June 20, 2015

Energy supplied by humanitarian kite

The Zéphyr project, a photovoltaic balloon designed by students, aims to supply energy to disaster areas

Caroline de Malet (Le Figaro)

In the Iliad, Zephyr is a violent, stormy wind, while in the Odyssey and more recent literature, it is depicted as gentle and light—a warm breeze that melts the snow. In this project set up by two ambitious young Parisian graduates, Zephyr takes the form of a flying device that comes to the rescue of those living without electricity in disaster areas.

In emergency situations, the question of energy supply is often of critical importance. At the moment, electricity in refugee camps generally comes from heavy, polluting generators that require expensive fuel oil. The supply chains for such oil can be broken, making procurement unpredictable.

These problems gave the students the idea of designing a photovoltaic balloon inspired by inflatable balloons, which can generate energy anywhere—even in disaster areas where it is not possible to install land-based infrastructure as a result, for example, of a natural catastrophe. The students, graduates of Telecom ParisTech and the École Nationale Supérieure des Arts Décoratifs, met while working together from November 2013 to March 2014 on 'energies of the future' at the Laboratoire, a facility set up in Paris to bring together engineers and designers.

Energy for fifty people

The principle is based on a highly mobile, low-cost kit made up of a box housing the technology and a lightweight sail. The land-based housing contains an electrical transformer and is less than a cubic meter in volume, while the sail is 3.8 m in diameter and is covered with 15 m2 of lightweight solar panels. 'All you need to do is unfurl the sail and allow it to inflate. The balloon collects solar energy and transports it to the ground via a cable, while the batteries store surplus energy and take over the power supply at night,' explains Cédric Tomissi, one of the two young designers behind the project. The electrolyser uses nine litres of water plus the solar energy collected, coupled with the batteries inside the housing, to produce the gas needed to inflate Zéphyr in half a day. Halfway between a balloon and a kite, this hybrid device has a yield of up to 3 kilowatt hours (kWh), comparable to that of a traditional generator. This is enough to supply lighting and heating to around fifty people living, for example, in a refugee camp or emergency hospital.

The idea has not gone unnoticed. The young entrepreneurs have already won several awards, including the 2014 ArtScience prize, the 2014 James Dyson Award, first prize at the 2014 Student Entrepreneurship Day run by the Université Paris-Saclay, the 2014 Humanitech Challenge jointly organised by the Red Helmets Foundation and Orange and EDF's 'Sharing energy in the city, 2030' challenge. They were also given the opportunity to present their project at EDF's stand at the Saint-Étienne Design Biennale in March. 'It's a simple, environmentally friendly device,' explains Jonathan Bouzy, a project manager at Soft IQ and member of the Humanitech Challenge panel of judges. 'They are applying existing technology in a brand new way. That's what "high tech" is all about.'

A technical feasibility study was carried out on the balloon last November in partnership with EDF, Dassault Systèmes, the Red Helmets Foundation and the Institute of Research and Development on Photovoltaic Energy (IRDEP). The students worked particularly closely with the IRDEP to improve the balloon's photovoltaic technology. After one of the engineers who set up the project left the team to pursue other professional avenues, Zéphyr entered into a partnership with the EI-CESI engineering school, giving final-year Master's degree students the opportunity to work on technical aspects of the project.

This photovoltaic balloon is capable of generating energy in disaster areas where it is not possible to install land-based infrastructure.

From student project to start-up

The next stage is to build an initial prototype, which should be completed in January 2017 and will serve as 'proof of concept'. 'We think that we will need 25,000 euros to make it,' explains Julie Dautel, a designer who is currently studying at the Sciences-Po Paris research university. Zéphyr has already received around ten thousand euros from the various prizes that it has won and a fundraising campaign is planned to run from September 2015 to January 2016. The team hopes to use this investment to take on additional staff, particularly engineers. The two young entrepreneurs want to turn this student project into a start-up. Zéphyr is also currently applying to join the Sciences-Po Paris incubator.

The duo is aiming to move into an industrial phase and start selling the balloon in 2018. More investment (one million euros) will be required at this later stage. In the long term, the aim is to sell an entire range of balloons adapted to generate energy in different kinds of situations, including non-humanitarian applications. 'The balloon can be used for homes in remote areas where the roof cannot take the weight of traditional solar panels, at campsites and in nomadic encampments like those found in Africa and Asia. It can even be used to support communications technology,' explains Julie Dautel. For now, it will be some time before Zéphyr is ready to take to the air.

Green Vehicles Take Root with Cash Incentives

Sales more than doubled in April and May with direct cash incentives of ₹29,000 for bikes and ₹1.38 lakh for cars

Chanchal.Chauhan
@timesgroup.com

New Delhi: The government's efforts to drive sales of green vehicles through direct cash incentives appear to have paid off. Sales more than doubled in April and May, according to industry estimates, after the government started providing cash incentives of ₹29,000 for bikes and ₹1.38 lakh for cars.

More than 2,500 electric two-wheelers were sold during the two months, up from about 1,000 in the year-ago period, providing a lease of life to a struggling industry. "There has been an uptick in demand and we have noticed positive customer sentiment in certain markets," said Ayush Lohia, CEO at Lohia Auto Industries, a prominent two-wheeler manufacturer. "There is a definite improvement in inquiries and we expect the demand to translate into incremental sales in coming months as the incentive policy gets popularised."

Although India is the largest two-wheeler market for petrol engines, with an annual production of 18 million units, electric two-wheeler segment had been languishing for years with sales of just a few hundred units a month.

This changed with the notification of FAME India – Faster Adoption and Manufacturing of Hybrid and Electric vehicles in India – as part of the National Electric Mobility Mission Plan to promote eco-friendly vehicles. The policy, for which the government has earmarked ₹795 crore in the first two financial years, covers other vehicles including three-wheelers, buses and light commercial vehicles as well.

The incentive scheme helped home-grown electric carmaker Mahindra Reva, which has the world's largest production capacity in the segment, to double its monthly sales in the past few months. The company has been able to sell around 200 units of the E20, the new version of the erstwhile Reva electric car.

"We are committed to a greener environment and we will constantly work towards educating and encouraging the use of electric vehicles in India," said Praveen Shan, president and chief executive (automotive) at Mahindra & Mahindra.

"In the first go our monthly sales doubled to 80-100 units per month and once the charging infrastructure and government scheme gets popularised, we are expecting electric cars to get their rightful place in the Indian market," he added.

The government adopted FAME policy to promote faster switch to electric, hybrid and other green vehicles in order to reduce India's dependence on largely imported fossil fuels and improve environment by reducing vehicular pollution.

The National Electric Mobility Mission Plan target is to have at least seven million e-vehicles on Indian roads by 2020. The Centre plans to reduce VAT and road tax to the minimum on green vehicles with active participation of state governments.

The spurt in demand also took the world's largest carmaker Toyota by surprise. It sold more than 280 units of its Camry hybrid sedan in the first 50 days of the year, compared to 720 units sold in the entire 2014.

Move in the Right Direction

NATIONAL ELECTRIC MOBILITY MISSION PLAN: 7 million e-vehicles on Indian roads by 2020

CENTRE PLANS TO REDUCE VAT and road tax to the minimum for all green vehicles

Faster Adoption & Manufacturing of Hybrid and Electric vehicles in India (FAME) has improved sales in the past two months:

Segments	April-May 2015	April-May 2014
Electric 2-wheelers	2,500	1,000
Toyota Camry	280	720*(Full 2014)
Mahindra E20	200	100

*Source: Industry

The Economic Times, Delhi dated June 22, 2015

Deccan Chronicle, Hyderabad dated June 23, 2015

Solar panels a must in France

Paris, June 22: Rooftops on new buildings built in commercial zones in France must either be partially covered in plants or solar panels, under a law approved on Monday.

Green roofs have an isolating effect, helping reduce the amount of energy needed to heat a building in winter and cool it in summer, *The Guardian* reported.

They also retain rainwater, thus helping reduce problems with runoff, while favouring biodiversity and giving birds a place to nest in the urban jungle, ecologists say.

The law approved by parliament was more limited in scope than initial calls by French environmental activists to make green roofs that cover the entire surface mandatory on all new buildings.

- **Energy would be collected from the rooftop solar panels to heat rooms during the winter.**
- **Contrarily, it will also produce energy to cool rooms during the summer.**

The Socialist government convinced activists to limit the scope of the law to commercial buildings.

The law was also made less onerous for businesses by requiring only part of the roof to be covered with plants, and giving them the choice of installing solar panels to generate electricity instead.

Green roofs are popular in Germany and Australia, and Canada's city of Toronto adopted a by-law in 2009 mandating them in industrial and residential buildings. — *Agencies*

The Times of India, Delhi dated June 24, 2015

Former Chambal dacoits turn green warriors

TIMES NEWS NETWORK

aipur: Once they ruled the ravines of Chambal, now they are planning to launch a battle with an entirely different purpose. The dacoits — self confessed 'baghis' — who have laid down their arms years back, will give a lesson on saving environment and the forests, that served as their hideout years ago.

Seema Parihar, Gabbar Singh, Mohar Singh, Saru Singh, Malkhan Singh, Renu Yadav and Sarla Yadav, who once made headlines for their gunshots will gather in Jaipur in mid-July to take part in a 'mahakumbh' of former dacoits and their families. The 'mahakumbh' will be named 'Pehle basaya bihad — Ab bachayainge bihad' (Once we lived in forests — Now we will save forests).These dacoits, who had given a slip to the police many times in the 1970s and 1980s in the border areas of MP, Rajasthan and UP, now lead a normal life.

(Clockwise from above) Malkhan Singh, Saru Singh, Renu Yadav and Mohar Singh

These former dacoits will be seen appealing to the people and the government to take concrete steps to save environment and forests. "I went to Muraina, Bhind, Jhansi, Auraiya and other places in MP, UP and some places in Rajasthan to find these dacoits who once ruled the ravines of Chambal," Vishnu Lamba, an environment activist, said. "I met at least 22 dacoits till date and seven of them have already given their consent to take part in the programme. They include Seema Parihar, Malkhan Singh and Mohar Singh," Lamba of Shree Kalpatru Sansthan said.

Centre moots 'one child, one tree' plan

The government has devised an innovative plan to generate awareness for greater greenery in the country with its "One Child, One tree" programme that it hopes to begin this year. This time the programme that is meant to involve nursery-going children is an ambitious plan to have them plant a seed and nurture the plant till it grows into a tree. The idea is to create a bond between children and trees, right from childhood, environment minister Prakash Javadekar said. **Mohua Chatterjee**

Deccan Chronicle, Hyderabad dated June 25, 2015

GO GREEN

■ Said to be the largest afforestation programme in India

GREENERY WITH HARITHA HAARAM

V. NILESH | DC
HYDERABAD, JUNE 24

The TS government will start publicity campaigns across the state for the Telangana ku Haritha Haram (TKHH) on Thursday.

Touted to be one of the world's largest afforestation programmes, it aims to plant 230 crore saplings in three years. Nearly 40 crore saplings will be planted this year which have been raised in 4,213 nurseries across the state.

While afforestation programmes have been taken up across many states, none have been as massive as TS. ₹300 crore has been allotted for the afforestation programme out of which ₹70 crore has already been released for various works.

The main aspect of TKHH is involving people in the movement. A senior government official said, "All nurseries in the mandals have tied up with the gram panchayats along with details of available seedlings of various species. People can choose saplings of their choice and plant them wherever they want – homes, offices and fields. The state government has also tied up plantation activities with NREGA, which will attract many villagers to participate. Survival of plants will also be ensured as funds will be given to maintain the plants."

As part of TKHH, 80 local species of trees will be planted. And many of these will be doing more than just providing green cover. People can pick up species like guava, drumstick, papaya and curry leaves from the nurseries if they want to enjoy the produce as food or red sanders and teak if they want to reap economic benefits. Eetha (palm tree) will also be planted across the state as it will prove a source of revenue for villagers who can tap the toddy and sell it.

The government has planned the afforestation programme to the minutest detail. Books for each of the 120 constituencies in TS have been printed with information pertaining to location-wise, species specific planting of trees. Steps like digging of pits and transportation of saplings has been done along with preparation of village wise requirement of seedlings.

NEARLY 40 CR SAPLINGS WILL BE PLANTED THIS YEAR WHICH HAVE BEEN RAISED IN 4,213 NURSERIES ACROSS THE TELANGANA STATE

The Telangana ku Haritha Haram afforestation programme does not just aim at increasing green cover in the state but also increasing forest cover from the present 25.16% to 33%.

SAPLINGS TO BE PLANTED

Teak :	10.25 crores
Red Sanders:	23.85 lakhs
Bamboo:	62.87 lakhs
Silver Oak:	32.63 lakhs
Babul:	33.58 lakhs
Eetha(Palm):	32.06 lakhs
Kanuga:	2.08 crore
Pheltophorum:	70.48 lakhs
Gulmohar:	1.18 crore
Rela:	19.54 lakhs
Neem:	47.86 lakhs
Guava:	14.74 lakhs
Drumstick:	37.71 lakh
Curry leaves:	8.35 lakh
Others:	20 crore

INDUSTRIES TO GO WITH POLLUTION RESISTANT TREES

DC CORRESPONDENT
HYDERABAD, JUNE 24

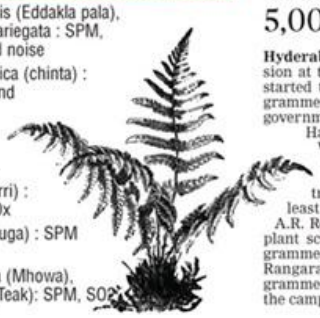
Industries, infamous for increasing pollution levels, will also be participating in the Telangana ku Haritha Haram programme as the Telangana State Industrial Infrastructure Corporation (TSIIC) aims to plant 1 crore saplings across all industrial estates.

The saplings which will be planted in the 148 industrial estates in the state will be of species identified by the TSIIC as having the potential to bear noxious pollutants released by the industries like sulphur dioxide, carbon monoxide, nitrogen oxide, suspended particulate matter and even noise pollution.

The TSIIC has identified 36 such "pollution resistant trees", which will be planted in industrial estates. The TSIIC will also take into account various parameters including soil type, functions —aesthetic, and water requirement etc. of the trees.

EXAMPLES OF POLLUTION RESISTANT SPECIES

- Astonia scholaris (Eddakla pala), Neem, Bauhinia variegata : SPM, SO2, NOx, CO and noise
- Tamarindus indica (chinta) : SPM, SO2, NOx and noise
- Dalbergia sissoo, Gulmohar, Eucalyptus, Ficus benghalensis (Marri) : SPM, SO2 and NOx
- Pongamia (Kanuga) : SPM and noise
- Madhuca indica (Mhowa), Tectona Grandis (Teak): SPM, SO2



The need for afforestation

DC CORRESPONDENT
HYDERABAD, JUNE 24

● The forest area in TS has been on a continual decline. Annual survey points out encroachments as a reason of declining forest cover in almost all districts in the state.

The Telangana ku Haritha Haram afforestation programme does not just aim at increasing green cover in the state or urban areas but also increase forest cover from the present 25.16 per cent to 33 per cent.

As per a senior government official, about 10-15 per cent of the 40 crore saplings raised this year will be planted in forests. As monsoon has arrived, planting of saplings has already begun in many forest areas. The official said that in such plantation drives, the survival rate of saplings was around 70 per cent, which means that there are chances of at least 25 crore saplings surviving.

However, all these efforts will be futile if the state government does not ensure that the threats of deforestation and encroachments in forests are removed. A single tree is said to consume nearly 22 kg of carbon dioxide every year once it matures, usually by the time it reaches 40 years of age.

While the increase in green cover in Telangana due to Haritha Haram will be visible in four-five years as the saplings will be of enough height by then to be recognized as green patches through satellite imagery, they will not be contributing much to the environment in terms of cutting down carbon footprint as compared to large mature trees of natural forests.

Sadly, the forest area in Telangana has been on a continual decline. The annual Survey of Forests reports released by the forest department always points out encroachments as a reason of declining forest cover in almost all districts in the state.

There has been a decline in forest cover by more than 100 sq. km in the last four-five years. Deforestation, felling of trees for smuggling, clearing of natural forests for various purposes take place on a regular basis. There are already 25 forest clearance proposals pending in TS just in 2015.

UOH TO PLANT 5,000 SAPLINGS

Hyderabad: The horticulture division at the University of Hyderabad started the university greening programme in association with the state government's Telangana Ku Haritha Haram programme on Wednesday to increase the green cover on the campus.

The Hyderabad-based central university aims to plant at least 5,000 trees this year. Prof A.R. Reddy from the department of plant sciences will oversee the programme. University Chancellor Dr C Rangarajan inaugurated the programme by planting a royal palm in the campus.

POLICE TAKE UP GREEN DRIVE

Hyderabad: The Cyberabad police commissionerate will plant over one lakh saplings in all police stations under its jurisdiction as part of Haritha Haram. On Wednesday Cyberabad police commissioner, C.V. Anand, said the police machinery was gearing up to assist the state government in the publicity campaign for the programme. CDs and cassettes will be played at many places and Haritha Haram stickers will be displayed on police and government vehicles as well as autorickshaws and cabs Ranga Reddy divisional forest officer Hari Kumar briefed police officers on the programme.

The Times of India, Delhi dated June 25, 2015

Cut emissions to protect people: Court to Dutch govt

The Hague: A Dutch court ordered the government to cut the country's greenhouse gas emissions by at least 25% by 2020 in a groundbreaking ruling on Wednesday that activists hope will set a worldwide precedent.

The Hague district court made the ruling in a case brought by a sustainability organization on behalf of some 900 citizens, claiming that the government has a duty of care to protect its people against looming dangers, including the effects of climate change on this low-lying country.

Climate activists in the packed courtroom cheered as Presiding Judge Hans Hofhuis read the ruling.

"A courageous judge. This is fantastic," said Sharona Ceha, who works for the Urgenda group that took the government to court. "This is for my children and grandchildren."

Dutch government lawyers swiftly left the courtroom after the judgment and could not immediately be reached for comment. The court said that based on current government climate policy the Netherlands will cut its emissions by only 17% by 2020, compared with benchmark 1990 levels. AP

The Times of India, Delhi dated June 25, 2015

On per capita terms, India far behind top 3 emitters

WRI Data May Help Delhi In Climate Talks

Vishwa.Mohan
@timesgroup.com

New Delhi: As the global community gears up for the crucial Paris climate summit, the World Resources Institute (WRI) — a global research organization — has come out with its latest analyses of the country-wise emissions of climate-damaging greenhouse gases. It shows India, despite being the fourth largest carbon emitter, continues to be far behind the other three top big emitters in terms of per capita emission.

Though the data, released by the WRI, cannot be used as an excuse by India for not acting against its emission, such figures will certainly give the country an upper hand while negotiating for a global climate deal. India invariably uses the 'per capita' yardstick while insisting on more comprehensive actions from rich nations.

COUNTRIES SPEWING POLLUTION

TOP 10 EMITTERS OF GHG

Countries	Percent of total emission
China	25.26
US	14.4
EU	10.16
India	6.96
Russia	5.36
Japan	3.11
Brazil	2.34
Indonesia	1.76
Mexico	1.67
Iran	1.65

TOP 10 PER CAPITA EMITTERS

Countries	Ton of emission per capita
US	19.86
Russia	16.22
Japan	10.54
Iran	9.36
EU	8.77
China	8.13
Mexico	5.99
Brazil	5.10
Indonesia	3.08
India	2.44

(Source: World Resources Institute)

However, developing countries like China, Mexico and Brazil too are way ahead of India in terms of their per capita contribution to the overall emissions. And, this is the reason why a section within the Indian government has time and again argued not to compare the country's action with that of the Chinese goal.

The WRI analysis is based on data from its Climate Analysis Indicators Tool (CAIT) that has recently released its emission figures for the year 2012. It also came out with details as how the various economic sectors have contributed to the overall emission.

"Per capita emissions are still distributed unequally", it said, pointing out that the per person emissions still vary among the top 10 emitters, with the United States' per capita emissions eight times that of India.

According to the figures, the largest emitters contribute a majority of global emissions as the top 10 emitters contribute over 72% of global greenhouse gas emissions (excluding land use change and forestry). On the other hand, the lowest 100 emitters contribute less than 3%.

"While universal climate action is necessary, significant mitigation actions are needed by the largest emitters, taking into account that they have different capacities to do so," said the WRI in its document.

It shows the energy sector is the dominant source of greenhouse gas emissions. It contributes more than 75% of global emissions. "A rapid transformation of the energy sector by 2050, as the G7 (top rich countries) suggested in their announcement, is necessary to avoid the worst impacts of climate change," it said.

The analysis also shows that emission sources vary by country. While the energy sector dominates, industrial emissions in China contribute more than 3% of global emissions and new data from the Food and Agriculture Organization (FAO) indicate that agriculture contributes a notable share of Brazil's and Australia's emissions.

"Mitigation policy options that countries should therefore align with their national circumstances", the WRI suggested while sharing and analyzing those figures. Six of the top 10 emitters are developing countries. China contributes approximately 25% of global emissions, making it the top emitter.

Edited by: Prof. Sushil Kumar
Centre for Business Sustainability, IIM Lucknow