

5 ways utilities can lead on climate goals

By Anmol Vanamali

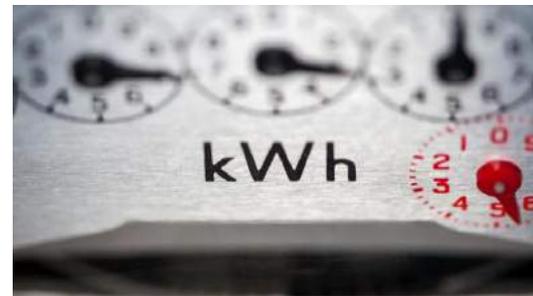
The energy supply sector — and primarily businesses related to electricity generation — was responsible for about 17 gigatons of carbon dioxide emissions in 2010, or about 35 percent of the global total.

According to the [Intergovernmental Panel on Climate Change \(PDF download\)](#), this figure could double or even triple by 2050 unless much greater

decarbonization of the sector is achieved.

Renewable energy, energy efficiency and behavioral change all have been identified as critical pathways leading to required decarbonization.

Although fossil fuels continue to be used to meet rising energy demand



How can electric utilities collaborate with the rest of the sector to reduce carbon emissions?

resulting from both population growth and economic expansion, exciting developments in the electricity sector indicate that this trend can be reversed and that decarbonization is feasible.

The agents behind these developments are private, public and also span public-private partnerships, reinforcing the notion that no one entity — and certainly not the much-vaunted utility — has the capacity or the responsibility to bear the brunt of reform.

To reach a higher-order magnitude of change, the entire electricity ecosystem has to work together. As identified in my previous article, Utility 2.0, the entire ecosystem of stakeholders — and not just the distribution utility — must evolve from its previous avatar.

Indeed, four changes that successful utility ecosystems already have begun to implement need to continue at a larger scale and a faster pace to ensure that the utility sector is part of the solution to meeting our energy needs and climate goals:

1. Deepening customer engagement

Utilities have begun to look at their customers as more than just rate-payers. This realization has been motivated and accelerated by challenges such as the emergence of emissions standards, affordable distributed generation, increased focus on energy efficiency and anemic economic growth in the case of matured economies.

This has led to an increasing degree of customer engagement, with a view to establishing a relationship that goes beyond selling electrons to being a “trusted energy adviser.”

This transformation is being enabled by customer engagement software platforms and smart devices that allow utilities to peek behind the meter into their customers’ lives. For example, using advanced meter-readings (such as

data mining), utilities are able to guide customers at an individualized level regarding their energy usage.

Through a combination of behavioral science, demand-response techniques and infrastructure upgrades, utilities are then able to help add value to customers’ lives by allowing them to achieve a lower utility bill or a more comfortable home or both.

This business model is still evolving, and companies are trying to use Big Data concepts to increase their effectiveness — on the one hand, helping utilities retain customers and reducing their cost of business, and on the other, helping customers make smarter usage-related choices and better investment decisions.

While seemingly innocuous, these developments are being valued highly by the marketplace, and the sector is seeing a proliferation of products and services being offered by an entire gamut of companies.

According to one study by GTM Research, the global utility data analytics market is expected to generate revenues of about \$20 billion between 2013 and 2020. This growth is expected to occur as the volume of data captured as well as the incentive to convert those in to usable information increases.

2. Increasing engagement with community

It doesn’t take a management guru to understand that an economically constrained society does not augur well for the utility business. Hence, utilities are only doing themselves a favor by participating in efforts to maintain economic vitality and resilience in their territories.

A great example of this is the emerging community solar movement, in which retail users use their aggregate demand and a virtual net metering infrastructure to purchase electricity from a remotely located distributed generator.

For example, a warehouse with a large suitable rooftop space can install a large photovoltaic array that generates more energy than it needs, and can sell the excess energy to interested retail consumers who purchase “shares” in the project, either through an upfront payment or a pay-as-you-go arrangement.

One obvious benefit of this model is that consumers who do not have adequate or appropriate rooftop space can participate in the solar energy revolution. Moreover, larger projects lead to economies of scale, which makes the resulting solar energy more affordable than small individual residential rooftop systems.

The community aspect of this business model is obvious if one considers that this opens up the possibility of allowing low-income residents and small-scale businesses to access such low-cost clean energy.

Such a mechanism can be used to ensure that large commercial buildings in residential neighborhoods can give back to the community. It can do this by providing solar energy produced on its rooftops to residents or small businesses situated around it affected by its construction and operations.

France, Germany and Canada, for example, already have regulations promoting green roofs. Community solar could be a great way for commercial and industrial facilities to share their wealth with the most vulnerable parts of the communities they operate in. Community solar also reinforces two trends in resource management — the sharing economy and democratization — which have begun to revolutionize our lives in myriad ways.

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A credit card to offset your individual carbon guilt

By Katy Sater

Would you like some carbon offsets with those fries?



The green credit card's customer rewards can be used to offset one's personal carbon footprint.

organizations in the carbon market as inspiration for the development of the credit card.

Newman recognized the limited scope of individual actions in the offsets market, and wanted to create an opportunity for individuals to take action as organizations do. Once individuals have taken basic steps to reduce their carbon footprint by, for example, changing out old lightbulbs for new, more efficient lightbulbs, it becomes incrementally more difficult and expensive to reduce their environmental impact.

Untapped market?

Individual offset purchases have been minor contributors to the overall volume of voluntary carbon market transactions. In 2013, Ecosystem Marketplace found that just over 200,000 ton of carbon dioxide equivalent (tCO₂e) were transacted by individuals, with an average price of \$17.40/tCO₂e. For comparison, the overall carbon offset market transacted 76 million offsets in 2013, with an average price of \$4.90/tCO₂e.

When asked about the relatively small size of the individual market, Newman is quick to point out the challenges for connecting individuals to the carbon market. He notes that offsets have not been marketed to consumers in a successful manner.

"Some airlines offered offsets after you purchased a plane ticket, but we feel that in a price sensitive purchasing transaction like airline tickets, this the wrong time to be asking a consumer to spend more money," he said.

Additionally, the ability to purchase offsets from companies based on different verification standards can be confusing to those not well-versed in the nuances of carbon offsets. Questions about transparency and what was being purchased also may have stymied the market.

"People often have had little transparency into what their offsets were going to fund and how the money was to be used," Newman said. "Transparency was not high in many instances a decade ago when the market was born."

The company started with the idea to of making offsets convenient and free, he said. What Sustain:Green is trying to do with its credit card and the individual consumer is to make offsetting as easy, transparent and cheap as possible. While offsets aren't free for Sustain:Green, they have gone as far as they can to make purchasing offsets free for its customers.

"The difference with the Sustain:Green card is that we are giving these offsets away for free as a reward," Newman said "People are not charged additionally for them, and there is no annual fee for having the card. Additionally, the rewards are automatically tied to spending."

To do this, the card, financially backed by Commerce Bank, offers what works out to be the equivalent of 2.7 percent cash back on purchases, not including the 5,000 pounds that users receive upon the first purchase. But instead of consumers receiving cash back to purchase individual offsets, the money will be used by Sustain:Green to purchase offsets through the American Carbon Registry(ACR). ACR is a nonprofit enterprise of Winrock International focused on developing carbon offset standards and methodologies, and also serving as a clearing house to register, verify and oversee offsets projects, and issue offsets from projects.

"I do really like the concept in that people don't really have to do anything," said Mary Grady, director of business Development for ACR, who secured and already has used a Sustain:Green card. "All they are doing is living their normal lives and shopping and while they're doing that, they're offsetting. I think it's really interesting and I'm hoping it will be successful."

As more consumers sign up for and start using the card, Sustain:Green will "fill up a 'bucket' of money to provide seed funding to get projects going." Once the bucket is full enough, Winrock International and ACR will suggest projects for Sustain:Green to invest in.

Cardholders also will be allowed to suggest projects that will be vetted by ACR, and then all the information will be put up on the Sustain:Green website and cardholders will be able to vote for projects they want to fund. The card has the other added environmental benefit of being biodegradable. This was something Sustain:Green specifically pursued, because Newman said "people overlook the amount of credit cards that get thrown away each year — it's about half a billion credit and debit cards every year."

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Tips:

Everywhere sensitization for sustainability is being done. The terms like Green purchasing, Green Power, Green building etc are commonly being used by people. To promote sustainability we are required to make changes in our life style, attitude and behavior. You will also agree habits cannot be changed easily, so what should be done? The ideal answer to this would be catching them young before habits are formed. Educate young children about this issue and guide them to behave in responsible manner. We are confident this will inculcate such habits in children that will definitely contribute positively towards sustainability. We are providing some tips that if practiced by children will bring outstanding results. Of course if practiced by all of us will have even better results.

1. Conservation of water: Tell them about depleting resources of water, the impact of not conserving water and using water recklessly. Not only to conserve fresh water but also to use water that goes through drain by using the same in watering plants and lawn.
2. Ask children to turn off the taps while brushing teeth and turn only when water is required.
3. Also tell them about rain water harvesting. Site example yourself by collecting rain water in an underground tank and using it for flush tanks of toilets or gardening.
4. Illustrate and inform them about recharging of groundwater. If possible do it at your lawn or kitchen garden.
5. Give children the responsibility of putting of lights, fan and other electric appliance while you are moving out.
6. Educate them not to waste paper preserve their text books etc so that they may be used by other poor children also tell them about the reasons behind that.
7. Ask them to use chalk and slate for doing rough work or practicing math sums, this will save paper as it can be wiped and reused. This will be economical too so you will save money.
8. On the Birthday of child ask them to plant sapling, this will bring affection towards plant and will develop caring for plants and trees. Also involve them in developing kitchen garden by making them participate in activities like growing vegetables, flowers etc.
9. Take their help in sorting recyclable materials from waste and reusable items like boxes and containers etc.
10. Get your child admitted to summer holiday camp/ classes where they are trained in creating useful articles from waste products.
11. Encourage your children to walk down small distances, in vacations help them to ride bicycle if they don't know riding bicycle. This will develop habit of using bicycle to cover small distances.
12. If children are grown up narrate them how using fossil fuel is not sustainable and why it should be used less. Encourage them to use bicycle and ask them to use public transport.
13. If you are thinking of buying a two wheeler for them give a serious thought to buy a electronic bike. It will be pollution free as well as economical and safe.

Lessons From the Ozone Hole, Movement on Global HFC Phase-Out

SustainableBusiness.com News

30 years ago, a hole in the ozone layer above Antarctica was discovered, and within three years, the world joined to solve the problem under the Montreal Protocol.

But now, all these years later, and with decades of research to back it up, we struggle to get similarly strong action on climate change. Some Republicans in Congress even question that humans can alter the atmosphere.

The ozone hole is a vivid example of how quickly humans can change our atmosphere and how long it takes to heal, Jon Shanklin - one of the scientists who first revealed it - told *The Guardian*.

It took only about 10 years to develop the ozone hole, but after 30 years it has just begun to recover. It will probably be well into the second half of this century before the CFCs completely dissipate, he says.

And what if we had done nothing? The ozone hole over Antarctica would be 40% larger today and would also be over parts of the Arctic, big enough to affect northern Europe, say scientists at the University of Leeds. UV levels would be about 10% higher in Australia, New Zealand and the UK, causing an even bigger spike in skin cancers.

But we have yet to learn that lesson, Shanklin says. "Then it was chlorofluorocarbons; today it is greenhouse gases" [which hang on in the atmosphere for centuries or more and we are pumping out these gases on a far greater scale].



Once scientists figured out what was causing the ozone hole, CFCs were banned in the most successful international treaty ever.

Addressing greenhouse gases is much, much harder. While repairing

the ozone hole was about banning one product - even though it was the main product used for refrigeration - halting carbon emissions cuts to the core of the most powerful industries on Earth.

Montreal Protocol to the Rescue

This week, another Montreal Protocol meeting takes place in Thailand, this time to phase out the successor to CFCs, which turned out to be super-greenhouse gases.

HFCs were developed as a temporary substitute for CFCs until truly clean alternatives could be developed (which are now readily available), and they too need to go. India and China have been holding efforts back, but now it looks like they are on board.

India wants advanced nations to phase them out by 2035, with another 15 years plus financial support for developing countries. China made a similar commitment.

Mostly used in air conditioning, refrigeration and insulating foam production, HFCs are growing fast worldwide. Although they only account for 2% of emissions, that's expected to double by 2020 and triple by 2030. As greenhouse gases, HFCs are about 10,000 times more potent than carbon dioxide.

As we've written about many times - If HFCs and other climate forcers are eliminated quickly (black carbon, methane, ground-level ozone), **the rate of global warming would be cut IN HALF**, keeping global temperature rise under the dreaded 2°C through the end of the century - and perhaps less than that. And it would slow Arctic ice melt by two-thirds.

[<Source>](#)

A Simple, Cool Idea: Solar Powered Taxi

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This is such a simple, cool idea!

Golden Sun Taxi is an open air vehicle that sits eight people and is powered by solar panels on top.

The idea came to the co-founders in a college entrepreneurship class and they started the company last June at Folly Beach, near Charleston, South Carolina.

Besides the taxi service, they offer island tours where they talk about the history and wildlife of the area.

"We want to create an experience that's memorable and changes peoples' idea of what a transportation company can be," Jake Cotreau tells Sierra Club. "It's really important for small and big businesses alike to show that solar is feasible and using renewable energy is economical. In time, we believe consumers will catch on and start using renewable power as a regular practice," says partner Matt Coda.



They see it as a way to educate people about solar because most customers know little about it and haven't seen solar panels up close. Some people take a ride just to experience the solar and many people want a good look at the panels.

Not buying gas saves the start-up money, but because of the amount of driving they do, they have to supplement solar with some battery power.

Their goal is to set up a national franchise.

"There's only one Earth," Coda told Sierra Club. "We cannot continue to pollute it without suffering the consequences. It's essential that businesses show the world that solar and other renewables really do make economic sense. Once businesses, big and small, are able to show that solar power works and it's not a gimmick, then consumers will follow."

[<Source>](#)

German car manufacturer Audi makes e-diesel from air, water

One India

Germany's luxury car manufacturer company Audi has reportedly invented a carbon-neutral diesel fuel, made solely from water, carbon dioxide and renewable energy sources, media reported on Monday. German Federal Minister of Education and Research Johanna Wanka is reportedly using the crystal clear e-fuel to power his A8. The invention of the e fuel is seen as huge step forward for sustainable transport and the fact that it's being backed by an automotive giant is even more exciting. The car manufacturer has now set up a pilot plant in Dresden in Germany to pump out 160 litres of the synthetic diesel every day in the coming months.

The blue crude as termed by the company has been made by using a three-step process. The first step involves harvesting renewable energy from sources such as wind, solar and hydropower. They then use this energy to split water into oxygen and pure hydrogen, using a process known as reversible electrolysis.

This hydrogen is then mixed with carbon monoxide, which is created from carbon dioxide that's been harvested from the atmosphere. The two react at high temperatures and under pressure, resulting in the production of the long-chain hydrocarbon compounds that make up the blue crude.

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Air pollution causes low birth weight, Beijing study shows

The reduction in air pollution achieved during the 2008 Beijing Olympics resulted in an increase in birth weight, new research has shown

By Karl Mathiesen



A child looks at a congested Beijing road. During the 2008 Olympics the government raised emissions standards and slashed the number of vehicles on the road. Photograph: Teh Eng Koon/AFP/Getty Images

Air pollution causes babies to be born smaller, according to a study of babies born just after the Beijing Olympics.

The research surveyed the birth weights of 83,672 babies born in Beijing around the time of the 2008 Olympics, when the government closed down industry, raised vehicle emissions standards, stopped construction and introduced a license plate rotation to slash the number of vehicles on the road.

The massive state intervention created a one-off natural laboratory in which air

pollution levels in one of the most choked cities on Earth reduced by between 18% and 59% during the summer of 2008. Birth weights were an average of 23g higher for babies who were in the eighth month of pregnancy during the summer of the Games than during the same period in 2007 and 2009.

"These findings not only illustrate one of the many significant health consequences of pollution, but also demonstrate that this phenomenon can be reversed," said associate professor David Rich, a health scientist from the University of Rochester in the US.

"Even a short term reduction in pollution in a community has a very large public health impact. Some of these babies will have fewer complications or diseases later in life. So any time we can improve or increase birth weight we're protecting not only the babies when they are born, but also in later life," he said.

Rich said that when the results were extrapolated beyond Beijing's smoggy suburbs the total impact of air pollution was massive. "A major percentage of the world's population lives in environments with pollution levels this high. You could name a lot of those cities in China and India. But this shouldn't be thought of as only a problem in cities with very high air pollution. Even in cities that have lower pollution we see effects on birth weight."

Mothers who were between one and seven months pregnant during the Beijing Olympics gave birth to babies of a similar size in all three years studied. Rich said the short period of lower pollution, and these mothers' subsequent exposure to higher levels before giving birth, did not prove that no positive effect occurred from cleaner air during the early months of pregnancy.

But the study showed that during late pregnancy air pollution was restricting the fastest phase of foetal development. Rich said this was likely due to a restriction of nutrient delivery through the placenta, but the precise reason was unknown.

Air pollution has been identified as one of the biggest environmental health risks facing people worldwide. Long term exposure has been shown to cause millions of deaths.

The new study, published on Tuesday in *Environmental Health Perspectives*, follows other work that has shown pollution can have an insidious effect even before our lungs have started breathing air.



A woman wearing a face mask to protect her from poor air quality. The wall behind her reads "scientific development and amazing achievement". Photograph: Feng Li/Getty Images

Jonathan Griggs, a paediatric professor at Queen Mary University of London, said it strengthened this body of evidence. He said that 23g was a small impact on an individual child, but the impact for some vulnerable children would be larger and could push thousands of children in Beijing into a "clinically significant low birth weight" category of below 2.5kg.

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Time to Brace for Serious Temperature Rise, Say Scientists

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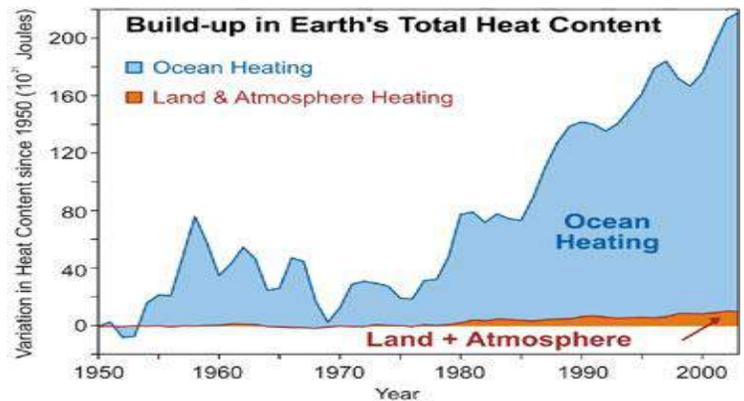
Just as worldwide efforts on climate change are beginning to bear fruit, evidence that we waited way too long is also evident.

Scientists at Pacific Northwest Labs predict that climate change has reached the tipping point and we must brace ourselves for accelerating global temperature rise - potentially 0.25°C per decade - a pace not seen for at least 1000 years, reports *The Guardian*.

"In these climate model simulations, the world is just now starting to enter a new phase, where rates of temperature change are consistently larger than historical values over previous 40-year time spans," lead scientist Steve Smith told *The Guardian*.

By 2040, costs related to climate change could become a "serious challenge" for businesses, because of property damage from severe weather. Costs could rise by a factor of 10 by then, say economists who conducted the study.

The lull that Republicans love to point to is ending. One of their main climate denial talking points is that temperatures haven't increased in the past 10-15 years. While that is false - the past decade was the warmest ever, topped by 2014 - temperatures have been rising slowly because the ocean has been absorbing almost all the heat.



But the ocean is saturated now and we will soon be feeling the impact. Scientists are seeing signs that the oceans might be starting to release some of that pent-up thermal energy.

"Pacific trade winds, for instance, which have been unusually strong for the past two decades thanks to a 20- to 30-year cycle called the Interdecadal Pacific Oscillation, have been pumping atmospheric heat down into the western Pacific. The winds are powered by the cycle's current negative, or cool, phase. But scientists say that when the cycle eventually swings back to its positive, warm phase, which history suggests could occur within a decade, the winds will wind down, the pumping will let up, and buried heat will rise back into the atmosphere," reports *Yale360*.

"Without the winds' cooling action, atmospheric temperatures could surge as they did in the 1980s and 1990s, the last time the oscillation was positive. During the next positive phase, "it's very much likely that warming will be as fast or even faster because greenhouse gases are now more elevated," explains Matthew England, ocean sciences professor at University of New South Wales.

"Greenhouse gases in the atmosphere are at such high concentrations compared to what they were 100 years ago that you don't need to bring heat back up from the ocean to the surface to get future warming - you just need to slow down the heat uptake by the ocean, and greenhouse gases will do the rest," he adds.

"The ocean's doing us a favor by grabbing about 90% of our heat, but it's not going to do it forever," warns John Abraham, a thermal sciences professor at University of St. Thomas in Minnesota.

When carbon dioxide was at these levels previously in history, polar ice melted and flooded the oceans, raising sea level up to 130 feet higher than today's levels.

[<Source>](#)

Raise a glass to neat ideas for more eco-friendly whisky

The Scottish whisky industry is starting to make the most of its industrial by-product to produce energy from anaerobic digestion and biomass



In the last five years the Scottish whisky industry has undergone something of an energy revolution. Photograph: Jeff J Mitchell/Getty Images

It may have a heritage dating back centuries, but in the last five years the Scottish whisky industry has undergone something of an energy revolution.

In 2009, the Scotch Whisky Association (SWA) launched an Industry Environmental Strategy for its membership of 101 malt and seven grain distilleries, accounting

for over 90% of the industry. Alongside commitments on water reduction and packaging, it set a target of 20% energy from renewable sources by 2020 and 80% by 2050. At the time of the strategy launch, non-fossil fuel energy use in the industry was at 3% and by 2012 it had reached 16%.

The SWA is currently crunching the latest figures, but it's possible that the 2020 target will be met ahead of time. So, how is it making this progress?

Replacing fossil fuels

The distilling process is energy intensive. The main energy requirement (79%) goes into the heat required (pdf) to fire the giant stills which drive the distillation process, traditionally done by burning fossil fuels.

However, the industry has now discovered an energy source much closer to home, namely "draff" – the spent grain left over from distilling. Using draff, energy can be produced either through biomass combustion by burning dried waste draff, or through anaerobic digestion (AD), whereby draff is mixed with pot ale (the yeast and protein-rich liquid created during distillation) to produce methane.

Anaerobic digestion

Julie Hesketh-Laird, director of operational and technical affairs at SWA, says that AD, the process by which organic matter is broken down to produce biogas and biofertiliser, has only been looked at properly in Scotch whisky production over the last four to five years. "The batch nature of malt distilling has made it difficult, but increasingly companies have had success."

Willie Fergusson, key account manager at Resource Efficient Scotland, explains that some distillers favour AD "from a circular economy point of view" because it "allows you to create gas, and a further by-product that can go to fertiliser or animal feed ... whereas biomass effectively burns all the raw material."

Iain Lochhead, operations director at five distillery sites for Bacardi-owned John Dewar & Sons, says that a wood-pellet boiler at its Aberfeldy site has been operational since the end of 2014. Bacardi estimates that the project could reduce the distillery's carbon footprint by up to 90%.

"We are currently installing a second at Royal Brackla distillery, he says, "which means we will have removed heavy fuel oil from the mix entirely ... Anaerobic digestion is something we are also looking at as an option on the site."

Other distilleries using AD include Willam Grant & Sons' (brands including Glenfiddich) site in Girvan, the Dalhainne malt whisky distillery in Speyside and the Edinburgh Scotch whisky grain distillery (Famous Grouse and Johnnie Walker Black Label).

Going big

The next stage appears to be collaborating on a larger scale. "Like any industry, it starts off at a cottage scale, it begins to polarise into local small units, and then develops into bigger hubs," says Fergusson. "It lends itself to co-operation in terms of developing economies of scale."

Diageo's £17m bioenergy plant at the Roseisle distillery was one of the first in the industry, but that is soon to be eclipsed by its £65m bioenergy plant

combining biomass combustion, AD and reverse osmosis at its Cameronbridge distillery. An impressive 5.5MW output meets 95% of the site's energy needs and reduces the corporation's global emissions by more than 5%.

The biggest example of industry collaboration so far, however, is the CoRDe biomass energy plant in Rothes, which takes the by-product from 16 local distilleries produces up to 8.3MW through a combined biomass burning scheme, enough to power 9,000 homes.

While there is no similar large-scale AD plant in the pipeline, Fergusson has heard discussions, although any plans must get around the challenges of finding the quantity of material and transporting it.

Other neat ideas

There are other potential uses for whisky by-products in the pipeline too. A team from Heriot-Watt University has received £600,000 in funding from Scottish Enterprise for "Horizon Proteins" – a process developed to replace traditional proteins used in salmon farm feed, such as fish meal and soya, with proteins extracted from draff and pot ale. The removal of protein in turn improves the by-product for AD by decreasing the nitrogen load. Hesketh-Laird says the SWA is "really interested" in this work and following it closely.

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Netherlands SolarRoad Can Power a Home

SustainableBusiness.com News

Six months and 150,000 bicyclists later, the SolarRoad is considered a success.

A 230-foot bike path over embedded solar panels produces enough energy for a single-person home - a good start at 3000 kilowatt-hours. The test path is in the Netherlands near Amsterdam.

"We did not expect a yield as high as this so quickly," says Sten de Wit, a spokesperson for SolarRoad.

The idea is simple: why not turn some of the millions of miles of roads drenched in sunshine into solar panels? It could power street lights and traffic systems and in time, even electric cars and households.

You can barely see the solar panels beneath the cyclists. The other side of the road is left as is, as a "control" in the experiment:



While a flat solar panel is 30% less efficient than those at an angle or rooftop, there's plenty of surface to make up for that.

A group of engineers stepped to the challenge of designing a solar road that repels dirt, resists skids and

is strong enough to bear buses and trucks. The result: prefabricated concrete modules topped with a translucent layer of tempered glass covering the solar panels underneath. Solar panels are connected to smart meters, which optimize their output, and feed electricity to street lighting or the grid.

While cyclists have "hardly noticed it's a special path," engineers are improving the top layer because the glass coating shrinks with big fluctuations in temperature. Parts of it have peeled off in early spring and early winter.

The project is a public-private partnership between the Dutch province of Noord-Holland and engineering firms TNO, Ooms Civiel and Imtech. It has a \$3.9 million budget.

Solar Roadways in the US

In the US, a startup called Solar Roadways raised an amazing \$2.2 million last year through crowdfunding as well as \$850,000 from the US Federal Highway Administration for a pilot.

Although paving roads with solar is also their goal, they are starting with parking lots, driveways and sidewalks.

Their solar "bricks" are octagonal

[<Source>](#)

Brewing a greener cuppa joe at Starbucks and Thanksgiving Coffee

Marc Gunther



Aside from being in the coffee trade, Starbucks and Thanksgiving Coffee would appear to have little in common.

Seattle-based Starbucks is a FORTUNE 500 company (2011 revenues: \$11.7 billion) that sells its brews all over the world, pursues global dominance (its latest outpost is Helsinki) and owns an iconic brand. The company bought about 428 million pounds of coffee last year.

Thanksgiving Coffee is a family-owned, artisan roaster that sells most of its coffee to grocers, specialty stores and restaurants near its home base in Mendocino County, CA, where the other popular crop is often smoked. Thanksgiving bought about 500,000 pounds of coffee last year.

Yet the big coffee company and the little one share a couple of important goals.

First, they want to win the trust of their customers and, of course, their own employees. One way to do that is by showing them that their coffee is ethically sourced. Starbucks talks about responsibly grown coffee, citing its Coffee and Farmer Equity (CAFE) Practices, a set of social, economic, environmental and quality guidelines. Thanksgiving's slogan is "Not Just a Cup, but a Just Cup." Reputation matters, whether you are big or small.

But, even if reputation didn't matter (and to most customers, it probably doesn't), Starbucks and Thanksgiving need to devote their attention to the social and environmental practices of their growers, upon whom they depend for a reliable supply of high-quality coffee. If their coffee farmers run into trouble -- because of low coffee prices, poor environmental practices or climate change -- Starbucks and Thanksgiving will struggle, too.

The other day, I wrote about the Fair Trade movement and its efforts to improve the lives of coffee growers. (See my blog post, A Schism over Fair Trade.) About 9 percent of the coffee sold by Starbucks in the U.S. is certified as Fair Trade; all of Thanksgiving's coffee is Fair Trade certified. Today, I'll dig a bit deeper into the ways Starbucks and Thanksgiving work with growers.

By way of background, coffee, as you may know, is the most widely traded agricultural commodity in the tropics, providing a livelihood to tens of millions of farmers. (Brazil and Vietnam are the largest exporters, followed by Colombia, Ethiopia and Indonesia.) Historically, the relationship between buyers and growers has been transactional; prices paid to farmers sometimes didn't cover their costs, forcing them into cycles of debt and poverty. Cheap, low-grade coffee known as robusta is still traded as global commodity, with wildly fluctuating prices, sometimes less than \$1 a pound.



At Starbucks, I spoke by phone with Ben Packard, vice president of global responsibility, and Kelly Goodejohn, director of ethical sourcing. (Disclosure: Ben is a friend, and we're both members of the board of Net Impact.) They told me that Starbucks has worked with Conservation International, a global nonprofit, since 1998 on coffee buying; together they launched CAFE practices in 2004. Their relationship isn't arms-length; Starbucks pays CI for its advice and consulting services. Starbucks has pledged to have 100 percent of its coffee "ethically sourced," either by meeting the CAFE practices standards, or by being certified as Fair Trade or Organic, by 2015. In 2011, about 86 percent was certified.

The CAFE practices program has 249 (!) indicators to measure growers' social and environmental performance -- everything from the wages and benefits they provide to their use of pesticides and water. They are classified in three categories: Verified, Preferred and Strategic. "The goal is continuous improvement," Ben told me.

Farmers that perform well enough to enter the program are rewarded with higher prices, technical support and, in some cases, loans. Starbucks paid an average price of \$1.56 per pound for our premium green (unroasted) coffee in 2010.

Since 2008, Starbucks and CI have monitored and evaluated the program to see what difference it is making on the ground. "Almost all the indicators are moving in the right direction," Kelly said. Between 2008 and 2010, about 30 percent of the farms that were certified moved up a category. About 99 percent did not convert any natural forest to farmland. The added income made a difference, too.

"More CAFE practices farmers sent their children to secondary school," Kelly said. Not everything was working as well as it should. Between 19 and 23 percent of farms applied chemicals within 10 meters of bodies of water. Between 8 and 31 percent of mills failed to provide their workers with clean drinking water.

Justin Ward and Bambi Semroc, who oversee the program for CI, concurred that most of the findings were positive. What makes the Starbucks program a standout, Justin said, is the company's willingness to measure impact and be open about what it has found. You can download the 153-page report here.

At Thanksgiving Coffee, I spoke over Skype with Ben Corey-Moran, the president and director of coffee, about the company's work helping farmers in Rwanda adapt to climate change. Climate change is a worry for growers: A peer-reviewed study reports that higher temperatures are already allowing a pest known as coffee borer beetle to spread further in East Africa, threatening livelihoods, and a coffee journal, Fresh Cup, devoted a recent issue to climate change threats and adaptation.



Ben told me that Thanksgiving is very focused on its growers. "We envision ourselves as the bridge that connects coffee lovers with farmers on the other side of the world," he said. "How can every transaction, how can every pound of coffee we buy and sell be sourced in a way that restores the environment and benefits the farmers?"

Thanksgiving Coffee was invited to work in Rwanda in 2004 by USAID, which was helping rebuild the Rwandan coffee industry. The company, to its surprise, found fruit that was literally dying on the vine. "I'd never seen a crop fail before it had actually been harvested," Ben said. Farmers told him that summers were drier than they had been. "We've always know that weather affects our business. Climate change makes that weather more extreme," he said.

The solution was fairly obvious. Coffee is best grown under a shade canopy. In Rwanda, it was being grown in the open sun. So Thanksgiving Coffee, with the help of a Dutch nonprofit named Progreso and a Rwandan NGO called, Redi, began a tree-planting project, to create a forest canopy.

Together they financed the construction of seedling nurseries, hired agronomists and brought information technology to the Dukunde Kawa cooperative, which has about 1,800 farmer-owners. Tree planting does more than cool the coffee as it ripens; it helps protect topsoil, buffers the impact of rain and allows the soil to retain more moisture during dry periods. "We can't change the weather, but maybe we can change the way the farms withstand the weather," Ben said. For an investment of less than \$40,000, the farmers and their allies planted about 300,000 trees.

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How water offsets can fix the drought (and save energy)

By Jeremy Faludi



Shutterstock

Water offsets could be one way to reconcile broken pricing schemes in the face of severe drought.

save water in California that could provide more savings at less cost than many other measures: water offsets.

Roughly 80 percent of the state's water is used for agricultural irrigation, and half of that water is wasted — evaporating before it ever sees the crops — making irrigation a far more effective way to address water scarcity than reduce.

And farmers are not solely to blame; it's the state's underlying water rights and pricing systems that encourage waste. Still, these systems are not likely to be adequately reformed anytime soon.

In the meantime, water offsets could act as a patch to work around these misaligned incentives, connecting those who pay too much for their water with those that do not pay enough. The goal would be having Californians invest their money in the most effective water-saving systems.

Green architects design buildings to save water in many ways, and spend significant amounts of money to do so. But the amount of money spent on installing low-flow sinks, faucets, and showers in a building could actually save three to nine times as much water if it were spent buying part of a drip irrigation system for a Central Valley farmer.

Farmers generally do not have the money to pay for such systems — and even if they did, the price they pay for water is so low that the investment would not pay off. Urban water prices, however, are significantly higher.

That's where building design comes in; buildings applying for LEED certification have several points to earn related to water savings, and builders by definition have capital available to invest in a project. For over a decade, LEED-certified buildings and others have paid for "renewable energy credits."

These credits are money paid to an electricity generation company to install new windmills or solar panels equivalent to the amount of energy the building uses. While the building itself uses normal grid electricity, the new renewable energy generation matches the building's power use, so that on a global scale it is as if the building had those solar panels or windmills on its roof.

The difference is that it's usually more cost-effective. Rooftop wind systems generate far less electricity per dollar spent than two-hundred-foot-high towers on windy plains. The same is true for water use.

Forging new financial models

Eight years ago, I proposed water offsets and ran rough calculations for how much more water would be saved by a new building owner buying a drip irrigation system for a farmer, as opposed to buying low-flow fixtures for the new building at hand.

At the time, the multiplier was 3.5x or more; \$6,000 could buy 20 waterless urinals, which would save about 340,000 gallons per year, or the same \$6,000 could buy ten acres of drip irrigation system, which would save about 1.2 million gallons per year.

And that was before the drought.

Now the difference between drip irrigation and traditional irrigation will be even larger, due to more evaporation losses over drier lands. Other calculations I ran with dry locations, such as Arizona, suggested that water offsets could save 8 or 9 times more water there than the same investment in a building's low-flow fixtures.

Everyone in California is aware of the record drought we find ourselves faced with. However, most of the solutions being proposed will cost Californians significant amounts of money without significantly reducing water use.

One method to help

Such calculations will certainly not be exact today, so I encourage experts to re-run the numbers on likely savings. If even half of the benefit described here could be gained by water offsets, it would radically improve the effectiveness of water reduction.

Indeed, variations of this model actually exist today.

The nonprofit Bonneville Environmental Foundation (BEF) offers "water restoration certificates" that can include either habitat restoration or installation of water-saving irrigation systems. They are a credible organization already used by LEED practitioners for carbon credits and renewable energy credits.

Water offsets from them and others need not be limited to new building construction; just as with carbon offsets, anyone can buy them, and each individual's small payment would provide a small percentage of a large installation of drip irrigation.

Or, more similarly to the building industry, urban water utilities considering installing water-saving equipment could instead pay for a farmer's drip irrigation and negotiate with the state for credit towards their water reduction mandate.

In addition to the water savings, water offsets also save electricity; 2-to-3 percent of California's entire electricity generation is used just to pump water from Northern California to Southern California.

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World Needs to Triple Spending on Clean Energy Innovation, Says IEA

SustainableBusiness.com News

MIT isn't the only group pushing for more innovation on renewable energy technologies, so is the International Energy Agency (IEA).

In fact, it is the only way the world can stay below a 2 degree C rise in global temperature, they say in *Energy Technology Perspectives 2015*.

"We are setting ourselves environmental and energy access targets that rely on better technologies. Today's annual government spending on energy research and development is estimated to be \$17 billion. Tripling this level, as we recommend, requires governments and the private sector to work closely together and shift their focus to low-carbon technologies," says Executive Director Maria van der Hoeven.

While onshore wind and solar PV are "ready to be mainstreamed in many energy systems" we need innovation on enabling technologies that better integrate them into the grid, such as energy storage and smart grid infrastructure.

Alevo opens North Carolina factory for grid-scale energy storage products:



"The shale gas and shale oil boom of the last few years was virtually unthinkable at the dawn of this century," she says. "If we only stick to the beaten path of today, we will miss the game-changers of tomorrow."

While we are beginning to see the tie between energy consumption and economic growth breaking, we need to move this along at double the pace.

Government spending on energy R&D has been growing in absolute terms since the late 1990s, but as a percentage of total R&D it is way down. Since peaking at 11% in 1981, R&D has remained flat at 3-4% since 2000, says IEA.

[<Source>](#)

The military spy turned sustainability warrior - drones have come of age

Once used almost exclusively for military surveillance and warfare, drone technology today is being put to work by farmers, conservation charities and companies such as BP and Cargill

By Dominic Bates



Drones fly over a wheat field to spray insecticide in Shijiazhuang, north China's Hebei Province. Photograph: Xinhua /Landov/Barcroft Media

Drones have come a long way, from their military origins as sinister hardware for spying and remote warfare to their more recent use by conservation charities monitoring whaling ships and rare bird nests.

This year's Drones for Good awards finalists included social enterprises hoping to develop unmanned aerial vehicles (UAVs) to deliver vaccinations in Africa,

provide better planning in India's slums and help with international disaster relief planning.

In business, companies such as Amazon and Facebook have been grabbing the headlines and the public's imagination with multimillion-dollar research into drones for same-day deliveries and to expand the internet to remote parts of the world. While these are a long way from commercial reality, other industries are finding numerous uses for drone technology – uses that could bring wider benefits to the environment and society, as well as greater efficiencies.

BP, granted the first commercial license to fly drones over US soil in June last year, uses UAVs to monitor its oil infrastructure in Alaska, helping to spot potential pipeline leaks and protect the safety of its workforce on the ground.

"This technology is proving invaluable at our Prudhoe Bay site, where floods, ice break-ups and ice floes constantly alter the topography, making other monitoring methods difficult, costly and time-consuming," says a BP spokesperson.

Elsewhere, BP says it is using drones to produce 3D models of outcrops in Azerbaijan and has flown an unmanned "octocopter" around a 100m cooling tower in Hull to check its integrity, "removing the need for scaffolding and people working at height".

Another multinational and one of the world's largest agricultural companies, Cargill, is just starting to use drones to help monitor its commitment to zero deforestation in its palm oil supply chains in Indonesia.

"The drones will help us map, identify and monitor environmentally sensitive areas," says Tom Vandyck, media specialist at Cargill. "They'll also augment our efforts against burning and illegal forest clearing through faster and more accurate detection. With the right sensor on board, they can help us with yield intensification – a plus on the sustainability side, because it means more palm oil from the same amount of land."

It's an interesting example of a company employing the methods used by conservation charities campaigning against it as a tool for its own sustainability strategy. While it's too early for meaningful results from the drones, Vandyck says Cargill is planning to allow independent third parties to produce publicly-available maps of their plantations to ensure impartiality.

"As drones and sensors get more advanced, we can expect them to play increasingly important roles," he says. "They're cheaper to operate than acquiring images from satellites, deployable on short notice, unhindered by cloud cover and generate images at a much higher resolution."

But he adds: "It's important to note that drones alone do not improve sustainability – it is the action we take on the information gathered that makes the impact."

Jonathan Evans, assistant land management adviser at the National Farmer's Union, agrees that it's the analysis of the data provided, and the management decisions drones help inform, that matter. Farmers have been among their earliest commercial adopters in the UK, and their use to survey crop health and yields, monitor livestock and even deter pigeons is increasing every year.

"The whole idea of drones in arable production is to improve production and efficiency, making more efficient use of pesticides and fertilisers by identifying

sections that need them or where they can be best used," says Evans. "The agronomists and farmers work alongside third party companies actually doing the analysis, so it's creating more opportunities for these companies to grow."

One such company is Ursula Agriculture, which began in 2013 as a research project funded by the Welsh Assembly and now works with international agrichemical companies such as Syngenta and Bayer Crop Science.

"We can identify weeds, like black grass, because it has a different spectral range than the crop," says Ursula Agriculture's William Allbrook. "We can be pretty precise, making a map, processing the data and providing it to a GPS tractor for spraying."

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Air pollution costs Europe \$1.6tn a year in early deaths and disease, say WHO

Costs of dirty air are equivalent to about a tenth of Europe's GDP, with Germany, UK and Italy among the hardest hit economically

By Fiona Harvey

The financial cost of air pollution in Europe stands at more than \$1.6tn (£1.5tn) a year, a study by the World Health Organisation (WHO) has found, equating to about a tenth of the GDP of the continent.

While air pollution has long been known to be a major environmental burden, the costs in human and economic terms have not been categorised before.

The costs come in the form of 600,000 premature deaths each year, and the sickness caused to hundreds of thousands of other people from preventable causes, such as pollution from small particles that come from the exhausts of diesel vehicles, and nitrogen dioxide, a gas that can inhibit breathing in vulnerable people.

The figures are from 2010, the latest year for which full data is available, and cover the whole of the European region, including non-EU states such as Norway and Switzerland, and are compiled by the WHO Regional Office for Europe and the Organisation for Economic Co-operation and Development (OECD).

Zsuzsanna Jakab, regional director for Europe at the WHO, said: "Curbing the health effects of air pollution pays dividends. The evidence we have provides decision-makers across the whole of government with a compelling reason to act."

In many east European countries, the WHO data shows, the economic costs of dirty air are more than 10% of their GDP. On absolute economic costs, the top 10 list is dominated by major economies including the UK, Germany and Italy.

In the UK, air pollution has become so bad in London that the European Union is to levy fines on local government, reflecting years in which the extent of pollution has been in excess of EU standards. The Supreme Court is expected to issue judgment on Wednesday on a case brought against the UK government for its breach of EU pollution limits.

The WHO report found that air pollution was the single biggest environmental health risk in Europe, with the damage from outdoor risks such as diesel exhaust pollution accounting for 482,000 deaths in 2012 from heart and respiratory diseases alone. The deaths or sickness of at least one in four Europeans can be traced to environmental pollution, according to the organisation.

In March, the European Environment Agency warned that hundreds of thousands of people would die prematurely over the next two decades from air pollution because of governments' failure to act.

However, the issue of air pollution has attracted little political attention in the UK, and has played little part in the current general election campaigns by the major political parties.

[Economic cost of deaths from air pollution](#)

[<ReadMore>](#)



A faint view of the landmark Arc de Triomphe is seen through a pollution haze in Paris. Photograph: Yoan Valat/EPA

Argan oil: the cost of the beauty industry's latest wonder ingredient

Supplies of the Berbers' anti-ageing oil, discovered by big brands from L'Oréal to Lush, could be threatened by overuse, deforestation ... and even goats

Argan oil has gone from a natural, tribal ingredient to one of the most prized oils in the world as cosmetics companies have woken up to its anti-ageing properties.



Two Berber women producing argan oil, Morocco, Africa. Photograph: imageBROKER/Alamy

deforestation and even goats.

What is argan oil?

Traditionally, argan oil was used extensively in Morocco to treat various ailments, such as dry skin, acne, wrinkles and joint pain. Toasted, it is also a common ingredient in cooking, with health benefits ranging from lowering cholesterol to easing arthritis. As western countries cottoned on to this apparently magical resource, demand has shot up, with argan oil appearing in everything from shampoo bars to instant eye-tightening serum.



Goats climbing up an Argan tree, near Essaouira. Photograph: Fadel Senna/AFP/Getty Images

The argan tree is grown almost exclusively in the barren lands of south-western Morocco. A natural barrier against the advance of the desert, it prevents soil erosion and protects water resources.



Women gathering argan in Ait Baha, Morocco. Photograph: Hemis/Alamy

The tree is so beneficial to the environment that Morocco's argan forest was declared a Biosphere Reserve by Unesco in 1998. Still, the forest has been threatened with deforestation, as local people chopped down the trees for building materials and firewood. This has diminished in recent years as locals became involved in the production of argan oil.

Dana Elemara founded Arganic, a UK-based supplier of Argan oil, and works with Sidi Yassine, an argan oil producer in the region. "One key thing to sustainability is getting local people involved and paying them fairly. That stops them from cutting down the Unesco-protected trees." The production of the oil is, she says, helping preserve the tree. "You don't damage the tree at all by producing argan oil. We only pick fruit from the ground."

Getting oil from the fruit of the argan tree involves drying it, extracting the nuts, cracking them to reveal the kernels, and pressing them to release the oil. The byproduct of pressing is a thick argan paste, which is sold locally for cosmetic products. Nothing else is wasted, as the outer pulp provides food for village animals, while the shells are burned for fuel.

Empowering women

Previously, women in small family businesses of two or three people would collect the argan fruit and extract its oil. Their husbands or brothers would then

sell the oil in local markets or exchange it for sugar and other goods. In recent years, however, women's co-operatives have been created to meet the surge in demand. These co-operatives provide the women with an income, as well as a social experience and improved status.

L'Oréal, together with its supplier BASF, has set up a sourcing programme in Morocco to foster corporate social responsibility in the argan supply chain. The programme works with an umbrella body involving six women's co-operatives producing argan oil.

As well as access to education and healthcare, the cooperative also provides the women with an opportunity to earn money. Professor Zoubida Charrouf of the Université Mohammed V-Agdal in Rabat, says some women earn up to \$250 (£164) a month, plus bonuses that are paid out at the end of the year. With more financial independence, the women are able to choose how to spend their earnings, changing the status of women in the family. Charrouf says: "Women regain the capacity to decide, to manage their income and to invest in the future by sending their children to school."

Others recognise a shift in attitudes towards women in general in this Arabic country due to their newfound independence. Elemara says: "The argan oil trade has made changes that will have an influence over the way that society sees women there."

Challenges in the supply chain

There are, however, problems with this burgeoning industry. The Berber women in the co-operatives are ill-equipped to conduct business with international organisations, leaving plenty of scope for exploitation. Charrouf says the big problem co-operatives still face is that the women have long remained marginalised and illiterate. "A lot of training is necessary. If they are well-trained, it works. But if not they end up being managed by the husband or father of the co-operative's president, and in this case they benefit very little."

L'Oréal says its work with the NGO Yamana was crucial to overcome these challenges. Rachel Barré, who is responsible for sustainable sourcing within L'Oréal Research & Innovation says: "To lead this cooperative, [the women] have to get access to education. They have to understand what is business, what is a purchase order, what is governance, what is democracy, what is transparency, what is accounting."

With the help of the NGO that worked with them, we managed to organise this way of functioning and professionalise the way that every woman could have a voice in the decision-making process."

There are also concerns about the standard of oil coming out of the co-operatives. British cosmetics retailer Lush uses argan oil in several of its products, which it sources from a supplier working with 22 women's co-operatives across the region.

Lush's creative buyer Lyndsey Fisher-Cooke says some kind of leadership is required to protect standards. "[The co-operatives] are headed up by an elected president. Someone is put at the helm of that organisation and supports them with visits to each village, in terms of ensuring quality standards."

The co-operatives are improving standards all the time, she says, with help from Lush. "Our unit is working with each village to increase standards to be recognised by [certification body] Ecocert. Any co-operative needs some sort of accredited control to increase those standards; it's an area that has potential for downfall."

It is thought that co-operatives can suffer from a lack of professionalism towards their international customers. Ulysses Müller, a Swiss national who gave up his life as an advertising executive to pursue a dream in Morocco, runs Sidi Yassine with his Berber wife. He believes their combination of skills makes their facility unique in the region, and the farm counts Weleda and L'Occitane among its clients.



Berber woman hitting argan nuts on a stone anvil with a rock to get to the kernels. Photograph: imageBROKER/Alamy



Argan oil is rich in vitamin E. Photograph: Chromorange / Tschewitschke / Alamy

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Fracking Industry Can Tap Toxic Waste Water For Geothermal Energy

SustainableBusiness.com News

The natural gas industry has found a way to increase revenue by making use of one of its waste streams - the huge amount of toxic waste water that's produced during the fracking process.

Waste water can be used to produce geothermal energy on site and can power equipment used at the oil field, reports *Bloomberg*.

When oil comes out of a well, so does seven times that amount of boiling waste water. Before the water is pumped back into the well to produce more oil, it can turn electricity-producing turbines, producing geothermal energy.

The idea comes from University of North Dakota researchers who have been exploring how to get geothermal energy from the thousands of fracking wells in the state.

Testing is about to begin. Large pumps will push the hot water through geothermal generators housed in 40-foot long containers. The electricity can either be used on site or sent to the grid, says *Bloomberg*.



University of North Dakota, Will Gosnold via Bloomberg

The industry uses some 25 billion gallons of water a year in the US, enough to produce geothermal electricity equal to three coal-fired plants.

As you can imagine, with oil at such low prices, new revenue sources are welcome. At the pilot project in North Dakota, each well could bring in another \$100,000 a year from a 250 kilowatt geothermal generator, says the Department of Energy.

What About Methane?

The industry can probably make a lot more money, however, by capturing all the methane it releases into the atmosphere.

After carbon, methane is the top greenhouse gas emitted in the US, and the oil and gas sector is a major contributor to both.

Burning the fossil fuels the industry produces is responsible for 77% of US emissions, and gas and oil drilling, processing and transport produces 29% of US methane emissions - the largest source (other major sources are confined cattle operations at 26%, landfills and wastewater treatment plants).

Incredibly, the amount of methane flared into the atmosphere could supply 5 million households with electricity, "packing the same climate punch over the first 20 years as eliminating carbon emissions from more than 160 coal-fired power plants," says Mark Brownstein at the Environmental Defense Fund.

EPA regulations have been in place since 2012 that require leaks to be controlled from drilling wells. That has cut those emissions 9.5%, but the regulations don't apply to oil drilling or equipment at drill sites.

In January, EPA said its goal is to reduce oil and gas methane emissions 45% by 2025, from 2012 levels. It will propose measures to meet the goal this summer and be finalized in 2016.

Although it's notable that EPA is targeting the entire system - leaks from wells, pipelines and valves from drilling, production and transportation - rules will only apply to new and modified oil and gas systems - not existing systems - which are currently causing the problem. To handle existing systems, EPA is looking to the industry to take voluntary action.

Worldwide, the amount of methane vented in 2012 could have sold for \$30 billion, according to the Rhodium Group, which produced Environmental

Defense Fund's study. If a country produced that much natural gas it would rank #7 in the world, they say.

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Carbon Capture Milestone: 10 Million Tons Stored Underground

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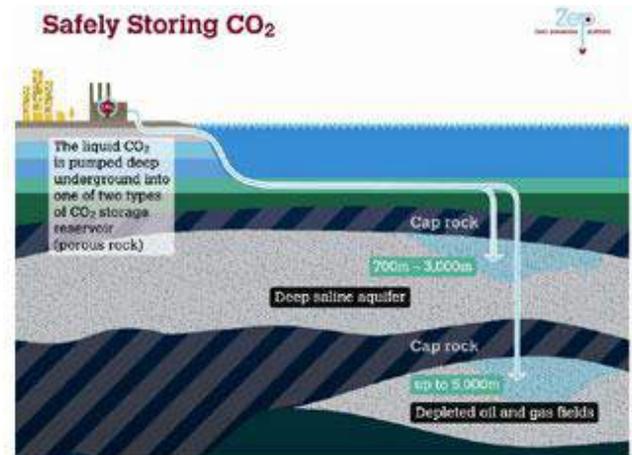
Calling it a landmark accomplishment, the Department of Energy (DOE) announced progress on carbon capture and storage (CSS).

DOE says the projects it's supporting have stowed 10 million metric tons of carbon dioxide underground - equal to the annual pollution from 2 million passenger cars.

In one project, Air Products and Chemicals, Inc. in Port Arthur, Texas, is demonstrating a state-of-the-art system. Carbon emissions are captured from two steam methane reformers that produce hydrogen. The system separates carbon from process gas and is sent through a pipeline to enhanced oil recovery projects nearby. Nearly 2 million metric tons of carbons have been captured.

"The U.S. is taking the lead in showing the world CCS can work. We have made the largest government investment in carbon capture and storage of any nation, and these investments are being matched by private capital," says Ernest Moniz, Secretary of Energy.

Carbon is captured from power plants before it's released into the atmosphere and injected underground in deep geologic formations. An alternative is to sell the carbon for enhanced oil recovery and, in the future, carbon could be used to make lots of products such as fuel, plastics, building material and fertilizers.



But most of all it can save the coal industry through "Clean Coal." Under EPA's power plant regulations, coal plants can comply with the rules if they are equipped with CSS technology. DOE has appropriated \$8 billion for innovative technologies that make fossil fuels cleaner.

DOE's Regional Carbon Sequestration Partnership is focused on determining the best regional approaches for storing carbon in geologic formations. Some 400 organizations across 43 states and four Canadian provinces are identifying optimal technologies, geologic carbon storage sites, regulatory options and infrastructure requirements to ensure carbon is stored safely.

DOE's Industrial Carbon Capture and Storage program - a \$1.4 billion investment initiated under the 2009 Recovery Act - is demonstrating how CCS can be used at industrial facilities.

Last year, the world's first commercial-scale carbon capture experiment began at a Saskatchewan coal-fired power plant, which will purportedly capture 90% of emissions. Most will be sold for enhanced oil recovery - recouping project costs - similar to the \$1 billion project NRG is developing in Texas. The rest will be stored deep underground in rock formations.

Other smaller carbon capture projects are in Illinois (from an ethanol plant), Texas and in Norway (from a refinery). Most other projects in the US and EU have been cancelled.

[<Source>](#)

How MillerCoors is brewing more beer with less water

By Peyton Fleming



Shutterstock

"Liquid gold" is a popular descriptor for a refreshing mug of beer. But in the case of MillerCoors' sprawling Irwindale, Calif., brewery, the phrase is most applicable to water — or the lack thereof.

Situated in the heart of the drought-stricken San Gabriel Valley in southern

California, the brewery, which produces approximately 6 million barrels of beer every year, long has considered its water use.

"We're 50 years in the valley, 35 years in this location, and we still remember the drought from two decades ago," said Edward Gharavi, the MillerCoors technical services manager responsible for the facility's energy and water programs.

Even before the current historic drought that has fallowed farmland and famished entire communities, the facility's water-to-beer ratio was well below industry averages. The facility uses just over three barrels of water for every barrel of beer produced, compared to an industry average of six to eight barrels of water, Gharavi said.

Now, with the drought in its fourth year and showing no sign of let up, the brewery is tamping down even more.

MillerCoors this week became the latest company to join Ceres' Connect the Drops campaign — a business-led effort organized by Ceres seeking bolder measures and shared solutions to achieve a sustainable water future in California.

Day-to-day, the company is also re-evaluating how water is used in various aspects of its operations.

Winnowing down water use

Driving through the front gate of the 227-acre property, visitors will see that 15 acres of lush green grass recently was pulled out and replaced with a cactus-laden dry landscape.

They'll also see more than 10,000 solar panels installed last winter that are helping the brewery cut its energy use by as much as 38 percent during peak-demand hours. The solar arrays that cover 10 acres also save water because they eliminate local power plant demand for cooling tower water.



Peyton Fleming

A snapshot of MillerCoors' Irwindale, Calif., brewing operation.

Every step of the 21-day beer-making process — from cooking the hops to fermenting the beer in 60-foot-high towers to final bottling and packaging — is scrutinized closely.

Using new cleaning solutions in the facility's massive brewing tanks — each with 98 filters — is saving hundreds of thousands of gallons of water each year alone, Hernandez said. Additional gains have been found by using plastic conveyor belts to move the beer bottles; the old metal conveyor belts had to be washed down constantly to prevent the cans or bottles from sticking.

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Leftover industrial heat to warm Sweden's chilly northern city

In a city where temperatures plunge to minus 30C, Kiruna's mining factory will soon be warming local homes

By Elisabeth Braw

Factories generate heat they don't need, but the towns around them do. So far, connecting the two obvious partners has been tricky, with nobody quite sure who's doing the other a favour and who should pay for the arrangement. But now the city of Kiruna in northern Sweden has joined with its largest employer, mining company LKAB, to warm its homes cheaply using the factory's leftover heat.

"The whole arrangement is based on the fact that LKAB has leftover heat and we need energy to heat our homes, especially during the cold months," explains Jan Fjordell, chief executive of Tekniska Verken i



Snow covers the town of Kiruna in northern Sweden. Photograph: Kiruna municipality

Kiruna, the municipal-owned company in charge of the city's waste, roads, parks, water and energy. "This is a matter of using a resource that would otherwise go to waste."

Construction of the pipeline system begins this year and by next summer residents in the city — some 125 miles north of the polar circle — will be heating their homes with a growing amount of waste heat from the mining process.

A global leader in iron ore mining, LKAB turns its mined material into pellets before dispatching it to customers around the world. The pellet-making process is particularly energy-intensive and until now it has done what virtually every other manufacturer does: dispose of the unneeded heat.

Meanwhile, Tekniska Verken i Kiruna imports fossil fuel to meet city residents' substantial heating needs: during the winter months, temperatures can plunge to minus 30C. In the past, with fossil fuel being a guaranteed resource and climate change a distant concern, both parties were content to do their separate thing. Besides, figuring out how to get the industrial heat into people's homes was tricky.

"We produce low-grade heat and homes need a high-grade kind," explains Stefan Savonen, LKAB's general manager of energy and climate systems. "In the past, we didn't have the technical capability to transform the heat at a reasonable cost." As a result, LKAB's leftover heat accounted for only 5% of Kiruna's energy needs. Energy from burnt waste — a major source of energy in Sweden — made up 75% of the city's energy supply, while fossil fuels accounted for the rest.

Now LKAB's engineers have designed a cost-effective way of transmitting the company's heat into people's homes. They will collect the heat at the factories and feed it to the city's district heating plants, which are connected to 90% of its households, using a new network of pipelines. "The idea is that we'll be able to use much more leftover heat from LKAB and stop using waste," explains Fjordell.

By phasing out waste — in itself a potential greensource of energy — and replacing it with leftover industrial heat, this industrial centre is taking renewable energy to a new level. The expensive imports of CO2-intensive fossil fuels will end, too.

Leftover industrial heat is a fast-growing source of energy across Sweden; in 80 pilot projects, it's already being supplied to the grid. "Most of these projects harvest leftover heat from heavy industry, as Kiruna does," explains Adis Dzebo, a research associate at the Stockholm Environment Institute. "But there are opportunities for cities without heavy industry as well. Server farms and shopping centres, for example, generate a lot of leftover heat. And in Stockholm, the IT company Bahnhof is now supplying the grid with heat."

Fortum, Stockholm's district heating supplier, has even launched the Open District Heating initiative, inviting local companies to sell their leftover heat to Fortum's grid.

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Most Ambitious Climate Goals Lead to Greatest Economic Growth

SustainableBusiness.com News

Yesterday, Governor Brown set a higher goal for reducing greenhouse gas emissions in California - to 40% by 2030.

You can bet many people are wondering if that's achievable and what impact it will have on the economy.

New research provides an answer: **the highest, most ambitious goals produce the biggest economic boost.**

"All seven policy pathways resulted in net positive economic benefits for Californians, but the most powerful economic and employment stimulus comes from moving quickly and aggressively to reduce greenhouse gas emissions," says Professor Roland-Holst, who conducted the study at University of California/Berkeley.



The research assesses employment, income, household consumption, price, and emission impacts of different greenhouse gas reduction strategies - from ambitious early action to more gradual approaches the state could take to cut emissions 80% below

1990 levels by 2050 - and finds that all seven policy pathways modeled resulted in net positive economic benefits for Californians.

But the most ambitious 2030 emissions cap produces the greatest overall positive economic impact - **more than a million new jobs and nearly 6% higher economic value (gross state product) amounting to \$338 billion by 2050.**

It also shows California can achieve its 2050 climate target even under the least ambitious cap-and-trade program.

The most ambitious policy scenario for 2030 includes a strong cap-and-trade program; 50% renewable energy; carbon mitigation credits; energy efficiency improvements; a moderate electric vehicle adoption rate -25% of vehicle sales by 2030 and 100% by 2050.

This is more ambitious than the 40% by 2030 that the Governor has settled on.

[<Source>](#)

Negative emissions technologies: A cautionary trend

By Pete Smith



The best way to keep your floor dry is to avoid spilling a bucket of water onto the floor, rather than to deliberately tip the bucket and then develop technologies to dry the floor. The same is true of greenhouse gases: We need to prevent their emission now rather than focus on

developing ever more complex and risky solutions to remove them from the atmosphere in the future.

Despite knowing what we need to do for well over 20 years, we so far have failed globally to reduce greenhouse gas emissions. The international goal of avoiding 3.6 degrees F (2 degrees C) of mean climate warming relative to the preindustrial era is becoming increasingly challenging.

Recent modeling suggests that meeting this target may require large-scale deployment of "negative emissions technologies" — NETs — which result in the net removal of CO2 and other greenhouse gases from the atmosphere.

Among the NETs that have been proposed:

- producing bioenergy with carbon capture and storage

- capturing CO2 from ambient air by engineered chemical reactions
- enhancing CO2-capturing natural weathering of minerals
- growing CO2-capturing forests in unforested areas
- boosting carbon uptake by the ocean by adding nutrients or increasing alkalinity
- changing agricultural practices to boost carbon capture (reducing soil disturbance or amending soils with biochar)

As part of a large team assembled under the auspices of the Global Carbon Project that analyzed the potential and limitations of a range of NETs, I know that, despite their significant mitigation potential, all of the NETs have limiting factors, such as cost and energy requirements (direct air capture), logistics of spreading materials over large areas (enhanced weather technologies) and potential competition for land and freshwater (afforestation and bioenergy with carbon capture and storage).

While research and development may be able to overcome some of these limitations, none of the NETs offers an impact-free pathway to climate mitigation.

Perhaps the biggest downside of NETs, however, is this: They risk giving us a false sense of security that we will be able to engineer our way out of climate problems. In that case, people likely will continue to emit greenhouse gases and generate energy from greenhouse gas intensive fossil fuels, taking false comfort that technology will save us. The fact is that our ability to stabilize the climate declines as cumulative emissions increase.

So the longer we continue with business as usual, the harder and more risky it becomes to take action. Therefore, while NETs may prove useful in climate regulation, emission reduction must remain the immediate priority for global climate policy.

More than ever, we need a global deal in Paris this year to limit greenhouse gas emissions, with binding targets for all countries. Without it, we are left on a path of continuing emissions, grasping at straws based on largely untested, future technologies.

[<ReadMore>](#)

Tesla's New PowerWall Battery Sells Out!

SustainableBusiness.com News

Calling the response "overwhelming" and "crazy" Elon Musk says Powerwall batteries are already sold out through mid-2016.



Within days of announcing the launch of Tesla Energy, the company has 38,000 reservations for Powerwall - the home version of the battery. And since most people ordered more than one battery, the sales add up to more like 50,000-60,000.

There's also lots of interest on the industrial/ utility side for the larger version, called Powerpacks. There are 2500

reservations for about 10 Powerpacks each, for a total 25,000.

Tesla also received 2,500 requests from distribution and installation companies.

Musk said all this on a call with investors on Tesla's first quarter results, but spent most of the time answering questions on Tesla Energy. The Gigafactory in Nevada - which comes online in mid-2016 - could be devoted to just these batteries, he says, indicating that this first factory won't meet demand.

He expects demand for these batteries to be double that for electric cars.

In the first quarter, Tesla sold 10,030 Model S cars - 55% more than Q1 2014 - with revenues of \$1.1 billion and a loss of \$159 million. Its Model X SUV goes on sale late this year, followed by a lower priced Model S in 2017 (\$35,000).

[<Source>](#)

Selling the energy collected from efficiency

By Lisa Weinzimer



Benjamin Benschneider

It seems about time to put a value on energy efficiency, monetizing the difference it makes. Well, that is what's happening in a Seattle pilot program with the Bullitt Center, which bills itself as the most energy efficient building in the world.

Seattle City Light, the city's electric utility, is preparing a contract to purchase the metered electricity from the Bullitt Center's efficiency — or the energy the building would have consumed had it been built to the city's prevailing energy code.

The first-of-its-kind pilot uses a financing structure similar to a power purchase agreement for solar or traditional forms of electricity.

To measure it, Portland, Ore.-based Energy RM has developed a DeltaMeter to measure energy savings from the highly efficient Bullitt Center. The DeltaMeter monitors and compares energy use of the Bullitt Center to what the building would have consumed had it been built to Seattle's prevailing energy code.

If successful, the pilot could help incentivize a dramatic boost in efficiency from commercial buildings. In 2014, commercial and residential buildings accounted for 41 percent of total U.S. consumption, according to the U.S. Energy Industry Association.

This approach could put "efficiency on a level playing field with investments with other energy supplies," said Jeanne Clinton, California Public Utilities Commission special advisor for energy efficiency. The model "offers tremendous opportunities as one of several approaches that could be used to try to double our pace of [energy] savings."

Developers in April completed the baseline metric which will be used to compare the Bullitt Center's efficiency performance against buildings built to Seattle's current energy code. Equilibrium Capital Group co-developed the financing structure; a 20-year power purchase agreement for the Bullitt Center to purchase efficiency savings from Seattle City Light.

Along with the baseline, the key to the approach is the DeltaMeter, which will use the baseline to measure and sell the energy savings from efficiency installed in the Bullitt Center back to Seattle City Light in a 20-year power purchase agreement. The utility, in turn, sells the energy savings back to tenants, based on their energy consumption.

"Effectively, what the utility is doing is supplying the building's existing energy requirements with efficiency instead of with the electrons that are used to generate the nuclear power plant 100 miles away," said Bill Campbell, a principal at Equilibrium Capital.

From a utility's perspective, this transaction is no different from if the building put a solar panel on the roof and the utility bought the energy from the solar panel, then sold the energy back to the building, Campbell said. Equilibrium Capital co-developed the financing structure for the contract between Seattle City Light and the Bullitt Center.

The pilot will run for roughly three years, after which Seattle City Light and the Bullitt Center, with the option to continue, depending on the pilot's performance, said Craig Smith, director of the conservation resources division for the utility.

With the baseline model set on the Bullitt Center's energy use, Seattle City Light is set to start the billing and measurement components of the pilot this month, Smith said.

When the three-year pilot ends, the utility and Bullitt Center owners will have the option to continue for the contract's 20-year term, or modify or terminate the agreement, Smith said.

"We already know the building is operating very efficiently," Smith said.

"How well the business arrangement works, what kind of things we have to prove out (in) operation of the DeltaMeter, the whole construct of billing

combined with a power purchase agreement and have those things work together effectively in a way that's scalable, those things take some time to work through when you want to look at how do we replicate and scale," Smith said.

On its website, the Bullitt Center is described as the greenest commercial building in the world. The building features windows that maximize daylight, shades that help regulate interior temperatures and low-flow, composting toilets. On the rooftop of the "zero net energy" building is a 575-panel solar array.

[<ReadMore>](#)

Even With Deforestation, Earth's Vegetation is Increasing

SustainableBusiness.com News

While deforestation continues in too many places in the world, other areas are getting greener - so much so that total plant cover has been rising over the past 13 years.

The Earth's biomass has increased by 4 billion tons since 2003, offsetting about half the loss from deforestation, concludes a study published in *Nature Climate Change*.

Savannahs in Australia, Africa and South America have been expanding because of more precipitation (even as many areas are in drought), and forests have been growing back in Russia and former Soviet states on abandoned farmland, for example.

China's Great Green Wall

The biggest increase in biomass comes from northern China's Great Green Wall, called the largest ecological engineering project ever undertaken.



NASA

Every citizen over the age of 11 is required to plant at least three trees a year in an effort to hold back the Gobi Desert. An incredible 66 billion trees have been planted across 100,000 square miles since 1978. When the project is finished in 2050, it will stretch over 2800 miles along the edges of China's deserts. It will increase the world's forest cover by more than 10%.

Rampant logging and overgrazing are the cause of desertification. Sand blows into cities, coating roads and everything in sight. Sadly, just 2% of China's virgin forests remain and more than 25% of the country is now desert.

Is this enormous planting project is a good thing? We have long wondered about tree planting projects. Which trees are they planting? Are they being mixed in such a way that they form ecosystems - or is this a gigantic tree farm? What impact does planting a forest have on land that is composed of grass and shrub?

It turns out our fears are correct. The Great Green Wall has been planted mostly with easy to grown *non-native* pines, poplars and eucalyptus - tree farms that are unsuitable for the soil, and prone to disease. One pest wiped out 1 billion poplar trees in 2000 - two decades of planting efforts, reports *The Economist*, and in arid areas trees aren't even appropriate - they suck up the groundwater, killing grasses that bind the soil.

This mismanagement is hopefully coming to end - the government has begun to bring back native species instead.

Satellite images do show the forest is increasing the amount of stored carbon, removing it from the atmosphere. All told, the world's vegetation is absorbing about 25% of carbon emissions.

A Great Green Wall is also being planted across the southern edge of the Sahara in Africa.

[<Source>](#)

Less material consumption is not the end for business

Emphasising healthy food, regular engagement with nature and physical activity could create substantial financial dividends

By Jules Pretty



Regular exercise and time spent in natural surroundings have measurable effects on wellbeing which, in turn, could lead to large savings on healthcare. Photograph: © YAY Media AS/Alamy

The past half century has seen dramatic lifestyle changes for people in affluent countries. Per person, GDP in the UK has risen nearly four-fold. Each of us consumes more, has more stuff, benefits from abundant technology and transport, there is more diverse food and better housing, and we live longer.

Yet there is a worrying fact: average wellbeing and happiness across whole populations has not changed over 50 years.

This seems odd. Every government in all affluent countries wants their economy to grow; all engage in collective panic when material consumption slows or stops. In the poorest countries, of course, more consumption is good. It means food, shelter, water, education, transport. Yet after about \$10,000 (£6,300) per capita GDP, the returns for wellbeing flatten off.

One explanation for this is that material consumption also produces many costly side effects on both human health and the natural environment. It gives with one hand and takes away with the other. The external costs of modern living have risen dramatically. Now we have to spend to solve the problems created by the very material consumption we thought was solely good. The costs of conditions and diseases caused by modern lifestyles are eye-watering. We have calculated that seven conditions – mental illness, dementia, obesity, physical inactivity, diabetes, loneliness and cardiovascular disease – now cost Britain's NHS £60bn a year and result in £184bn of costs to the whole economy. The revenue expenditure of the NHS is some £100bn annually.

Many of these costs are avoidable. This is an opportunity for business, but it will need new thinking. Put another way, a substantial financial dividend could be released by a greener and healthier economy that emphasises healthy food, regular engagement with nature and physical activity, the enhancement of social bonds, and attention to creating healthy minds.

A priority is to substitute activities that increase both environmentally-sustainable consumption, to save the planet, and non-material consumption behaviours, to increase wellbeing and reduce health costs.

As part of this, I suggest there are two priorities for business: firstly, they must identify actions to improve the wellbeing and health of the workforce, as greater wellbeing improves productivity, engagement and retention. Secondly, they must identify the new goods and services they could develop that would drive greener and healthier economies.

For the first, this means incentivising behaviours that improve wellbeing, for example healthy food, more physical activity, greater engagement with natural places, more volunteering and probably fewer hours at work. Across the OECD countries, those with the lowest hours worked per year have the greatest wellbeing; long hours might look clever but appear counterproductive.

For the second, this means identifying greener consumption opportunities that result in a competitive advantage while improving the planet's natural capital. Less material consumption is not the end of business and the economy as we know it. In health, early interventions produce the greatest returns. Britain's Chief Medical Officer has estimated that there is a 6–10% rate of return on early life interventions. In other words, spend to prevent. Waiting until

someone is ill with a lifestyle-related condition such as diabetes or obesity results in economic activity that looks good in GDP terms, but this is a falsehood.

[<ReadMore>](#)

Tesla's Next Goal: Transform How We Get Electricity

SustainableBusiness.com News

On May 1, Elon Musk announced the launch of Tesla Energy - a day we may look back on years from now as when the renewable energy revolution really took off.

This quote tells us why this is such a watershed development:

"I think in the near future, having a battery in your home will be as normal as having a water heater or a dishwasher. This takes us one step closer to being able to power homes completely without the use of fossil fuels," says Jason Ballard, President of TreeHouse, a green home improvement store that sells Powerwall.

"Powerwall Home Battery" is a lithium battery that inconspicuously hangs on a garage (or outdoor) wall. Tesla has succeeded in designing a battery that's powerful yet small and affordable.

"You can order it now," Musk says, "it comes in different colors."

It can take a house with rooftop solar off the grid or be used as a backup during power outages, and of course charge electric cars.

The price for installers is \$3000-\$3,500, depending on the amount of energy it stores. Homeowners have to pay for an inverter and installation costs, but the price is still far below what analysts anticipated - around \$13,000.

Right now the batteries are made at Tesla's California auto plant, but Musk has promised prices will drop 30% in the first year the Nevada [Gigafactory](#) comes online. And that's just the beginning.

Notice Powerwall hanging on the wall next to Tesla's car:



For businesses and utilities, Tesla Energy offers "Powerpacks," more powerful versions of the home-based system "designed to scale infinitely." They integrate lithium batteries, power electronics, thermal management and

controls into a turnkey system.

Powerpacks are being piloted in over 100 projects, including Amazon Web Services data centers, Target and Walmart stores and Green Mountain, Southern California Edison and other utilities.

Incredibly, Musk plans to make its battery patents available for free as he has done for the electric car.

"The goal is complete transformation of the entire energy infrastructure of the world," Musk says, and we would expect nothing less from him!

Utilities Beware

Utilities that insist on holding onto the past could find 50% of residential sales and 60% of commercial sales gone in the US Northeast by 2030, says the Rocky Mountain Institute.

In the next 10-15 years, solar-plus energy storage will cost less in states where utility-supplied electricity is expensive, which includes California and Hawaii.

That would leave utilities high and dry without the money to maintain and upgrade the grid so clearly new business models for utilities are needed.

Revenue from energy storage enabling technologies is expected to grow from \$605 million a year now to over \$21 billion by 2024 worldwide, according to Navigant Research.

How About Nuclear?

The nuclear industry's big talking point is its reliable base load power, but with the ability to store solar and wind energy that's no longer an advantage. There's no comparison on the costs - or the time - to build renewable energy projects, the largest of which take a couple of years. And wouldn't it be great not to have to worry about nuclear waste or a meltdown?

[<ReadMore>](#)

Is Dubai the capital of the green economy?

By John Elkington



It was hot, it was Earth Day 2015, and I was poised to walk on stage at the Dubai World Trade Center.

The occasion: the second World Green Economy Summit.

In the spirit of transparency, I was happy because I was about to participate in a "Green Visionaries" session with a real hero, solar adventurer Raphael Domjan. Among other things, he has sailed around the world in a PlanetSolar catamaran powered by 38,000 photovoltaic cells. Next, for him at least, will be a trip to the edge of space in a solar plane (French).

Amid that backstage excitement, I got a ping on my phone. I had received an email from Hazel Henderson on the Green Transition Scoreboard with a jarring figure; by Earth Day, she said, a total of \$6.22 trillion had been invested in the global green economy since 2007.

That's a huge number. And when I dropped it into my presentation, the statistic helped bring our grand green visions down to earth, placing them in a broader market context. Interestingly, Hazel also noted that the scoreboard, which projects \$10 trillion of private investment in the green economy by 2020, is on track to reach that goal.

Perhaps more telling, though, is the group's new emphasis on "Breakdowns Driving Breakthroughs," which introduces a new sector to the Scoreboard called "Life Systems." The focus is on systemwide interconnections, with efficiency, information and digitization, energy, water, food, education and health accounting for 14 percent of the total value of investments captured by the scoreboard.

My host city of Dubai was singled out in the report for innovations in the fields of green building design and urban planning — no doubt conferences and summits also will help boost Dubai's position on the scoreboard over time.

But the emirate has ambitions above and beyond having the world's tallest skyscraper, the 830-meter Burj Khalifa, and running major Green Economy events. Its publicly stated goal is to be recognized as the "Capital of the Green Economy" by 2021.

As I said at the end of my presentation that day, Dubai's ascent would be no small feat. Indeed, I wondered aloud whether it would even be possible.

Reasonable doubt

There is no doubting the serious intent underlying Dubai's audacious sustainability goals.

Among the city's immediate priorities are developing a regulatory framework to incentivize green infrastructure investments, ensuring diversification of energy sources and evolving a carbon abatement strategy in alignment with the objectives of its [Integrated Energy Strategy for 2030 \(PDF\)](#).

All good, but this is still a patriarchal and economically stratified society, despite frequent talk about engaging young people. A bigger cultural shift is needed.

Plus, Dubai's economy is basically built on fossil fuels.

According to sometimes-reliable Wikipedia, Dubai is sitting on 4 billion barrels of the stuff, out of a total for the United Arab Emirates of almost 100 billion

barrels — on a par with Kuwait's reserves. Again, fine, but if strict climate controls were to be imposed, Dubai could become the ultimate stranded asset. No wonder the city's government is beginning to invest heavily in major solar farms.



A snapshot of Dubai's Mohammed bin Rashid Al Maktoum Solar Park.

Earlier this year, the Dubai Electricity & Water Authority (DEWA) launched a tender for a 100 MW solar plant as part of the second phase of the Mohammed bin Rashid Al Maktoum solar park. The 40-square-kilometer park south of Dubai is already home to a 13 MW solar park, built in 2013.

To make a much larger 1,000 MW plant a reality by the end of 2017, DEWA called on solar developers to submit bids for a fixed tariff, over 25 years, under a build-own-operate model.

All great, but my point was that any self-respecting world capital of the green economy — particularly one with its tap-root suckling on oil — would need to meet a number of other criteria.

For example, Dubai would need not just to convene and celebrate leading green economy players but also to challenge them, holding them to account. It also would be a leader in the incubation of breakthrough science and technology. It would spur leading-edge business mode experimentation. It would provide capital for green economy innovators and entrepreneurs. It would collaborate as often as it competed.

Critically, it would offer an attractive, sustainable model for a future world of between 9 and 11 billion people.

Connecting the dots

Money can buy many things, and I don't doubt that Dubai's investment in a number of these areas will grow mightily, particularly as Dubai moves towards Expo 2020. This will feature sustainability as a key theme, alongside mobility and opportunity.

But Dubai will need to stretch energetically to meet some of these criteria.

Intriguingly, Dubai's Arabic name, *al Wasl*, means "the connection," and the city increasingly aims to become a hub between East and West. With an anticipated 25 million visits to the Expo, and 70 percent of visitors predicted to come from overseas, it could turn out to be the most globally inclusive event in Expo history.

The man behind the World Green Economy Summit is André Schneider, now Chairman of World Climate Ltd but for many years at the World Economic Forum, where he was responsible for running the Forum's Davos summits. He chaired the session I did with Domjan and, a key factor for me, made both sessions we were both involved in great fun.

But why, you may ask, is fun important?

Well, experience suggests that when people are having fun it signals that they are both emotionally engaged and at least moderately confident that real progress is possible. Other people may use more grown-up metrics and indicators, but for me the 2015 World Green Economy Summit ticked that key box.

As a result, I came away confused — and that was progress because I had flown for my second visit believing there was little, if any, chance that Dubai would achieve green capital status. Having now met a number of the people whose job it is to make this a reality, I can at least now imagine the possibility.

[<Source>](#)

The UK company turning coffee waste into furniture

Re-Worked makes material from waste coffee grounds collected from offices around the UK to make furniture for the same offices

By Josephine Moulds



Britain was falling in love with coffee just as Adam Fairweather was exploring ideas for new products and materials. Ten years ago, Starbucks stores were opening on every corner, followed by the burgeoning industry of artisan coffee roasters.

Fairweather, a designer by training and expert in recycling technologies and materials development, now develops materials from coffee grounds and uses them to design products including furniture, jewellery and coffee machines.

A poll of 2,000 Britons by Douwe Egberts in 2012 found 69% spent between £1 and £5 in coffee shops five days a week. "We use coffee as a moment to take a break, it's a luxury product," says Fairweather. "The idea that it already had this high value but we only use a little of it, that was interesting because I felt that there was a way of tapping into this perceived high value the product has intrinsically."

On average, we use just 18% to 22% of the coffee bean when we make a cup of coffee but Fairweather says that coffee waste is not "the biggest problem". "There are already massive recycling programmes in the UK that manage organic food waste very well. My interest is that we can use materials that have a perceived value to them, to communicate and get people excited about the idea of sustainability and social change and environmental management."



An example of Re-Worked furniture: easy chair and unity coffee table made with Çurface boards containing 100% recycled content and ash wood. Photograph: Re-Worked

made of 70% coffee grounds for the decorative housing of its Verde coffee machine. Fairweather says they have sold 300-400 of these each year since it was launched in 2013 and they are currently being installed in Wyevale garden centres around the country. High-end jeweller Rosalie McMillan makes use of another of Re-Worked's materials, combining it with gold and sterling silver for her Java Ore collection.

Scaling up for profit

Re-Worked is a non-profit and Fairweather says the quest for funding has been one of his biggest challenges. "I'm really under-resourced. Because it's been pioneering work, it's made it quite hard to get the buy-in from people. We've never had huge amounts of wealth in the background to make things happen quickly."

Re-Worked does generate revenue from trading, which it invests back into the business but Fairweather says the organisation still relies on grants. "In all

honesty it's not been massively profitable. The way we sustain ourselves is by getting government support." This funds ongoing research into new materials and better production processes.

Fairweather says the process of making materials from coffee grounds would be economically viable if Re-Worked were to scale up. "Doing the life-cycle analysis of materials, is a very good way of seeing whether or not something stands up. If it's more environmentally friendly, generally it's more economically-friendly, because it means that you're using less of everything."



Java rock wrist bangle made by Rosalie McMillan using a custom Çurface material containing 70% recycled content. Photograph: Rosalie McMillan

Fairweather only wants to scale up, however, if he can maintain true to the original aim. He says the company explored the option of developing a low-value product, making fuel pellets out of coffee, to act as a staple to keep the business running. That hit a stumbling block when he realised they would have to take waste coffee from other sources and not just Greencup.

"It's about promoting the idea of a circular business, if we started to offer the service to Nero, then we add value to their business, but we don't promote the idea of this circular business model that excites people. It just becomes a service that people use."

He admits he is not particularly commercially minded and that is, perhaps, why Re-Worked is not a million-pound business. "I'm not a marketer I'm more of an inventor. I like to invent the stuff. I like to work problems out."

[<Source>](#)

Nissan, BMW launching national grid of charging stations

Source Name: Greentech Lead

Nissan and BMW are to jointly build a national grid of electric vehicle (EV) and plug-in hybrid electric vehicle (PHEV) charging stations in South Africa. The grid is to be utilized by Nissan and BMW vehicles.

According to news reports, the companies have signed a memorandum of understanding for the purpose as part of a drive to increase electric vehicle adoption in the country.

The charging stations will accommodate direct current fast-charging devices for Combined Charging System 2 used by BMW's electric and plug-in hybrid models and the Charge de Move system plug standards used by Nissan LEAF.

In certain regions alone the grid of charging stations will also make use of smaller alternating current-based vehicle chargers equipped with 'Type 2' sockets common to all EVs and PHEVs.

The companies have stated that the grid will be maintained by a joint task team. And the agreement the companies will be effective until 2017.

Both BMW and Nissan have been launching their new EV and PHEV models in South Africa. In March BMW introduced the i3 (named Green Car of the year 2014 by Green Car Journal) and i8 (named the 2015 World Green Car of the Year) in South Africa.

Nissan introduced its 100 percent electric car, LEAF, in South Africa in 2013. Globally, 174 000 units of the model have been sold worldwide.

[<Source>](#)

Rethinking the water cycle

How moving to a circular economy can preserve our most vital resource.

By Martin Stuchtey

Three billion people will join the global consumer class over the next two decades, accelerating the degradation of natural resources and escalating competition for them. Nowhere is this growing imbalance playing out more acutely than the water sector. Already, scarcity is so pronounced that we cannot reach many of our desired economic, social, and environmental goals. If we continue business as usual, global demand for water will exceed viable resources by 40 percent by 2030.

Many experts have claimed that wasteful treatment of water results from dysfunctional political or economic systems and ill-defined markets. But the real issue is that water has been pushed into a linear model in which it becomes successively more polluted as it travels through the system, rendering future use impossible. This practice transforms our most valuable and universal resource into a worthless trickle, creating high costs for subsequent users and society at large. Since the linear model is economically and environmentally unsustainable, we must instead view water as part of a circular economy, where it retains full value after each use and eventually returns to the system. And rather than focus solely on purification, we should attempt to prevent contamination or create a system in which water circulates in closed loops, allowing repeated use. These shifts will require radical solutions grounded in a complete mind-set change, but they must happen immediately, given the urgency of the situation.

A new, 'circular' perspective on water management

The global water crisis is real and graphically manifest. It's apparent in rivers that no longer reach the sea, such as the Colorado; exhausted aquifers in the Arabian Peninsula and elsewhere; and polluted water sources like Lake Tai, one of the largest freshwater reserves in China. The root of this challenge is the violation of the zero-waste imperative—the principle that lies at the heart of any circular economy. It rests on these three basic beliefs:

- All durables, which are products with a long or infinite life span, must retain their value and be reused but never discarded or down cycled (broken down into parts and repurposed into new products of lesser value).
- All consumables, which are products with a short life span, should be used as often as possible before safely returning to the biosphere.
- Natural resources may only be used to the extent that they can be regenerated.

Even countries with advanced water-management systems violate these fundamental rules. They often fail to purify water before discharging it back into the environment because cleanup costs are high or prohibitive, even when energy or valuable chemicals could be extracted. The substances contained in the water then become pollutants. Equally troubling, any volume of water removed from the system is seldom replaced with return flow of the same quality.

When considering a redesign that will create a new, circular water system, we can take three different views:

- the product perspective, which calls for a strict distinction between water as a consumable and water as a durable, since there are different strategies for reducing waste in each category
- the resource perspective, which calls for a balance between withdrawals and return flows
- the utility perspective, which focuses on maximizing the value of our existing water infrastructure by increasing utilization and ensuring better recovery and refurbishment of assets

Water as a product

If we consider water to be a product—something that is processed, enriched, and delivered—we must follow the same strict design rules applied to any other product in a circular economy.

When water is treated as a durable, it should be kept in a closed loop under zero-liquid-discharge conditions and reused as much as possible. The major goal is not to keep water free of contaminants but to manage the integrity of the closed-loop cycle. Situations that favor the durable view include those in which it would be too costly to dispose of the solvents and re-create them—for

instance, when water contains highly specific water-borne solvents, electroplating baths, acids, and alkaline solutions used in heavy-duty cleaning. The Pearl Gas to Liquids complex in Qatar, for example, requires large volumes of water to convert gas to hydrocarbon liquids, including kerosene and base oil. To help prevent waste in a country plagued by shortages and droughts, the complex has a water-recycling plant—the largest of its kind—that can process 45,000 cubic meters of water per day without discharging any liquids.

When water is treated as a consumable, it must be kept pure and only brought into solution or suspension with matter that is easy or profitable to extract. For instance, consumable water should not be mixed with estrogenic hormones, toxic ink found on poor-quality toilet paper, or textile dyes. All water, including freshwater and gray water (household waste water still fit for agriculture or industrial use), should flow into subsequent cascades, where it may be used for another purpose. Whenever possible, energy and nutrients should be extracted from consumable water; there are now many revolutionary new techniques to help with this process, as well as other innovations that encourage reuse. Consider the following:

Our ability to extract energy. It is now commercially viable to generate heat and power from sludge and other organic wastes through thermal hydrolysis, which involves boiling them at high pressure followed by rapid decompression. This process sterilizes the sludge and makes it more biodegradable. Facilities at the forefront of this movement include the Billund BioRefinery in Denmark.

Our ability to extract nutrients. We can now recover a wide variety of substances from water, reducing both waste and costs. For instance, the potassium hydroxide that is used to neutralize the hydrofluoric acid in alkylation units can be extracted, decreasing costs for this substance by up to 75 percent. Substances can also be removed from sludge, such as polyhydroxyalkanoates and other biodegradable polyesters. The technology has advanced so much that value can be obtained from substances that were formerly only regarded as contaminants. For instance, ammonia removed from water can be used in the production of ammonium sulfate fertilizer, rather than simply discarded.

Our ability to reuse water. We are witnessing significant improvements in membrane-based treatments that separate water from contaminants, allowing for reuse and commercialization at grand scale. Many types of water benefit from this treatment, from gray water to Singapore's branded NEWater, which is high-grade reclaimed water. In fact, NEWater is so pure that it is mainly used by water-fabrication plants that have more stringent quality standards than those used for drinking water. In addition to innovative membrane-based technologies, experts have developed new source-separation systems that reduce mixing between chemical-carrying industrial and household waste water, making purification easier.

Although we should celebrate these improvements in treating water and safely returning it to the system, the creation of a truly circular economy will eventually require even more radical solutions. Achieving this would require the prevention of impurity and contamination in the first place. In the European Union, for instance, 95 kilograms of nitrate per hectare are washed away from fields into rivers (an amount higher than the 80 kilograms allowed). Discontinuing this process would reduce both waste and contamination.

Water as a resource

Water can come in the form of a finite stock or a renewable flow. As one example, water used for agriculture in Saudi Arabia comes almost exclusively from fossil aquifers that will be depleted in a few decades. Since these stocks are difficult to regenerate, future Saudi agriculture efforts must eventually involve new irrigation sources, such as gray water, and follow more stringent guidelines for reducing waste.

Luckily, most hydrological systems are flow systems—rivers or replenishable aquifers. Water from such systems can be withdrawn or consumed as long as the volume taken does not exceed the minimum "environmental flow" required to keep the ecosystem intact, or the natural replenishment rates. You cannot be more circular than managing the water balance of a river basin in a rigorous and integrated fashion. Investing in strategies that promote the vitality of a watershed are also circular, including those that involve better forest management (protection, reforestation, and forest-fuel-reduction programs that help control or eliminate wildfires), improved agricultural practices (such as no-tillage farming), and restoration of wetlands. The list of highly successful watershed-protection programs is long, ranging in location from New York's Catskill Mountains to Bogotá, and many additional opportunities exist.

[<ReadMore>](#)

CIAL to be world's first fully solar-powered airport

Source Name: Manorama Online

Kochi: The Kochi International Airport is on track to become the first airport in the world to derive all its power from solar energy. The airport would generate 12 MW of power from solar energy, and the work is expected to be completed in three months. Bosch is patterning the airport to build the required structures.

CIAL, the company that runs the airport, is planning to raise 50,000 to 60,000 units of power per day and this would cost Rs 64 crores. Solar panels have reached the airport from Chennai and related works are going on.

The airport already has a 100 KW pilot project and a 1.1 MW project that generates power for the firm and they produce 5000-5500 units of power each day. Currently, the airport requires about 50,000 units of power each day.

When the new power unit is installed, it can sell the surplus energy to KSEB. As of now, there is a power bank programme with the KSEB where surplus energy is sold to the board. It is believed that the project would break even in four years. The panels have been erected in such a way that they can accommodate further expansion of the airport.

When the new international terminal of the airport comes into existence, the airport would need close to one lakh units a day. Then, it might resort to mini hydroelectric generators to meet the power requirements. The government has allowed the firm to operate eight hydroelectric projects and they are being constructed by a subsidiary – CIAL Infra.

[<Source>](#)

Floating solar panel more 'powerful' than land avatar

Source Name: Times of India

It has been found out that floating solar panels generate more power than land-based solar installations under the same condition. "Normally, a solar panel with a capacity of 10KW installed anywhere on land generates a maximum 45 units of power per hour. A similar solar panel set up on a water body has been found to generate 50 units per hour and above," said solar power expert S P Gon Chaudhuri, who heads the Arka Ignou Community College of Renewable Energy.

The country's first floating solar panel that has been installed on a 2-acre-wide water body in Rajarhat, close to Eco Park, has thrown up this finding. The panels generated more than 50 units of power on a single day last month. The floating panel was jointly installed by the renewable energy college and New Town Kolkata Development Authority in January and started operating from February.

On March 19, the panel crossed the 50-kilo watt hour (kWh) mark by generating 50.75kWh. On April 18, it recorded its highest generation so far — 51.45kWh. The panel again generated more than 50kWh on May 1 by touching 50.59kWh.

Gon Chaudhuri said 30-35kWh can usually power two ACs, four fans and 10 light bulbs daily. This means that 50kWh can meet the power demand of at least a two-storied building.

He explained the reason behind the floating solar panel generating more than a land-based panel — the base of the water body is much cooler than the surrounding of a solar panel installed on land. Floating solar panels also have other benefits. Not only does it generate pollution-free solar power, but also helps produce less carbon dioxide.

Gon Chaudhuri said there are only two other countries which have floating solar power plants — in Japan and Australia.

[<Source>](#)

Learn from China: NGT to Centre on curbing vehicular pollution

Source Name: Business Standard

The National Green Tribunal today asked Centre to learn from China in curbing vehicular pollution in the Delhi-NCR, as it extended till July 13 the stay on its order banning plying of over 10-year-old diesel motor vehicles.

"Why can't you learn from China? Have you gone through the reports how vehicular pollution is controlled in Shanghai city of China," a bench headed by NGT Chairperson Justice Swatanter Kumar said.

The observation came when Additional Solicitor General Pinky Anand cited a report prepared by IIT-Delhi saying that up to 67 percent of total Particulate Matter at 2.5 emissions from road transport was contributed by goods traffic (heavy and light duty commercial vehicles) alone, even though their share in total vehicular fleet in Delhi was only 4 per cent.

The bench then wanted to know what could be done to check this 67 per cent emission, with the ASG suggesting that long term measures should be adopted as short term measures would not suffice.

She submitted that age of the vehicle may not be the only criteria for curbing pollution and suggested that the Centre was also thinking about a single fuel policy.

The IIT, Delhi report said that Delhi was among the top 10 cities with worst particulate matter pollution, as per World Health Organization (WHO) estimates for 2014.

The green panel has now listed the matter for final hearing on July 13 while asking the Centre and Delhi government to file their replies within three weeks on the reasons for non-compliance of its earlier order.

"Government of India, NCT Delhi both will file their reply as why NGT should not pass an appropriate order for non-compliance of its order within three weeks. All interim orders will continue," the bench said.

The bench also asked the Central Pollution Control Board to file additional data in support of its report regarding pollution in the national capital region (NCR).

[<Source>](#)

India set to become water scarce country by 2025: Report

Source Name: The Economic Times

MUMBAI: Although India is set to become water scarce country by 2025 due to demand-supply mis-match, the water sector is expected to see investment of USD 13 billion from overseas players in the next few years, a new study has said.

"India's demand for water is expected to exceed all current sources of supply and the country is set to become water scarce country by 2025.

India set to become water scarce country by 2025: Report India's demand for water is expected to exceed all current sources of supply and the country is set to become water scarce country by 2025 "With increasing household income and increasing contributions from the service and industrial sectors, the water demand in the domestic and industrial sectors increasing substantially," says a study conducted by EA Water, a leading consulting firm in water sector.

Nearly 70 per cent of country's irrigation and 80 per cent of domestic water use comes from groundwater, which is rapidly getting depleted.

However, overseas players from Canada, Israel, Germany, Italy, United States, China and Belgium sees big investment opportunity worth USD 13 billion in the domestic water sector.

The industry is expected to receive Rs 18,000 crore in the next three years, the report said.

The country provides huge opportunities across the spectrum in infrastructure development for water supply and wastewater management.

The industrial market is going to be the big opportunity till 2020, with growth in wastewater recycling and industrial water treatment, the report said.

Maharashtra is emerging as a hub for the water sector. Over 12 international companies have already set up design and engineering centers in Mumbai and Pune.

At present, there are more than 1,200 companies dealing in water and wastewater treatment in the state, mainly cater to the small & medium sector.

Pune and Nashik are going to be large hubs for manufacturing & fabrication industry in pumps, instrumentation & monitoring equipment.

A centralised wastewater treatment & recycling plants is under planning stage for Mumbai and Pune city, the report said.

With Modi government's planned investments in the water sector through the Ganga River Cleaning project, the Smart Cities initiative and the Swachh Bharat campaign, the industry is also hopeful of creating over 1 million jobs, it said.

[<Source>](#)

India's child labour 'reforms' could make it a dangerous place to invest

By Aidan McQuade

Government signals plan to stimulate economic growth by removing basic protections for workers and ending ban on child labour



Soon after India's compulsory education law promised a reinvigorated effort to ending child labour, protections could be dismantled. Photograph: Amit Bhargava/Corbis

Something momentous is happening in India – and not many outsiders are noticing. Prime minister Narendra Modi's government has recently announced significant changes to the laws governing India's labour market. These "reforms" appear to be aimed at stimulating economic growth and inward investment by removing "red tape" from entrepreneurs. So far, so little out of the neo-liberal ordinary.

However, removing "red tape" will mean taking away basic protections for some of the most vulnerable workers. This will include dismantling labour inspections, restricting trade unions, moving employment law violations from criminal to civil code, removing penalties for gender-based discrimination and ending the country's absolute ban on child labour.

Indian society, in particular a new coalition the Working People's Charter Secretariat, has begun to protest. They are fearful of a "race to the bottom" among businesses and between states to cut costs by reducing wages and terms and conditions. Civil society has also warned of increased exploitation of children, by making legal many of the forms of child labour and exploitation that have so long blighted India's vast "informal" economy. These proposed changes are particularly depressing coming so soon after India's compulsory education law promised a reinvigorated effort to end child labour.

India is already rife with labour rights abuses. Bonded labour, recognised as a form of slavery under both Indian and international law, affects millions, perhaps most notoriously in agriculture and brick production. Child labour and slavery remain a pernicious problem. Other forms of forced and child labour have recently emerged in export-oriented industries: the child labour found in the manufacture of sporting goods in Punjab would become legal under the proposed "reforms"; forced labour of girls and young women, notably in the spinning mills of Tamil Nadu, forms part of the supply chains that provide cheap clothes to northern hemisphere high streets.

Those affected by these slavery abuses – poor girls and young women, Dalits and people from other minority groups – are precisely the people that the laws governing India's labour market are meant to protect. If the government were to increase the capacity of the overburdened courts, and root out corruption and prejudice in the police, it would begin to transform the promises of those laws into a reality for all Indians.

Instead the path it has chosen appears quite different. The proposed reforms, taken together, are arguably unconstitutional, flouting article 23 of the Indian constitution, which prohibits trafficking and forced labour. Future generations may come to regard this as a seminal moment in Indian history, when an Indian government repudiated the ideals enshrined in the constitution by the founders of the republic – and instead substituted a legal basis for the exploitation of vulnerable citizens.

Ironically, this embrace of the excesses of 19th century "robber baron" capitalism occurs just as the growing international discourse on ethical trade runs counter. A core concept of the UN Guiding Principles on Business and

Human Rights is that governments have the responsibility to protect human rights and businesses have the responsibility to respect human rights.

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Dual flush system may be made compulsory to save water

Source Name: Economic Times

Seeking to save millions of liters of water per day across the country, the Bureau of Indian Standards (BIS) - country's national standardization agency that involves in issuing quality certification - has planned to amend the existing criteria to certify toilet's flush so that the attached cistern can discharge water for flushing as per needs.

The idea of this move is to promote and adopt new water saving standards in India on the line of global best practices.

"The BIS has a plan for amending the IS 774:2004 to include 'dual flush only' (criteria) instead of 'single and dual flush' to save water", said the minister of state for water resources Sanwar Lal Jat in his written reply to a Parliament Question in Lok Sabha on Thursday.

The 'dual flush cistern' has the option to discharge full or reduced quantity of water after using the toilets, depending on selection of option. Accordingly, a 10 liters cistern can discharge either 10 liters or five liters and similarly six liters flushing cistern can discharge either six liters or three liters in one go depending on the option selected by the users.

"The low flush toilets use less water and also reduce the volume of waste water", said Jat while referring to a guideline of the Central Water Commission (CWC). The Commission in its report on "Guidelines for Improving Water Use Efficiency in Irrigation, Domestic and Industrial Sectors" has indicated that water efficient toilets using six liters of water per flush can save 30 liters of water a day per person in the country.

The plan to bring required amendment while certifying flushing cistern is also part of the government's roadmap to conserve water and minimize wastage under the National Water Mission.

The Mission has identified it as an integral part of the strategies for water saving measures including recycling of water including waste water, improve efficiency of urban water supply system and efficiency labeling of water application and fixtures.

[<Source>](#)

Ludhiana unit to manufacture solar charkhas

Source Name: The Times of India

LUDHIANA: An industrial unit in the city is working towards the production of solar charkhas for the Prime Minister's project, aimed at reviving the use of charkha and making it a source of livelihood for women in rural areas of the country.

These solar charkhas are being manufactured by the GSL company in Focal Point. Whereas the owner of the company, Ghan Shyam Lote, refrained from giving out details, one of the sources informed that the minister of state for MSME (micro, small and medium enterprises) Giriraj Singh would be making an official announcement of the project on Wednesday, after deciding and finalizing the cost and other details.

The solar charkha is being seen as an alternative to the manual charkha that yielded an income of only Rs50 per day after working for eight hours on it, which required a lot of energy. Earlier, it was thought of fitting an electric motor to the charkha, but that would have increased the cost due to power consumption. The solar charkha with 16 spindles is being seen as an alternative to the traditional charkha, as it would help the user earn Rs5,000 to Rs7,000 per month in contrast to Rs1,500 to Rs2,000 by the traditional one.

According to information, in all over five crore charkhas are to be given to rural women in the country. This project had come up after Prime Minister Modi shared his idea on the radio programme 'Man ki baat' about reviving charkhas for the empowerment of rural women in the country. One good thing about the solar charkha is that apart from khadi, even yarn can be woven on it. To make these charkhas more affordable, the government is going to provide subsidy.

[<Source>](#)

Going green: Infosys will spend Rs 400 crore to become carbon neutral

Source Name: Economic Times

InfosysBSE 1.33 % will spend about Rs 400 crore over the next four years to achieve carbon-neutrality on commuting and travel by its nearly 1.8 lakh employees and in doing so deepen its commitment to sustainability, a senior executive at India's second-largest software services company said.

The Bengaluru-based company will have to offset 3.74 lakh tonne of carbon dioxide attributed to employees' travel, and it will spend Rs 70 crore this year on initiatives such as installing solar projects for rural electrification, biogas plants and distribution of smokeless cook-stoves in villages, besides afforestation.

"These will benefit communities outside of the company. Our programmes are in sync with the guidelines issued by various international agencies, including the United Nations. These projects will have the maximum social impact, and are subject to audit by international agencies," Infosys executive vicepresident Ramadas Kamath said.

On Monday, Infosys also announced that it is joining RE100, an elite club of global corporations such as GE, SAP, NestleBSE -0.87 % and BT with a commitment to go fully green.

While Infosys says it has fully offset greenhouse gas emissions that can be directly attributed to it (such as buying power from the grid and diesel used by its captive generating sets), the software firm is now aiming to offset so-called Scope 3 emissions that are indirectly attributable to it and these arise from employee commute and travel. To fully offset Scope 3 emissions, Infosys says it will have to offset 3.74 lakh tonne of carbon dioxide (Co2).

As part its journey toward sustainability, Infosys will commission 55 MW of solar capacity, including 40 MW in Karnataka, in the next year. It will add another 110 MW of solar capacity in the coming years. It is already generating energy from 2.7 MW capacity solar panels on rooftops across its campuses in India. "We will work with states to get the most favourable policy for renewable energy sector," he said.

Infosys consumed 257 million units of electricity globally during 2014-15, and 30 per cent of this came from renewable energy sources. Three years ago, Infosys had made an announcement at the United Nations committing to meet all its energy needs from renewable energy sources, to become carbon neutral, and to cut per capita power and water consumption by half (on 2007-08 baseline) by 2018. The company said its per-capita power and water consumption declined by 45 per cent and 35 per cent.

[<Source>](#)

Coimbatore college's novel windmill blade design wins patent

Source Name: Times of India

Students and staff of Park College of Engineering and Technology here in the city have been awarded patent by the Indian Patent Office for designing a low-speed windmill blade. The design has the potential to produce power at 3m/sec wind velocity and stands out from the ones already available in the windmill industry.

A P Haran, K Prasanna, P Mani Bharathi and Karthik V were awarded the patent last week for designing the windmill blade. While Haran and Prasanna are faculty members of the aeronautical engineering department, Mani Bharathi and Karthik are alumni of the institution, who worked on the project for almost three years.

Mani Bharathi and Karthik, who belong to the 2008-2012 batch of BE aeronautical engineering, were keen on doing something in the field of renewable energy. "There were long power cuts during the period, and everyone was looking for alternative sources for power. Solar and wind energy started gaining importance at that time," said Karthik. This was the motivation for the duo to suggest an idea to A P Haran, the dean of mechanical sciences.

"I suggested the students to do some literature study and come up with ideas for the project. And, Mani Bharathi and Karthik came up with the idea of designing a windmill blade that could produce power at low windmill velocity," said Haran. The students along with Prasanna K, an assistant professor with the aeronautical engineering department, studied some designs made by Indian windmill companies, and some designs from China and Japan, too.

"We found that windmills had difficulty producing power at low wind velocity and this was the challenge we took up for our design," said Bharathi. The team then identified parameters like weight, material and aerodynamics of the blade.

Initially, the team had designed a blade with glass fibre composites and it weighed 4.7kg. "This was the first challenge we faced. So, we replaced a section of the blade with an 'I' section. This reduced the weight to 2.4kg, giving us a huge boost in the design," said Prasanna. Further, the team introduced 25 cross sections in the blade, and improved the resin used in the material.

The students, Bharathi and Karthik started working on the project during their first year in college itself. "We worked 6 to 8am, as the weather conditions supported to record the power generation from the windmill. Then 6 to 8pm was also ideal for us to record the power," said Bharathi. The college management was upfront in accepting the project and funding it. "The college provided us with all necessary facilities. They also helped us in setting up the windmill," said Karthik.

When asked about the next step, dean Haran said that they attempted to sell the blade design to some windmill companies, but had a better offer waiting for them. "At least two companies from the state approached us to buy the design. While we were deliberating the idea to consider the proposal, we received a letter from the Union ministry of new and renewable energy," Haran said. The ministry wanted the team to work with an electrical company in Bengaluru on improving the design to make a high-power generating windmill.

[<Source>](#)

Heat waves in India are more deadly than you think – and they are likely to get deadlier

Source Name: Scroll.in

News reports have put the number of deaths last week in the heat wave sweeping parts of India at more than 500.

The number sounds alarming but is most likely an underestimate. Research shows that India is underreporting heat mortality, which in turn is inhibiting adaptive policies like early warning systems and better public health preparedness.

For one, the government counts only death by heat stroke and heat exhaustion as heat wave deaths. The narrow definition does not account for the way "heat exposure stresses underlying physiological systems", a study on heat mortality in Ahmedabad said. Heat exposure exacerbates respiratory diseases and renal failure that might not result in same-day deaths but could show up with a time lag of a few days.

The study found that mortality rates in the city of Ahmedabad were 43% higher in May 2010 when the city experienced a heat wave as compared to the same days in 2009 and 2011. An excess of 1,344 deaths occurred in May 2010, relative to the average for the years before and after.

The researchers accessed the day-wise death counts from Ahmedabad Municipal Corporation. Since the cause of the deaths was not documented by officials, it could be argued that the excess deaths in May 2010 may not necessarily be related to the heat. However, the researchers checked the government's epidemic surveillance system to rule out any outbreaks that could have contributed to an increase in mortality rates in 2010 – which implies that, all things the same, more people die in conditions of extreme heat.

The bad news is that heat waves are likely to intensify in the future, according to climate change researchers. Like the rest of the world, over the last century, India has turned hotter, with temperatures rising in the range of 0.8 to 1°C, with an increasing number of hot days.

"The heat waves are projected to be more intense, have longer durations and occur at a higher frequency and earlier in the year," said a research paper published in April 2015. The paper projects future heat waves in India based on multiple climate models. It finds that large parts of southern India and the East and West coasts, which are presently unaffected by severe heat waves, could be severely affected after 2070. This could lead to increased mortality.

The researchers draw attention to the fact that the Indian government does not consider heat waves as a serious risk to human health and heat hazards are not counted among the priorities of its disaster management plan.

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Global average concentration of carbon dioxide in atmosphere exceeded its threshold limit for the first time in March

Source Name: Economic Times

As there is no let up in climate-damaging human activities including burning of fossil fuels across the world, the monthly global average concentration of carbon dioxide in the atmosphere had exceeded the threshold limit of 400 parts per million in March 2015 for the first time in recorded history.

"This threshold is of symbolic and scientific significance and reinforces evidence that the burning of fossil fuels and other human activities are responsible for the continuing increase in heat-trapping greenhouse gases", said the World Meteorological Organization (WMO) in a statement on Thursday.

The WMO referred to the monthly global average of carbon dioxide concentration in the atmosphere, data of which was released by the US National Oceanic and Atmospheric Administration.

Accumulation of carbon dioxide is quite serious as the CO₂ remains in the atmosphere for hundreds of years. Its lifespan in the oceans is even longer.

It is the single most important greenhouse gas emitted by human activities. It was responsible for 85% of the increase in radiative forcing - the warming effect on our climate - over the decade 2002-2012. The CO₂ absorption by the oceans causes ocean acidification.

"The latest finding highlights the relentless rise of concentrations of greenhouse gases in the atmosphere. All of the northern hemisphere monitoring stations contributing to the World Meteorological Organization (WMO) Global Atmosphere Watch network passed the threshold of 400 PPM monthly average atmospheric CO₂ concentrations in April 2014 during the seasonal maximum. This maximum occurs early in the northern hemisphere spring before vegetation growth absorbs CO₂", said the WMO.

The NOAA's report from its Global Greenhouse Gas Reference Network, which constitutes substantial part of the GAW observational network, issued on Wednesday marks the first time that the global monthly average within their network - including stations in the southern hemisphere - has crossed 400 PPM, with a March value of 400.8 PPM.

"The WMO's Greenhouse Gas Bulletin showed that between 1990 and 2013 there was a 34% increase in radiative forcing - the warming effect on our climate - because of long-lived greenhouse gases such as carbon dioxide (CO₂), methane and nitrous oxide.

"In 2013, concentration of CO₂ in the atmosphere was 142% of the pre-industrial era (1750), and of methane and nitrous oxide 253% and 121%, respectively", said the WMO.

[<Source>](#)

More Efficient Solar Panels, Thanks To Eye Of Moth And Leaf Of Lotus

Source Name: Clean Technica

When scientists at the Oak Ridge National Lab went rifling through nature's drawers on their hunt for a more efficient solar panel, they missed the eye of newt, but they did find inspiration in a couple of other natural ingredients, the moth's eye and lotus leaf. The result is a "revolutionary" souped-up superhydrophobic coating that could mean an increase in solar conversion efficiency in the range of three to six percent.

That may not sound all that awesome, but the new solar panel coating hits the trifecta when you count in brownie points for two other factors that contribute to the overall cost of solar energy, which would be manufacturing costs, and maintenance and operating costs.

Group Hug For More Efficient Solar Panels

Oak Ridge is part of the Energy Department's network of national laboratories, so let's pause here while US taxpayers get a nice group hug for chipping into the research project.

You can get all the details about the new coating in the Royal Society of Chemistry's Journal of Materials Chemistry C under the impressive title "Monolithic graded-refractive-index glass-based antireflective coatings: broadband/omnidirectional light harvesting and self-cleaning characteristics," but for those of you on the go it all boils down to a specialized, ultra-thin layer of porous glass.

Here is a snippet from the abstract:

...The coatings comprise an interconnected network of nanoscale pores surrounded by a nanostructured silica framework. These structures result from a novel fabrication method that utilizes metastable spinodal phase separation in glass-based materials...the fabricated nanostructured surfaces are found to promote a general and an invaluable [similar]3-7% relative increase in current output of multiple direct/indirect bandgap photovoltaic cells.

As a side note, the Energy Department's press materials have the upper range at six percent, not seven, so we'll settle for that.

[<Source>](#)

Indian scientists show how eco-friendly cars can run on air

Source Name: The Hans India

Indian scientists have shown a new route to make fuel cells more efficient, thus pushing further the possibility that cars could one day run on air. In a study, researchers said they had used an iron-based substance to act as a catalyst, instead of platinum, to speed up energy generation in a hydrogen peroxide-based fuel cell.

"It makes the procedure not only energy efficient but also cost-effective since we did not use conventionally used platinum catalyst, which is very expensive. Moreover, hydrogen peroxide storage and transportation is very easy compared to hydrogen," said study co-investigator Sreekumar Kurungot from CSIR-NCL, Pune.

A fuel cell combines hydrogen with oxygen to produce electricity, heat, and water - which makes it eco-friendly. But due to the storage and safety concerns of hydrogen, the focus now is on hydrogen peroxide as the source in fuel cells. The hydrogen peroxide-based fuel cells are now considered the best option for use as a power source at space stations, remote military camps and for underwater power requirements.

At a time when carbon dioxide emissions from vehicles have come under the scanner for problems related to climate change, fuel cells are being seen as promising alternatives to fossil fuels. Fuel cell vehicles are already a reality. In November last year, Toyota unveiled the Mirai, one of the first hydrogen fuel-cell vehicles to be sold commercially. Honda also displayed its sleek, new environmental friendly car engineered on the same principle.

[<Source>](#)

Tata Power launches India's 1st Self-Healing Grid technology for continuous power supply

Source Name: Energetica-India

Tata Power has announced the adoption of Self-Healing Grid technology at its 11 kV Distribution Network in Kandivali, the first of its kind in India to be implemented by the Company as a Distribution utility.

The purpose of the Self-Healing Grid technology is to help automate the process of restoration of power supply to keep interruptions (if any) to a bare minimum. Unlike the conventional centralised control approach, Self-Healing Grid (SHG) is a totally decentralised approach where, in case of power fault, every substation communicates with each other and executes the best possible instruction for rapid fault isolation and restoration of supply in the network. In case of power interruption, the average restoration time with SHG is less than a minute, unlike the conventional restoration time which usually takes about 15 minutes. In addition, the Self-Healing Grid concept requires no manual intervention, thereby minimising all errors or delays in the restoration of supply to the consumers. SHG's less than a minute power restoration turnaround time is extremely useful in case of essential services like Hospitals, Banks, and Data Centres, and the technology also reduces emissions & carbon foot print.

Speaking on the initiative, Mr. Ashok Sethi, Executive Director- Operations, Tata Power stated, "Tata Power is committed to empowering its consumers, and has been undertaking various initiatives to ensure the best possible service to the Mumbaikars. Self-Healing Grid is an innovative step towards addressing power interruptions in an optimal way. The Company will continue to develop a robust network backbone and, to facilitate the same, it will continue to deploy innovative technologies to overcome all constraints, and serve growing demand of consumers."

[<Source>](#)



International Institute of Engineers & Researchers

AUGUST 8, 2015

DUBAI, UAE

2015 IIER 6th International Conference on Natural Science and Environment will be held at Flora Grand Hotel in **Dubai, UAE**, during **August 8, 2015**, as the Conference of ICNSE-2015. ICNSE 2015 is sponsored by International Institute of Engineers and Researchers (IIER). It aims to be one of the leading international conferences for presenting novel and fundamental advances in the fields of Natural Science and Environment. It also serves to foster communication among researchers and practitioners working in a wide variety of scientific areas with a common interest in improving Natural Science and Environment related techniques.

The conference will be a international forum for the presentation of technological advances and research results in the fields of Natural Science and Environment. The conference will bring together leading researchers, engineers and scientists in the domain of Natural Science and Environment interest from around the world. The topic of interest includes various subjects like Environmental sciences, Environmental Science and Technology, Environmental dynamics, The Global environmental change and ecosystems management, Climate and climatic changes, Global warming, Ozone layer depletion and Carbon capture and storage.

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6th WORLD RENEWABLE ENERGY TECHNOLOGY CONGRESS

International Conference and Exhibition

21-23 August, 2015

Delhi Cantt., India

The 6th WRETC (World Renewable Energy Technology Congress & EXPO 2015) is being organized by Energy And Environment Foundation with support from Ministry of New and Renewable Energy, Govt. of India from 21st August to 23rd August, 2015 in Delhi. The theme of the conference is "Promoting Renewable Energy, Energy Efficiency & Sustainability for a Brighter Future". This is a premier event that focuses on Renewable Energy Technology, Power Utilities and Transmission, Bioenergy, Biofuels and Renewable materials.

The 6th WRETC & EXPO 2015 shall provide vital information about the latest concepts, trends and technological developments with special focus on fostering co-operation for generating green business. The exhibition will showcase latest green technologies, equipments, products and services. It is expected that more than 100 CEOs and senior executives and more than 400 national and international delegates that will include policy makers, financiers, producers, strategic investors, marketers and exhibitors shall attend this international conference.

The tracks of the conference include most of topics related to Solar Energy, Wind Energy, Tidal Energy, Bio-energy, Small Hydro Power, Geo-thermal Energy, Waste to Energy, Energy Efficiency, Power Transmission, Green Vehicles and Green Buildings and many more interesting and important topics.

[<Conference Brochure>](#)

[<Website>](#)

2015 International Conference on Renewable Energy and Development

August 23-25, 2015

Bangkok, Thailand

ICRED 2015 (**International Conference on Renewable Energy and Development**) will be held in Bangkok, Thailand during August 23-25, 2015. The aim as well as objective of ICRED 2015 is to present the latest research and results of scientists related to Renewable Energy and Development topics. This conference shall provide opportunities for the delegates to exchange new ideas face-to-face, to establish business or research relations as well as to find global partners for future collaborations. It is expected that the conference results will lead to significant contributions to the knowledge in these up-to-date scientific fields.

ICRED 2015 is organized by South Asia Institute of Science and Engineering (SAISE). ICRED 2015 is supposed to be the largest technical event on Renewable Energy and Development in Thailand in 2015. The focus of the conference is to establish an effective platform for institutions and industries to share ideas and to present the works of scientists, engineers, educators and students from all over the world.

Topics of interest are categorized under broad themes Renewable Energy and Sustainable Development. The topics include All type of Renewable Energy, Small Hydro Power, Hybrid Energy Systems, Grid and off-grid issues, Sustainable energy and environment, Green manufacturing, Agricultural sustainability, Zero energy building, Waste management and Energy efficient system.

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The International Conference on Science, Ecology And Technology (Iconsete'2015 – Vienna)

25th to 28th August 2015

Vienna, Austria

The International Conference On Science, Ecology And Technology I (Iconsete'2015 – Vienna) will be held in Vienna, Austria, during **25 – 28 August, 2015** as the Conference of ICONSETE. ICONSETE 2015 is sponsored by eight universities, two international organizations and state institutions. It aims to be one of the leading international conferences for presenting novel and fundamental advances in the fields of The International Conference on Science, Ecology and Technology (Iconsete'2015 – Vienna). It also serves to foster communication among researchers and practitioners working in a wide variety of scientific areas with a common interest in improving Technology, Science, Social Sciences, Medical and Engineering related disciplines. The conference aims at providing a unique communication and discussion platform for Science, Social Sciences, Medical and Engineering scientists as well as any discipline of science aiming at the protection of the world.

The main goals of ICONSETE 2015 are

- Presenting current researches being carried out in the different research areas for scientists, scholars, engineers and students from the universities all around the World
- Discussing fundamentals of development in science
- Raising an awareness of emerging problems in the world
- Providing opportunities for the delegates to exchange ideas and application experiences face to face,
- Establishing business or research relations and to find global partners for future collaboration.

The topics of interest also include Earth Science, Ecology, Energy, Environment and Environmental Engineering.

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International Conference on Clean Water, Air & Soil (CleanWAS)

28-30 August, 2015

Kuala Lumpur, Malaysia

International Conference on Clean Water, Air & Soil (CleanWAS) will be held between 28-30 August, 2015. The International Conference will be held at Hotel Armada Petaling Jaya, Kuala Lumpur, Malaysia. CleanWAS is the conference organized every year since 2012 under The International Water, Air and Soil Conservation society (INWASCON) with joint supports from Malaya University, Universiti Kebangsaan Malaysia and University Putra Malaysia.

The aim of CleanWAS 2015 is to provide productive opportunities for academics and practitioners from interdisciplinary fields of Environmental Sciences to meet, share and take away expertise and ideas in related disciplines. The conference will bring together leading researchers, engineers and academician in the domain of interest from around the globe. CleanWAS 2015 offers interdisciplinary themes of quality R&D topical developments from potential contributors and experts and provides an opportunity in bring in the new techniques and horizons that will contribute to clean environment.

The main theme of this conference also include topics like Biodiversity, Carbon capture and storage, Climate change, Emission sources, Natural resources management, Human--Environment interactions, Pollution prevention, Recycling, Renewables, Sustainability, Waste management and Water and Wastewater management.

[<ReadMore>](#)

The IRES – 3rd International Conference on Natural Science and Environment (ICNSE)

August 30th, 2015

Toronto, Canada

The IRES – 3rd International Conference on Natural Science and Environment (ICNSE) aimed at presenting current research being carried out in that area and scheduled to be held on **August 30th, 2015** in **Toronto, Canada**. The idea of the conference is for the scientists, scholars, engineers and students from the Universities all around the world and the industry to present ongoing research activities, and hence to foster research relations between the Universities and the industry. This conference aims at providing opportunities for the delegates to exchange new ideas and application experiences face to face, to establish business or research relations and to find global partners for future collaboration.

This Conference is sponsored by The IIER (International Institute of Engineers and Researchers). The conference would offer a large number of invited lectures from renowned speakers all over the country. Among topics of interest Environmental sciences, Environmental Science and Technology, Environmental dynamics, Global environmental change and ecosystems management, Climate and climatic changes, Global warming and Ozone layer depletion also feature there.

[<ReadMore>](#)

The Times of India, Delhi dated
April 26, 2015

Carrot-&-stick policy can help implement NGT ban

Runu Banerjee & Jayashree Nandi
New Delhi
TNN

The ban on older, polluting vehicles is not impossible to implement if the transport and traffic departments show some will. China—which is reeling under a similar air pollution crisis—Mexico and US are among the countries that have successfully managed to phase out older private and commercial vehicles. The main reason why older vehicles are still in use in India is because under the Central Motor Vehicle Rules (CMVR), vehicles get registered for 15 years. At the end of that period, a fitness test is conducted by the transport department and the registration certificate (RC) renewed for five years.

If NGT's ban on diesel vehicles that are more than 10 years old and petrol vehicles more than 15 years old is to be implemented, the transport department will have to send notices to all such vehicle owners, asking them to get an NOC from the department. This NOC is needed to further sell off the vehicle elsewhere. Owners to be contacted can be easily identified from the registration database.

Owners can be contacted through addresses given in the registration certificate. Officials, however, say this may take time as the addresses provided in the RC would need to be verified. "For a phasing out of this magnitude, provisions for either selling off the vehicles or transferring them outside NCR would have to be made. For this, vehicle manufacturers could be roped in. Incentivizing the sale of older vehicles is also a way of getting rid of these vehicles," said a transport department official.

The second phase of the ban would be implemented with checks and enforcement. There can be drives against old vehicles, much like a Pollution Under Control (PUC) drive. Those found older than the age limit would be impounded. But the transport department is still wary of starting such a drive. "This would take time. We don't have space to keep so many vehicles. Plus the security of impounded vehicles is also an issue," they said. None of these issues is insurmountable and with help from the Centre and Delhi government, this can be executed.

Here is why implementing the ban on older vehicles can address Delhi's air pollution problem, provided it is implemented with a combination of other measures mentioned in TOI's air pollution agenda published on Friday. According to a

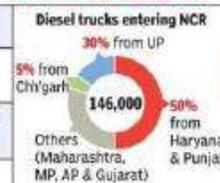
REPLACING VEHICLES IN PHASES

Total vehicles in Delhi
82 lakh

Total diesel vehicles to be phased out
1.5 lakh

Total petrol vehicles to be phased out
25 lakh

Diesel trucks entering city every night
85,000 to 100,000



VEHICLE REPLACEMENT PROGRAMMES ANALYSED BY INTERNATIONAL COUNCIL ON CLEAN TRANSPORTATION (ICCT)

Place	Vehicles	Targeted Average Subsidy	Complementary policy
California (US)	Multiple types	\$28,000	Upgrading highly polluting vehicles
US	Light-duty vehicles	\$3,500-4,500	None
	Heavy-duty vehicles	\$9,400	None
Germany	Light-duty vehicles	\$3,500	Low-emission zones
	Light- & heavy-duty vehicles	\$980-2,940	None
China	Light- and heavy-duty vehicles	LOVs - \$410-2,410, HDVs - \$1,330-2,100	Mandatory vehicle age limits, low emission zones
Mexico	Heavy-duty vehicles on federal highways	Up to 3% of cost of replacement vehicle	None
Mexico City	City buses	Up to \$7,700	None
Chile	Heavy-duty trucks	\$8,000-\$24,000	Plan to implement low-emission zone

60% trucks heavy goods vehicles while rest medium goods vehicles

ICCT RECOMMENDS HOW COLOUR CODING CAN WORK IN NCR TO IMPLEMENT THE BAN ON OLD VEHICLES

- ▶ The color codes on the labels can vary according to age/emission standard
- ▶ Red for Euro I, Yellow 1 for Euro II, Yellow 2 for Euro III and Green for Euro IV
- ▶ There could be a timeline set for how each colour code will be phased out over the next few years
- ▶ From October 1, 2015, no red label vehicles to be allowed inside Delhi
- ▶ From October, 2016, no Yellow 1 label to be allowed inside Delhi
- ▶ From October 1, 2017, no Yellow 2 label vehicles allowed inside Delhi



TOI FAVOURS A COMBINATION OF MEASURES TO CHECK AIR POLLUTION IN DELHI

- ▶ Phase out diesel vehicles more than 10 year old. Transport department should immediately notify the registration numbers that will be phased out
- ▶ Tighten PUC norms for pre-2010 vehicles; make them as stringent as norms for Euro 4 vehicles by issuing a notification
- ▶ Hike parking charges and demarcate parking zones, penalize illegal parking
- ▶ Increase cess on diesel. The current amount is only 25 paise per litre
- ▶ Impose an annual cess on diesel vehicles that can be increased on an yearly basis to discourage people from using old polluting vehicles
- ▶ Register only Euro IV (50 ppm sulphur) vehicles in NCR
- ▶ Procure 5,000 buses, waive off taxes on buses, and plan for last mile-connectivity, including cycle, walking and para-transit
- ▶ Set a final deadline for the NHAI and Haryana government to complete the eastern and western peripheral expressways. It's a priority because it can take off at least 60,000-70,000 vehicles from city roads
- ▶ Before the expressways are ready, deploy staff to increase checks at borders. Transport department should consider this a priority and invest in staff and resources accordingly

white paper on "best practices in reducing emissions through vehicle replacement programmes" by the International Council on Clean Transportation (ICCT), China's Ministry of Environmental Protection estimated that in 2011, 10-year-old and older vehicles (Euro 0 and Euro I equivalent) constituted just 15% of the vehicle fleet but emitted 61% of oxides of nitrogen (NOx) and 76% of particulate matter (PM). According to research studies carried out in Beijing, around 50% of PM and black carbon emissions came from high-emitter vehicles. "The story is similar in India, where ICCT estimated that the pre-2003 vehicles constituted less than 20% of the total vehicle fleet but accounted for nearly half of all vehicular PM emissions and a third of NOx emissions in 2011."

Most countries have a fiscal incentive policy for those who want to retire their old vehicles voluntarily or want to participate in the government's phase-out programme

(there is no legal ban on old vehicles in these countries but the government runs programmes to phase them out). For instance, light duty vehicles in China are given anywhere between 410 and 2410 dollars to retire their vehicles that are more than 8 years old.

"Based on the international experience, subsidies of up to Rs 1.5 lakh per truck will ensure that those who want to purchase a new Euro IV truck after retiring the old vehicle will be able to do so. Small fleet operators should be given an extra six months to a year to comply with any mandatory retirement requirement," said Anup Bandivadekar, Passenger Vehicles Programme Director, ICCT.

ICCT researchers also recommend that a colour coding or labelling system be implemented if the ban has to effectively address NCR vehicles also. These may be difficult to identify as Delhi transport department has no access to their database.

Delhi should require that all vehicles -either registered within or outside Delhi -need to have a label to enter Delhi. The label should be issued first time a vehicle enters Delhi after June 1, 2015. In addition, Delhi can also consider an environmental sur charge by the colour of label for each entry of the vehicle into Delhi," Bandivadekar added.

Another way of phasing out old, polluting vehicles is to make them too expensive to keep. We need to come up with a very rational pricing strategy. An annual pollution tax can be imposed on the basis of the age of the vehicle and fuel. This will discourage polluting vehicles and people will just dispose them of. There can be also incentive measures like discounts on new vehicle purchase and low interest loans for those who phase out vehicles," said Geetam Tiwari, chair of Transport Research and Injury Prevention Programme (TRIPP) at IIT Delhi.

Unfortunately, YOU are driving the air out of Delhi



POLLUTION TERROR

AIR QUALITY INDEX PM2.5

Delhi	262	Poor
Tomorrow	280	Poor
Pune	77	Good
Tomorrow	81	Good
Hyderabad	70	Good
Chennai	27	Good
Kolkata	35	Good
Mumbai	50	Good

Source: SAFAR (PM2.5-NM-10 stations)
US Embassy data calculated as per Indian standards by SAFAR/MOE-ITM-IND
Based on 1 Station Data Per City at 4pm

The Times of India, Delhi dated April 27, 2015

Hike diesel cess, invest in public transport

Experts Suggest ₹190Cr Raised So Far Can Power Many Green Initiatives

Jayashree Nandi & Rumu Banerjee | TNN

New Delhi: Delhi's environment department has collected about Rs 190 crore from the pollution cess of 25 paise per litre of diesel imposed in 2008, officials told TOI. The money was to be used to create an "air ambience" fund and promote clean air policies but a major chunk of it lies idle, according to sources.

If the money had been put into public transport, at least a few hundred much-needed buses would have been plying in the city by now. Alternatively, about 20 km of integrated road with pedestrian walkway and cycle tracks could have been built, considering that each km of integrated road costs about Rs 10 to 12 crore, according to experts.

While the cess on diesel was a welcome step, it's essential that the money raised is ploughed into green initiatives if the fight against pollution is to be joined, the experts point out.

They also make the case for hiking the cess on diesel because it addresses two concerns simultaneously—discouraging use of diesel vehicles and creating a public transport fund with the money collected through the cess.

TOI FAVOURS A COMBINATION OF MEASURES TO CHECK AIR POLLUTION IN DELHI BY WINTER

- ▶ Phase out diesel vehicles more than 10 year old. Transport department should immediately notify the registration numbers that will be phased out
- ▶ Tighten PUC norms for pre-2010 vehicles; make them as stringent as norms for Euro 4 vehicles by issuing a notification
- ▶ Hike parking charges & demarcate parking zones, penalize illegal parking
- ▶ Impose an annual cess on diesel

- vehicles that can be increased on an yearly basis to discourage people from using old polluting vehicles
- ▶ Register only Euro IV (50 ppm sulphur) vehicles in NCR
- ▶ Procure 5,000 buses, waive off taxes on buses, and plan for last mile-connectivity, including cycle, walking and para-transit
- ▶ Set a final deadline for the NHAI and

Increase cess on diesel. The current amount is only 25 paise per litre

Haryana government to complete the eastern and western peripheral expressways. It's a priority because it can take off at least 60,000-70,000 vehicles from city roads

▶ Before the expressways are ready, deploy staff to increase checks at borders. Transport department should consider this a priority and invest in staff and resources accordingly

Even after the deregulation of diesel, more than 40% of new car sales are diesel because the fuel is still around Rs 11 per litre cheaper than petrol.

TOI, which published an action plan recently, recommended implementing NGT's order of banning old vehicles but also several other interventions such as increasing the tax on diesel.

"We have been asking for the cess to be increased by Rs 2 and the money generated to be used for a dedicated purpose. Taxes on diesel are low in Delhi compared to not just other countries but other states such as Karnataka and Maharashtra. In UP, too, the retail price of diesel is higher than Delhi," said Anumita Roychowdhury, head of Centre for Science and Environment

(CSE) clean air campaign.

In the run up to NGT's crucial hearing on the ban on more than 10-year-old diesel cars and a number of other interventions to bring down air pollution levels in the city several organizations and ex-



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perts have submitted their recommendations. EMBARQ India in its submission to the transport department recently suggested a fuel tax as part of "travel demand measures", a measure implemented by Germany.

"People often think that the concept of higher fuel prices goes against the economy. Many European cities have proved it's not true. Here tax in general is high and on top of that there is usually an eco-tax of 10%. This helps build and subsidize public transport, for instance. Germany has an eco tax of \$0.53 per litre of diesel which is substantially high. No wonder their public transport system is so efficient," said Amit Bhatt, strategy head, urban transport, EMBARQ.

Bhatt added that Delhi government could buy close to 400 buses from the 190 crores it has collected. "It can do a lot like build public transport infrastructure, make bus depots, terminals etc."

The Sheila Dikshit govern-

ment had in 2004 proposed a pollution cess of 2% on diesel vehicles, besides the 0.25 paise cess on the fuel in stations, which was implemented in 2007. The government had even contemplated hiking the 0.25 paise cess to Re 1. However, the pollution cess on vehicles never took off as the UPA government at the Centre stepped in, discouraging the imposition of such a cess.

The cess on fuel in Delhi has remained the same for several years now, even as sale of diesel vehicles has been going up every year. While 31,784 private diesel vehicles were registered in 2010-11, the number went up to 50,062 the next year. The trend continued in 2012-13, when 68,863 diesel vehicles were registered — more than double the number in 2011.

The Times of India, Delhi dated April 28, 2015

Foul air against right to life, SC must act

William Bissell



I am writing this as a concerned father of two young children who are sick all winter with one pulmonary infection after another. My son loves nothing more than playing football, but lately I've been wondering if we should be letting him do that, as every night after he plays, he has a deep wheeze in his lungs. Seeing this terrifies me — it is not natural for a child to have to work so hard to breathe. How did something as innocent as playing football become a hazard to our children's health?

My friends, my family and my business are all in Delhi — my entire life is here. And yet, I know that by staying here my wife and I are harming our children and ourselves. What kind of decision is this for a parent to have to make? You shouldn't have to leave your home just to breathe safe air.

Article 21 of the Constitution affords all Indians the right to life. In the twenty-first century, this feels like it should be such a basic thing — and yet it isn't, not anymore. The air we breathe is killing us, cutting time off our lives with every breath we take, which is an extreme violation of the right to life.

Urban planning hasn't

A FATHER'S LETTER

kept up with the rapid population growth in urban India, and, as a result, pollution levels have been skyrocketing as well. Everybody in urban India, regardless of who they are or where they come from, is now breathing a deadly cocktail of pollutants and carcinogens everyday — rich or poor, young or old, it us all.

Over half a million Indians are estimated to die each year as a direct result of pollution. When we breathe polluted air, we are breathing in hazardous materials. The

worst is PM 2.5 — particulate matter, i.e. dust, smoke, etc., less than 2.5 micrometres in diameter. The particles are so small that they get lodged in our lungs, causing cancer, heart failure and respiratory diseases. Our air is killing us with every breath we take.



LET DELHI BREATHE

The Supreme Court would be doing an immense service to every Indian if there was a way in which the right to life could be codified into a national clean air standard. The Supreme Court could mandate that in order to protect

the lives of all citizens, pollution levels across India be decreased to a certain level. Every municipality could then develop and be held accountable for its own clean air action plan, as per its city's unique needs.

In 1998, in response to a sustained campaign by the Centre for Science and Environment, the Supreme Court ordered that all Delhi buses and auto-rickshaws be converted to CNG from diesel. As a result, the quality of Delhi's air improved tremendously over the next decade. Those of us in Delhi have seen the positive results of this, and it's really an example of what can be accomplished when the government fights to improve

air quality. There is absolutely no reason why this can't or shouldn't happen again.

One of the greatest fallacies is that doing something to reverse pollution and improve air quality will slow down India's economic growth. This couldn't be further from the truth: the fastest way to hinder economic growth is to have a sick workforce. India's loss of man hours due to air pollution is already incalculable, and this will only increase if we don't take action. So let's look towards the Court to lead the way once again, while we all begin working towards cleaning India's air.

William Bissell is Managing Director of FabIndia

The Economic Times,
Delhi dated April 28, 2015

Can Incinerators Help Clean India?

Hari Pulakkat investigates incineration as a technology to manage the country's growing problem of waste management

The Okhla Waste To Energy (WTE) plant sits in 15 acres of prime land, between the Apollo Hospital and the offices of country's top scientific research body, CSIR. In close proximity to the plant are Holy Family and Escorts Heart Institute, and Sukhdev Vihar, with a large residential population comprising doctors and engineers. Not too far are Friends Colony and Maharni Bakh where some of the rich and well connected people of Delhi live. It is easy to smell the plant from a distance, even before you begin to see it.

The plant has been controversial right from the beginning, with residents complaining about foul smell and fly ash. It is run by the Timarpur-Okhla Waste Management Company (part of the Jindal Saw Group), and has the capacity to process about 1400 tonnes of waste per day. It was built at a cost of Rs 290 crore. The current Delhi government has promised closure of the plant, but things have not moved after chief minister Kejriwal's promise soon after he was sworn in. It is hard for the government to close the plant, as it would mean confronting an additional 1400 tonnes of garbage every day, apart from having to deal with other legal and

administrative issues.

Such complaints are not uncommon around WTE plants, but they have come up anyway because of the pressing need to dispose of waste. WTE plants are indeed located in cities in the developed world, and that too in countries with some of the strictest pollution control regulations. There is one right in the heart of Paris. Large WTE plants are situated in Vienna, Hamburg, Taipei, Singapore and other cities. Residents do not like them in their backyard, but environmental regulators have not found much fault with the plants. "Controversies have always been a part of waste incineration," says D Sastry, associate vice-president of Ramky Engineering.

The world over, WTE plants have come up due to sheer necessity. India is no different, and it is planning a series of such projects around the country. India generates nearly 70 million tonnes of municipal solid waste a year, of which about 80% is dumped without precautions in landfills. These landfills are toxic places that spew gases like dioxins and the greenhouse gas methane for a long time. Land is getting scarce as well, while waste generation is increasing rapidly.

A few years ago, the National

Task Force on Waste to Energy estimated a potential of 439 megawatts of power from 32,890 tonnes per day of waste (12 million tonnes a year). The committee estimated that India's municipal waste production will be 165 million tonnes a year by 2031 and 436 tonnes by 2050. India has no waste land to fill with such enormous amount of waste.

Neither does it, or anybody else, have the ability to segregate and recycle all its waste. Composting has so far not worked in India because of poor segregation and other reasons, although it has several advantages. In the long run, the world has no alternative to stop creating waste. Since this is hard, in the short to medium term, WTE plants seem to be the only alternative to take care of what cannot be reused or recycled or composted. This is why cities around the world are using this technology, while working hard to make sure incineration becomes as safe as possible.

Controlled burning is not the only way to convert waste to energy. Gasification is a good and non-controversial method for organic waste. Over 50% of India's waste is organic, and hence a candidate for composting or gasification. However, for non-

organic and mixed waste incineration is the only way out. This is the logic that is followed in developed countries. "It is always a comparison between alternatives," says Ranjit Annepu, who studied India's waste problem as a master's student at Columbia University. "The problems with waste to energy plants come down to how the operator is operating the plant and how they are regulated."

Like composting, incineration has also not worked well in India. As early as 1984, a plant was set up in Delhi with technical help from Denmark. This was closed down due to administrative and technical reasons. Selco set up a plant in Hyderabad in 2002, and Suram Energy set up another plant in the same year near Guntur in Andhra Pradesh. Both of them closed down due to financial reasons. Jindal's was set up in 2007, and it has met with opposition. None of this means that the idea does not work. "Just because waste to energy plants in India has not been successful," says Sunil Kumar, scientist at the National Environmental Engineering Research Institute (NEERI), "we cannot say that the technology does not work."

Kumar is a waste to energy

researcher, and is convinced that it is a good way of using up waste that cannot be disposed of in other ways. Waste-to-energy plants in the developed countries are located in the heart of cities, and they operate without significant public opposition. Opposition in India boils down to a few key issues: smell, pollution, low calorific value of waste... Experts say that none of this should really matter in a well run plant. But, if not well run, waste-to-energy plants can become dangerous devices.

Smell usually comes from the waste during transportation and is one of the easiest problems to handle. In developed countries, waste is always transported in closed containers or underground, and hence does not smell. Pollution comes from burning, and current technology allows for bringing it down to low levels. High temperatures above 850 degree centigrade ensure that cancer-causing dioxins and furans are not produced, and a scrubber prevents the fly ash from going through the smoke-stack. Some fly ash needs to be disposed of safely, but it reduces the landfill requirements by about 90%.

Indian waste is of low calorific value because of the high moisture content, and some energy goes towards removing the water from the waste. Western technology cannot deal with this waste well, and it is why Chinese technology is popular among Indian companies. Says Sastry: "The Chinese have optimised the technology for high moisture content."

Ramky is among the companies building new waste-to-energy plants around the country. Such plants will be a key part of the country's waste management system over this decade. Controversies may be a partner of this industry, but India seems to be with no alternatives at the moment. In the long run, biological treatment can take over from incineration. And new technologies like plasma pyrolysis are being developed. But for the moment, incineration seems to be firmly ahead of land-filling.

hari.pulakkat@timesgroup.com

Incineration Plants Planned or Built			Why Controlled Waste Incineration?	Disadvantages of Controlled Waste Incineration
LOCATION	COMPANY	SIZE		
Narela, Delhi	Ramky	24 MW	Destroys most of waste safely, assuming technology and regulations are sound Reduces the area for landfill by 80-90% and gas emissions from landfills completely Reduces greenhouse gas emissions substantially compared to coal Significant reduction in pollution versus coal Provides partly renewable energy	High cost of pollution control and long lead in periods to recover investments Difficulty in monitoring emission of gases like dioxins in real time Need for tight regulation and monitoring of plants Removal of hundreds of thousands of jobs through elimination of collecting and sorting waste Absence of viable technology to deal with bottom ash completely safely
Ghaziipur, Delhi	IL&FS	10 MW		
Jabalpur, Madhya Pradesh	Essel Infrastructure	11 MW		
Pallavapuram, Tamil Nadu	Essel Infrastructure	5 MW		
Surat, Gujarat	Rochem	12 MW		
Jawaharnagar, Hyderabad	Ramky	20 MW		



₹5k fine for burning waste in open

NGT Imposes Total Ban, Says Senior Officers In NCR To Face Music If Orders Are Violated

TIMES NEWS NETWORK

New Delhi: In yet another bid to check air pollution in Delhi and the rest of the NCR, National Green Tribunal on Tuesday banned burning of waste in the open. It also announced a fine of Rs 5,000 on anyone who is caught burning dry leaves, plastic, rubber or any other waste material in NCR.

NGT said deputy commissioners, director of horticulture, area SHOs, assistant



LET DELHI BREATHE

commissioners and sanitary officers of the area would be held responsible if there was any violation of its order.

The bench headed by NGT chairperson Justice Swatanter Kumar said all authorities are duty bound to oblige with the tribunal's orders. "We make it clear that the orders of the NGT are to be complied with as a decree or order of the civil court," the order said.

The bench said it had data to support the view that waste burning is responsible for a major portion of emissions in the city. Nearly 29.4% of the total PM10 (coarse, pollution particles) are from waste

PANEL COMES DOWN HARD ON VIOLATORS

> Any person can lodge a complaint with the area SHO, corporation, local authority and pollution control board

> Delhi, UP and Haryana governments to notify the telephone numbers, web addresses or any other medium where complaints can be made

> If the offender refuses to comply with the directions of the authorized officers, the officers can issue him a notice to appear before the tribunal

> The fine will not absolve the offender of other liabilities that the person may incur under different laws in force, including other provisions of the NGT Act, 2010

> If authorities notice any burning of plastic materials, they will not only ensure that

All the corporations will notify on their websites information about registration of complaints within 2 days

such activity does not persist but even be entitled to seize the entire material which is illegally stored

> CPCB, DPCC, UP and Haryana Pollution Control Boards to ensure that brick kilns operating in NCR have their consent and are adhering to the prescribed emission norms



> All corporations, authorities and the state govt to ensure that there is proper composting pits in different areas within one week from Tuesday

burning, the bench said.

"Its contribution in terms of PM2.5 is not placed before us, despite our earlier orders. Burning trash in the open area produces many pollutants, including dioxins, particulate pollution, polycyclic aromatic hydrocarbons (PAHs), volatile

organic compounds (VOCs), carbon monoxide (CO), hexachlorobenzene—ash and fumes released from such burning can be carcinogenic," the bench noted.

It also said the serious nature of the offence calls for prohibitory orders and imposition of heavy fine on violators.

There was drama in the courtroom when the chairperson demanded an explanation as to why two huge heaps of dry leaves were recently set on fire at Bharti Nagar in Lodhi Estate. The lawyer representing NDMC said some passer-by

STOP polluting this city, it is the only one we have!



POLLUTION FRIGHT

	AIR QUALITY INDEX	PM2.5
Delhi	191	Moderate
Tomorrow	186	Moderate
Pune	70	Good
Tomorrow	66	Good
Hyderabad	70	Good
Chennai	11	Good
Kolkata	37	Good
Mumbai	35	Good

US Embassy data calculated as per Indian standards by SAFAR@MoES-ITM-IMD
Based on 1 Station Data Per City at 4pm

ries of three officials responsible for the offence," the bench said.

Meanwhile, the NGT bench directed the engineer in-charge of PWD to complete work on a central verge project between Savitri Cinema in GK II and Alaknanda within two days. "The existing central verge is disjointed and extremely accident-prone," the bench said. On parking, Justice Kumar asked officials to consider increasing the surface parking charges in Sarojini Nagar market.

Following an NGT order, DPCC had recently provided a complaint page on a social networking site and a WhatsApp number but lawyers claimed it was not being used widely. NGT directed all corporations to notify on their websites information for registration of complaints regarding waste burning.

The bench also directed corporations to provide area-wise composting pits within one week so that there is proper disposal of organic waste. It directed DDA and Delhi government to provide alternative landfill sites within three weeks as the three landfills are already saturated. It also directed DPCC and CPCB to take samples of emissions from smokestacks of thermal power plants in Delhi.

might have lit the heaps by mistake. "Do you want us to believe your explanation?" asked Justice Kumar.

"What will a third person or a passer-by gain out of setting fire on the leaves? Let a fine of Rs 50,000 be imposed and recovered from the sala-

The Times of India, Delhi dated April 30, 2015

Stricter emission norms only on paper

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New Delhi: The debate over air pollution due to vehicular emissions is not new. Despite several announcements of stricter emission norms as well as the apex court's criticism, the government has been lax in their implementation. Last year, the state government had announced that pollution under control (PUC) certificates would be made mandatory for refuelling at stations. It was supposed to be launched this year but the plan remains on paper.

It's not the first time that the courts have tried to tackle rising air pollution in the city. In 2000, the Supreme Court had ordered mandatory pollution checks of all vehicles. It had also asked that an automated inspection and maintenance system be set up at the earliest. Fifteen years later, inspection and maintenance (I&M) continue to be a manual exercise for commercial vehicles. This has resulted in fitness certificates being issued to vehicles without proper inspection and has also created scope for corruption.



NORMS GO FOR A TOSS: Shortage of personnel is a huge impediment

sued every month (to private vehicles) is around four lakhs, say officials. Less than 30% private vehicles comply with PUC norms, they claim.

The oft-repeated explanation for the abysmally low percentage of PUC certification is the lack of personnel in the transport department. Enforcement, say officials, is not possible with only 150 personnel. The reality though is that not every 82 lakh registered vehicle in the city needs to be checked for PUC. Sustained drives against PUC violations could do the trick. Earlier this year, the transport depart-

More importantly, taking away the human interface in PUC checking could help in enforcement. The transport department is in the process of upgrading software in PUC centres, which can automatically tabulate and collate information on emissions against the registration number of the vehicle. This in turn will be updated against the database of the transport department, allowing it to use this information to issue a fitness certificate. If implemented properly, it will ensure that fitness certificates will be issued to those vehicles only which

STOP polluting this city, it is the only one we have!



POLLUTION FRIGHT

	AIR QUALITY INDEX	PM2.5
Delhi	149	Moderate
Tomorrow	157	Moderate
Pune	66	Good
Tomorrow	69	Good
Hyderabad	78	Good
Chennai	19	Good
Kolkata	49	Good
Mumbai	40	Good

US Embassy data calculated as per Indian standards by SAFAR@MoES-ITM-IMD
Based on 1 Station Data Per City at 4pm

not even being adopted for commercial vehicles.

More worryingly, even issuance of certificates by pollution control centres are suspect. An audit by Central Pollution Control Board (CPCB) in 2013 found that a large number of PUC centres, especially the ones near the borders, were inadequately staffed, used pirated software that fudged emission data and had equipment that didn't adhere to the standards set by the transport department. The audit also found that when vehicles failed standard testing procedures, PUC certificates were issued after recording false figures.

That these centres are not checked by the transport authorities concerned is apparent from the fact that licences of only a handful of centres have been revoked in the past year, mostly for not paying the licence fee. The CPCB report found that transport department officials had not visited the centres they had audited for months. A senior government official said, "The RTO doesn't have any means of checking the authenticity of PUC certification." And while

lators against this data as

The Times of India, Delhi dated April 30, 2015

Gzb corpn burns waste, residents go to police

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Ghaziabad: A police complaint was filed against Ghaziabad Nagar Nigam (GNN) on Wednesday by residents against burning of dry leaves in Kaushambi's Central Park. The move comes a day after National Green Tribunal (NGT) imposed a blanket ban on burning of plastic, dry leaves and garbage in the open across the NCR.

Residents across Ghaziabad, as well as environmental activists, have for long complained about burning of garbage in the open, especially because of the adverse effect it has on the environment. Earlier this month, a group of residents had written to GNN, de-



FLOUTING BAN: Waste was also burnt in Civil Lines, Delhi

manding imposition of penalties on those found burning municipal solid waste within the city.

The complaint on burning of dry leaves in Central Park was filed by members of Kaushambi Apartments RWAs (KARWA) at Indrapuram police station on Wednesday. "Officials of the horticulture department and guards at the park are complicit in this practice. Smoke from the burning inside the park makes breathing difficult for those living nearby, as well as for morning walkers," said KARWA president VK Mittal.

Reports of burning of garbage and other municipal solid waste continue to pour in from several areas of the city. Despite repeated complaints by industrialists in Sahibabad, garbage continues to be burnt on its roads, particularly in Site IV.

"The corporation earns a lot from house tax and other sources. Yet, there is no garbage collection from Site IV," said S K Maheshwari, who owns a factory in Sahibabad.

Forest fund gets ₹38,000cr boost

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New Delhi: In a move which may give a major boost to the country's efforts to increase its green cover under a law, the Union Cabinet on Wednesday gave its approval for introducing a new legislation in current session of the Parliament.

The proposed law — Compensatory Afforestation Fund Bill, 2015 — seeks to create an institutional mechanism to properly utilize a corpus of Rs 38,000 crore for afforestation and other related works like wildlife care and ecological services under central and state monitoring authorities.

Besides utilizing the unspent accumulated amount (Rs 38,000 crore), the new authorities — which are to be set up both at the central and state levels — will also monitor use of fresh accrual of an estimated Rs 6,000 crore per annum to

NEW LAW ON GREEN FUND IN OFFING

► Whenever 'forest land' is to be diverted for 'non-forestry' purpose, user agencies have to deposit prescribed estimated amount of money for carrying out compensatory afforestation

► The money is available with an ad hoc body, **Compensatory Afforestation Fund**



Management and Planning Authority (CAMPA)

► The money (₹38,000cr), deposited in different nationalized banks, however, remains unspent

► Proposed law is meant for creating an institutional mechanism to properly utilize the corpus of ₹38,000 crore and any other amount which is to be deposited later

newly created "non-lapsable interest bearing" funds.

The bill is expected to be introduced next week. Once the bill is passed, the fund will be distributed among the states and Union Territories for aggressive afforestation under a central monitoring mechanism.

"The proposed legislation seeks to provide an appropriate institutional mechanism, both at the Centre and in each state and

Union Territory, to ensure expeditious utilization in efficient and transparent manner of amounts realized in lieu of forest land diverted for non-forest purpose", said a statement of the environment and forests ministry.

Any user agency which diverts forest land for non-forest purpose is, at present, required to deposit a prescribed amount to the government body. This amount is supposed to be utilized to

mitigate impact of diversion of such forest land.

However, the amount to the tune of Rs 38,000 crore — accumulated with an ad hoc body, Compensatory Afforestation Fund Management and Planning Authority (CAMPA), over the years — remains unspent.

The purpose of the proposed legislation is, therefore, to provide safety, security and transparency in utilization of these amounts, which are currently kept in nationalized banks and are being managed by the ad hoc body. Under the proposed law, 90% of the deposited money will be given to states for afforestation works.

"Apart from mitigating the impact of diversion of forest land, utilization of these amounts will also result in creation of productive assets and generation of huge employment opportunities in rural areas, especially in backward tribal areas," said the statement.

Current PUC regime of no use: Experts

Oppose Transport Ministry's Fitness-Based Approach To Phase Out Polluting Vehicles

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New Delhi: The Union transport ministry is pushing for a phase-out of polluting vehicles based on their fitness, instead of age. It has recently filed an application in National Green Tribunal (NGT) against the ban on more than 10-year-old vehicles.

The ministry has quoted an IIT Delhi study that says vehicles which are more than 10 years old constitute only 7% of the total fleet and the emissions from them are negligible.

But the authors of the same study told TOI they didn't recommend fitness-based approach in its current form as the system of issuing pollution under control (PUC) certificate was extremely lax and would not be able to improve Delhi's air quality. NGT is likely to admit suggestions to curb vehicular emis-

sions on May 1.

TOI on April 25 published a detailed action plan with measures like hiking parking charges, penalizing illegal parking, imposing a cess on diesel and phasing out more than 10 year old diesel vehicles among others.

"The PUC regime has been very weak. We strongly recommend an annual tax based on age, engine size and fuel type of the vehicle. The government should also start providing clean fuel as soon as possible," said Geetam Tiwari, professor of IIT Delhi, and the co-author of the study.

The emission norms for pre-2010 or non-Euro IV vehicles are so lax that hardly a few vehicles fail the test. "PUC norms are not enforced; the norms are also quite lax. For instance, they tightened the smoke density norms for Euro IV vehicles but not for pre-

TACKLING AIR POLLUTION

Nov 26, 2014 | NGT imposes a ban on more than 15-year-old diesel and petrol vehicles in NCR with 13 other stringent measures in various sectors

Apr 7, 15 | The tribunal bans more than 10-yr-old diesel vehicles

Apr 14 | NGT stays the ban on diesel vehicles for 2 weeks

Apr 21 | SC backs NGT order, saying the 'tribunal is trying to do something which is good for people. Let us assist them and not discourage them. We are not interfering with their order'



Apr 27 | Centre files an application in NGT appealing for a stay on NGT's ban on older vehicles and that phase-out should be based on fitness

ro IV ones. No wonder very few vehicles fail the test. Vehicles need to be randomly checked and visibly polluting vehicles should be penalized. Besides, parking charges and taxation on vehicles should be revised," said Vivek Chatopadhyay of CSE's clean air programme.

Some experts are of the opin-

ion that phasing out old vehicles will help promote cleaner technology. Amit Bhatt, strategy head of urban transport at EMBARQ, an environmental think tank, said phasing out old vehicles had been successful in Latin America. "In Latin America the life of a vehicle is determined by when they complete a million kms or 12 years of

age. I think it's much more economical to get a vehicle with efficient technology than maintain an old one. At the same time, there has to be a cap on the total number of cars."

Indian Foundation for Transport Research and Training (IFTRT) says the ban ought to be implemented and depending on PUC norms can be detrimental. "The transport ministry has themselves acknowledged that there are very few old vehicles in the city. Then why are they so reluctant about phasing them out? I think NGT's order has got nothing to do with fixing an age, it's a way of dealing with pollution," said SP Singh, fellow and coordinator, IFTRT.

Dinesh Mohan, Volvo chair professor emeritus at IIT Delhi, said that while he felt the ban on old vehicles will not make a huge difference to PM 2.5, a higher tax for diesel vehicles with bigger engines, a revamped PUC system and introducing Euro VI norms by 2020 can help.



LET DELHI BREATHE

The Times of India, Delhi dated May 01, 2015

Waste burning ban goes up in smoke in NCR

Authorities In Noida, Dwarka Issued Show-Cause Notices

TIMES NEWS NETWORK

New Delhi: Two days after National Green Tribunal (NGT) imposed a complete ban on burning of waste in the open and announced a fine of Rs 5,000 for its violation, many

NGT to hear plea on pollution today

NGT will on Friday hear the application filed by lawyer Vardhaman Kaushik against air pollution levels in the capital. The green body is likely to deliberate on how vehicular emissions can be curbed. TNN

people flouted the order with impunity. On Thursday, an NGT bench headed by chairperson Justice Swatanter Kumar issued show-cause notices to CEO of Noida Authority, officer in-charge of sector 29, Noida; Ghaziabad civic body SHO in-charge of Dwarka sector 5 and 6 for violation of its order in their respective areas.

Some lawyers had raised the issue in the tribunal saying how waste was being burnt in Bhairon Marg, parts of Noida and Dwarka. The bench expressed displeasure at the way

in which the orders were disobeyed. It warned of imposing hefty fines if the local bodies were not able to show cause. "We welcome that the bench has stepped in. There were newspaper reports highlighting that dry leaves are being burnt," said Sanjay Updyay, lawyer of the applicant, Vardhaman Kaushik.

One of the lawyers also mentioned he had noticed plastic burning in a godown of a Delhi civil supply corporation and presented photographs to the bench. The tribunal directed the registry to issue notice to authorities concerned, seeking their replies by May 5.

On Tuesday, NGT had held that deputy commissioners, director horticulture, area SHOs, assistant commissioners and sanitary officers of the area will be responsible for any violation of its order.

The bench chairperson Justice Swatanter Kumar had also said authorities are duty bound to obey NGT's orders. "Orders are to be complied with as a decree of the civil court. Thus, all these authorities and police are duty bound to carry out the directions of the Tribunal in accordance with law," the order had stated.



NOT TAKING BAN SERIOUSLY: Garbage being burnt near Vivek Vihar

HOW TO UTILIZE GREEN WASTE

<ul style="list-style-type: none"> Green waste, including dry leaves, generated from roadsides in NDMC areas 2 tonne (approx) 	<ul style="list-style-type: none"> Instead of composting it for manure, such waste is usually dumped, along with other non-organic waste, in landfill sites 	<ul style="list-style-type: none"> No. of waste-to-energy plants that can convert organic waste into pellets 2 in NDMC area 	<ul style="list-style-type: none"> use municipal solid waste, including green waste
<ul style="list-style-type: none"> Green waste generated from parks 4-5 tonne 	<ul style="list-style-type: none"> No. of composting plants with municipal corporations 2—at Okhla and Narela-Bawana; but both plants 	<ul style="list-style-type: none"> A majority of municipal parks, which are one acre or above in size, have composting pits 	
<p>What is mulching?</p> <p>Mulch is any type of material that is spread or laid over the surface of the soil (around plants too) as a covering. One can use shredded dry leaves as mulch. Mulch breaks down overtime and becomes compost</p>	<p>What is composting?</p> <p>Composting is a simple process of allowing organic waste, especially fresh kitchen waste and dry leaves, to rot and stabilize the organic matter under limited controls. In this process, mainly fungi and bacteria convert rich organic matter into humus. The pulverized waste is added to pit and each bed takes about 2-3 months to turn the entire waste into compost</p>	<p>How can you compost leaves?</p> <p>Collect the day's dried leaves in a bag. Add them in layers in any large aerated container like wire mesh enclosure and sprinkle water on the layers to make the pile wet, but not saturated. Add some waste food or fresh green lawn clippings in between the layers to ensure composting happens. Also, add compost</p>	<p>Experts recommend hiring informal waste workers in gathering green waste from each colony. They can be given a small space in a park to do the composting or oversee mulching</p> <p>Source: Daily Dump/ CSE/Chintan</p>

Composting: RWA shows the way

TIMES NEWS NETWORK

New Delhi: Composting or mulching of dry leaves requires no investment. Experts have expressed shock that the municipal corporations are finding it difficult to use this method to dispose of green waste. The Defence Colony RWA has managed to compost their organic and green waste in simple pits dug out in a park. All the corporations need to do is allot some to create composting pits or dry leaves can be gathered in heaps that can be turned into mulch.

Shyamala Mani, professor of waste management at National Institute of Urban Affairs (NIUA), said corpora-

tions are not utilizing the resource due to their laziness. "They probably use the dry leaves from gardens and parks but don't put the effort to gather the dry leaves from the roadside. I agree with the



courts that they should be penalized for not acting responsibly," she said.

She said dry leaves are rich in carbon while the dung slurry has nitrogen; together depending on the carbon-ni-

trogen ratio it can make excellent manure.

Chintan, an NGO that works in the field of waste management, recently documented the composting project by Defence Colony RWA. "If an RWA can do it, why can't corporations? They have about eight pits where organic waste, along with dry leaves and other green waste, is dumped. The compost is so good that they are selling it to residents. They have also hired a couple of waste pickers and gardeners. Local governments need to understand that the only way to utilize dry waste is to compost it," said Chitra Mukherjee of Chintan.

Shammi Talwar of the

Defence Colony RWA said there should be at least two pits in each park. Their pits currently compost green and other organic waste from 1,600 homes.

Nivit Kumar Yadav of Centre for Science and Environment (CSE) said the easiest way to implement composting in parks and colonies is to rope in ragpickers who will be happy to oversee the process at a nominal fee. "It can generate employment for them and ensure it's done well. Municipalities can give them some basic training." All India Khabri Mazdoor Mahasangh, which has about 1.5 lakh waste-pickers, have been demanding they be partnered with for such projects.

The Times of India, Delhi dated
May 01, 2015

Green waste in Dwarka is nobody's biz

Sharp Rise In Burning Of Leaves

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The city has long since been plagued by multiplicity of authorites, but residents of Dwarka have been battling widespread pollution due to burning of leaves as agencies responsible for maintenance of the sub-city are busy passing the buck.

and there has been a sharp increase in such activities. "We made several complaints, but authorities have done little to stop it. The civic agencies should take action to protect the green cover," said Capt (Retd) SS Mann, a resident of Dwarka and vice-president of Sukh Dukh Ke Saathi, a senior citizens' group.

In the past few months, residents have made several complaints to deputy commissioner of South Corporation's Najafgarh zone, SHO Dwarka police station, Delhi government's helpline number and DDA, but no their pleas have fallen on deaf ears. "It is a serious problem, but the authorities are yet to act. We have written to the chief minister and lieutenant governor to intervene," said Rejimon CK, member of Dwarka Forum.

When TOI contacted South Corporation officials, they said that the civic agency is not responsible for managing organic waste. "The development and maintenance of green cover is with DDA. We are just responsible for sweeping the streets, which is done using machines. The waste collected is dumped at the dhalao from where it is transported to landfill sites," said KK Dahiva, deputy commissioner of Najafgarh zone.

South Corporation officials say that DDA has handed over parts of the sub-city to it for maintenance. Recently, National Green Tribunal ordered civic agencies to construct composting pits for proper disposal of dry leaves. But corporation officials say they can't construct these pits, as horticulture department is still with DDA. "All big parks are with DDA and the greens along arterial roads are maintained by them. It is their responsibility to make arrangements for proper disposal of dry leaves," said a corporation official.

A senior DDA official said, "We don't burn the leaves that we collect after raking green areas. The horticulture department buries them in designated pits to make soil enriching compost, which is reused in green areas."

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POLLUTION FRIGHT
AIR QUALITY INDEX PM2.5

Delhi	163	Moderate
Tomorrow	176	Moderate
Pune	80	Good
Tomorrow	86	Good
Source: SAFAR@MoES-ITM-IMD (10 stations)		
Hyderabad	92	Good
Chennai	30	Good
Kolkata	71	Good

US Embassy data calculated as per Indian standards by SAFAR@MoES-ITM-IMD
Based on 1 Station Data Per City at 4pm

While Delhi Development Authority is responsible for development and maintenance of green cover and roads, South Delhi Municipal Corporation takes care of sanitation. But when it comes to managing organic waste, both agencies refuse to take responsibility.

Residents claim that civic authorities regularly burn dry leaves

Tesla unveils battery to store solar energy

It Can Power Homes, Business During Blackouts

Diane Cardwell

In recent years, the fast-growing popularity of solar panels has intensified a central challenge: how to use the sun's energy when it isn't shining. Now, Tesla Motors, the maker of luxury electric sedans, says it is taking a big step toward meeting that challenge with a fleet of battery systems aimed at homeowners, businesses and utilities.

To herald its ambitions in the field, the company scheduled an event on Thursday night at its design studio in Hawthorne, California, with chief executive Elon Musk presiding. He announced the firm would build batteries that store solar energy and serve as a back-up system for consumers during blackouts. The device would allow consumers to get off a power grid or bring energy to remote areas that are not on a grid. Tesla plans to start shipping the units to installers in the US by this summer.

The company's foray into the solar storage market will include rechargeable lithium-ion battery packs that can mount to a home garage wall as well as battery blocks large enough to smooth out fluctuations in the grid. "We've obviously been working on building a world-class battery, a superefficient and affordable way to store energy," said Khobi Brooklyn, a Tesla spokeswoman. "It's just that we've been putting that battery in cars most of the time."

In a news conference before the event, Musk said the consumer battery, called the Powerwall,



The Gigafactory, a \$5-billion plant is being built by Tesla in Reno, Nevada, to produce the lithium-ion battery systems. The batteries will be connected to the internet and can be managed by Tesla from afar. Customers can connect up to nine battery packs to store larger amounts of power

would sell for \$3,500, and was derived from the batteries that Tesla uses in its Model S vehicles. The device, which Tesla will start producing later this year, will be installed by licenced technicians.

In Hawaii, where 12% of the homes have solar panels, handling the surplus power is putting pressure on the state's biggest utility, which is fighting to reduce what it pays for the energy. The batteries will be connected to the internet and can be managed by Tesla from afar. Customers can connect up to nine battery packs to store larger amounts of power.

"If you have the Tesla Powerwall, if the utility goes down, you still have power," Musk said. He added: "The whole thing is an integrated system that just works."

Energy and auto analysts have generally responded positively to Tesla's move. "Elon thinks that there's a long-term gain to be made not only in electric cars but also in electric energy storage—and he's probably right," said Karl Brauer, an analyst at Kelley Blue Book. "There's a universal application for portable energy and storable energy that goes to everybody. It's really just a matter of getting the business model together."

Tesla's announcement comes as energy companies are moving in the same direction. Sungevity, a leading solar installer, announced a partnership this week with Sonnenbatterie, a smart energy storage provider in Europe, to begin offering their systems to its customers. NYT NEWS SERVICE

The Times of India,
Delhi dated
May 02, 2015

Gr Noida fines firm ₹25k for waste burning

TIMES NEWS NETWORK

Greater Noida: In the first fine slapped for open burning of waste in Delhi-NCR after the National Green Tribunal banned it on April 28, a private company in Greater Noida was on Friday fined Rs 25,000.

The company that was fined, said Greater Noida Industrial Development Authority additional CEO Yogendra Yadav, is involved in collecting garbage. It was penalized after its workers were found burning waste in the open instead of dumping it at disposal sites. "We found garbage being burnt at five different locations in Greater Noida," Yadav said.

The move comes two days after the National Green Tribunal imposed a complete ban on burning of waste in the open and declared a fine of Rs 5,000 on anybody violating it.

Yadav also urged all residents of the city to refrain from burning waste. "My team has been instructed to take strict action against anyone found flouting the NGT's orders. Even residents will be fined Rs 5,000 for any violations," he said.

The Times of India, Delhi dated
May 03, 2015

Air pollution campaign not anti-development: Activists

TIMES NEWS NETWORK



SMOKESCREEN: Garbage burns in a pit in Rangpuri, south Delhi

ment is trying to corner NGT which is pushing for action."

A new study by prominent economists and public policy experts from Yale and Harvard University had concluded that as many as 660 million people, or half of India's population, could add 3.2 years to their lifespan if air quality met the national safe standard. Last year, the World Health Organisation's urban air quality data-



LET DELHI BREATHE

base found Delhi had the highest PM 2.5 (fine, respirable pollution particles) levels among 1600 global cities, which also cited that the data for the analysis was taken from CPCB.

"I don't want to say anything about his comments because the truth is obvious. We have annexed a CPCB report from 2012 which says that air pollution is increasing. The Environment Pollution Control Authority (EPCA) has been raising the issue for years. There is a case in the Su-

preme Court against air pollution being heard since the 80's. Government's own data says air quality is poor in Delhi. So why debate," asked Vardhaman Kaushik, who also has an application in NGT against high air pollution in Delhi.

In his matter, NGT had recently directed that all diesel vehicles that are more than 10 years old and all petrol vehicles that are more than 10 years old be banned. The tribunal has now stayed its own order, pending responses from the Centre and states on the ban, on capping the total number of vehicle registrations, on hiking parking fee and many other interventions.

Vivek Chattopadhyay of CSE's clean air campaign pointed out that the issue of high air pollution has been in news since Commonwealth Games when there was scrutiny of air quality because athletes and important sports people were coming from all over the world. "I think the minister's idea that raising the air pollution issue will stall development is absolutely misplaced. Our GDP is actually getting affected by the huge health cost of air pollution. Denying the problem will not solve," he said.

YOU alone can stop Delhi's future from going up in smoke !



POLLUTION PLIGHT
AIR QUALITY INDEX PM2.5

Delhi	196	Moderate
Tomorrow	189	Moderate
Pune	80	Good
Tomorrow	72	Good
Hyderabad	88	Good
Kolkata	57	Good
Mumbai	55	Good

Source: SAFAR #MoES-ITM-IMD (10 stations)
US Embassy data calculated as per Indian standards by SAFAR@MoES-ITM-IMD
Based on 1 Station Data Per City at 4pm

The head of EPCA, Bhure Lal, too recalled that time and again agencies have said dieselization has to reduce. "Look at how diesel cars have increased. More than 50% cars now run on diesel. There are studies to show that pollution from diesel vehicles is a hundred times higher and diesel trucks continue to pollute. People have to forgo their habit of using diesel vehicles. I think it's the diesel lobby that's stalling any action. The eastern and western expressways also haven't been completed," he said.

Bhure Lal said he agreed that "vested interests" such as air purifier companies were also at play.

The Times of India, Delhi dated
May 03, 2015

Pollution affects baby weight

Steve Connor

Women breathing high levels of air pollution during the last month of pregnancy are more likely than unexposed women to give birth to babies with a significantly lower birth weight, says a study of the effects of the air-quality controls introduced during the 2008 Beijing Olympics.

The temporary pollution regulations imposed on the Chinese capital during the Olympics had a measurable and positive impact on the weight of babies born to mothers who were eight-months pregnant at the time. It is the first time that researchers have been able to pinpoint the effect of air pollution levels on a particular development period in the womb, indicating the importance of clean air during the last month of pregnancy when foetal growth is the most rapid.

Scientists found that women who were in the eighth month of their pregnancy during the sev-

en-week period of the Olympics-Paralympics benefited most from the cleaner air. They gave birth to babies who were on average 23 grams heavier than babies born to similar women in 2007 and 2009, when air pollution controls were not as strict.

There was no such similar significant difference in birth weights for women who were between the first and seventh month of pregnancy during the clean-air period.

"This is the first study to show that when air pollution levels go down during the eighth month of pregnancy, we see an increase in birth weight," said David Rich, an epidemiologist and lead author of the study. "The results of this study demonstrate a clear association between changes in air pollutant concentrations and birth weight. These findings not only illustrate one of the many significant health consequences of pollution, but also demonstrate that this phenomenon can be reversed," Dr Rich said. THE INDEPENDENT

The Times of India, Delhi dated
May 04, 2015

What's fouling air? Data puzzling govt

Govt Unsure Which Study To Believe In, But Experts Sure That Transport Is Biggest Culprit

TIMES NEWS NETWORK

New Delhi: A lot of confusion seems to exist over what really contributes to air pollution, particularly PM2.5 (fine, respirable particles) from the transport sector or from vehicles in Delhi. A letter accessed by TOI written by IIT professor Dinesh Mohan to the transport ministry claims that people may be overestimating the "pollution load from traffic" and that there may be a huge difference in the actual number of vehicles on the road as compared to those registered officially.

Mohan quotes a 2013 study that concluded that the transport sector is responsible for only 17% of PM2.5 emissions as compared to 15% from brick kilns and as much as 12% from LPG or domestic sector.

The transport ministry has submitted the letter to National Green Tribunal to deflect some attention from the transport sector and pollution

STUDIES THAT ARE CONFUSING SARKAR

MoEFCC in an affidavit to Supreme Court recently claimed that **vehicles in Delhi contribute to only 6.6%** of particulate matter pollution while road dust contributes 52%. **This figure changed to 8.7%-20.5% for vehicles and 14.5%-29% for dust.** The ministry also clarified that the figures were only for PM10



A 2010 study by IITM, Pune, said transport contributed to **32%** of total PM2.5 emissions. It increased to **38%** in 2013

2013 study by Sarath K Guttikunda and Giuseppe Calori put transport's PM2.5 contribution at **17%** as compared to **15%** from brick kilns, **12%** from LPG and other domestic sources

Recently, Chinese govt said mobile sources contribute to over **31%** of total PM2.5 emissions in Beijing

load from old vehicles. Recently, they filed an application quoting from Mohan's letter to appeal for six months time to come up with suggestions to curbar air pollution.

The GIS-based emissions inventory by Sarath Guttikunda of Desert Research In-

stitute (DRD), which Mohan quoted, estimates PM2.5 pollution from transport to be far lower than another study by scientists of Indian Institute of Tropical Meteorology (IITM). This study also GIS-based and conducted by chief programme scientist Gufran

Beig, found PM2.5 emissions from transport to be 32% in 2010 and steadily increasing in later years.

Guttikunda's estimation seems to be far lower than even a Chinese government's recently released emissions inventory for Beijing that esti-

mates more than 30% of PM2.5 emissions in the city are from "mobile sources."

The government has no consensus on which data to go with. Delhi Pollution Control Committee commissioned a similar emissions inventory to IIT Kanpur's professor Mukesh Sharma, which is likely to be concluded in September and may help clarify on pollution sources.

Meanwhile, scientists told TOI there should be no doubt that transport is the biggest culprit in terms of



PM2.5 emissions. "There is a lot of difference between emission contribution and actual pollution or the air quality people breathe. For instance, power plants or brick kilns are elevated, almost 300 metres above the breathing zone, while tailpipes are near our noses. That's what contributes

to the worst health impacts from PM2.5 emissions. I don't think there should be any confusion on this," said a government scientist on the condition of anonymity.

Anumita Roychowdhury of Centre for Science and Environment clean air campaign said, "From the public health perspective, proximity to the pollution source is most im-

portant. The Health Effects Institute, for instance, found the worst affected are those within 500 metres from the roadside.

They estimated about 55% of people in Delhi live within that 500 metres, so vehicles are the major concern."

She clarified that the Guttikunda study looks at emissions sources in the region and its conclusions cannot be applied for Delhi where vehicular sources are the largest.

The Times of India, Delhi dated
May 06, 2015

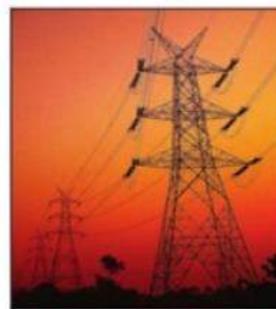
20 power plants asked to comply with green norms

TIMES NEWS NETWORK

New Delhi: The government on Tuesday said its central pollution watchdog — Central Pollution Control Board (CPCB) — has not conducted any specific assessment of pollution caused by thermal power plants around their sites, but has so far asked 20 of them to comply with environment standards.

"Directions under Environment (Protection) Act, 1986 have been issued to 14 power plants, while concerned State Pollution Control Boards were asked to direct six power plants to comply with the environmental standards under Air (Prevention and Control of Pollution) Act, 1981 and Water (Prevention and Control of Pollution) Act, 1974," Javadekar said.

Replying to a Parliament



POLLUTION SHOCK

question in the Lok Sabha, the minister in his written response said CPCB issued directions to the plants on the basis of the findings of inspections carried out by its Environmental Surveillance Squad (ESS).

The power plants which have been issued directions include Paras and Koradi thermal power stations in

Maharashtra; Patratu, Tenughat, Chandrapura power plants in Jharkhand; Kutch Lignite in Gujarat; Durgapur and Kolaghat in Bengal; Rayalseema power plant in Andhra Pradesh, and Chhabra thermal power station in Baran district of Rajasthan.

The thermal plants also include the ones at Korba (East), Korba (NTPC), Korba (West), Amarkantak (Lanco Power) in Chhattisgarh; Talcher (NTPC) in Odisha, Parichha, Anpara and Obra power stations in UP, as well as, Muzaffarpur and Kahalgaoon Super Thermal (NTPC) power plants in Bihar. Javadekar said the directions were in different phases of compliance. He also informed the House about various steps taken by the central government to contain pollution from the power sector.

The Times of India, Delhi dated
May 07, 2015

Rainwater harvesting is nobody's child

Policy Muddle Equally To Blame For Programme's Failure

TIMES NEWS NETWORK

New Delhi: For years the city has drawn more water from the ground than what rain puts back inside. At most places, water is found at more than 50-metre depth. Aware of the approaching crisis, Delhi high court had forced the city government to enforce rainwater harvesting on a large scale. The court regularly monitored progress of the programme and the chief secretary was required to submit a status report every six months. But the last time such a report came was two years ago.

Vinod Jain, director of Tapas, the NGO on whose PIL the court issued the order on rainwater harvesting, says the programme has failed in Delhi because there is no institutional framework to guide it. "Central Ground Water Au-

thority (CGWA) was made the nodal authority but no single agency is responsible for ensuring that it is done. Delhi Jal Board gives permissions for borewells and billing incentives, municipal corporations are supposed to ensure implementation but take no interest, and CGWA does not have staff for monitoring. I will now take the case to National Green Tribunal," he said.

No agency has any information on RWH structures in the city. DJB only has data on permissions granted for borewells. Due to lack of maintenance, many RWH structures are useless. "RWH is pointless if any part of the structure is blocked, or pollutants are going into it," said Jyoti Sharma, director of Force, another NGO. "Lack of maintenance

has rendered many RWH structures useless. Also, unless RWH is done across the city its benefits are limited," she added.

But Sushmita Sengupta from Centre for Science and Environment says maintaining a harvesting structure is extremely easy: "We have about 17 structures at CSE and spend just about Rs 1,000 to maintain them every year."

There's no clear policy on RWH. In 2001, the urban development ministry made rainwater harvesting mandatory for any structure occupying 100 sqm land or more.

But the current master plan allows 90% ground coverage for such plots, leaving hardly any space for RWH structures. Last year, the envi-

ronment department found that many people dig up pits claiming that they will harvest rainwater but actually withdraw ground water.

Many experts say it is best to build these structures at the colony level, or in parks, flyovers and wetlands. Manu Bhatnagar, who heads the natural heritage division of conservation body Intach, said RWH structures should be sturdy: "The design is often not right. Large volumes of water pass through narrow pipes which get clogged in no time." He gave the example of check dams in Sanjay Van that have helped recharge an old well. "The water table is at 60-70m in that area but we found water at 4m in the well. The Hauz Khas Lake has probably managed to put around 1,000 million litres of water into the ground. Wetlands are equally important recharge zones."

CATCH EVERY DROP



LET IT FLOW

Rainwater harvesting potential in Delhi
60 million cubic metres*
(1m³=1,000 litres)

That's **3,500 litres or 13 days'** average water availability per person

But hardly any rainwater is saved. Delhi Metro has water harvesting systems at **63 stations**

Source: Groundwater recharge strategy for Delhi submitted to DJB

LET'S DEPEND ON NATURE

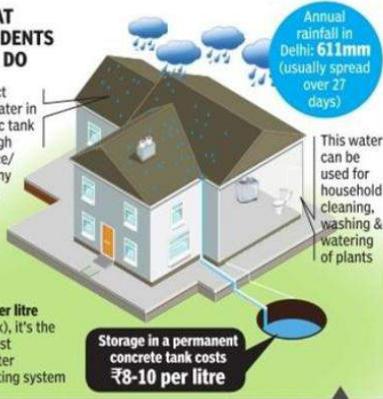
The best way to harvest rainwater is to rejuvenate dead wetlands, storm water drains and irrigation canals. Conservation body Intach claims Hauz Khas Lake has recharged **800 million litres** of groundwater in nine years

WHAT RESIDENTS CAN DO

Collect rainwater in plastic tank through terrace/balcony chute

At **₹4 per litre** (approx), it's the cheapest rainwater harvesting system

Underground recharge wells or pits can be developed in areas where groundwater is scarce. Rainwater from roof will flow directly into it. Drilling a 2-3m² well will cost **₹50,000-75,000**. A smaller pit of about 2-3ft² will cost **₹8,000-10,000**



Annual rainfall in Delhi: **611mm** (usually spread over 27 days)

This water can be used for household cleaning, washing & watering of plants

Storage in a permanent concrete tank costs **₹8-10 per litre**

HOW TO MAINTAIN IT

- ▶ Keep all catchments neat and clean
- ▶ Don't allow contaminated water to flow into system
- ▶ Put iron, nylon mesh or fine cloth on inlet/outlet pipes and chambers to prevent debris from getting into system
- ▶ Clean open drains regularly by removing deposits of sand & gravel
- ▶ Drain and clean storage tanks thoroughly before every monsoon
- ▶ Change filter media every year
- ▶ Remove algae from roof tiles and asbestos sheets before monsoon
- ▶ Do not let water stagnate in the collection chamber as this will slow down recharge

Tata target: 400 MW solar power in 3 yrs

Buoyed By Study, Discom Invites Bids For Panels

TIMES NEWS NETWORK

New Delhi: By incentivizing rooftop solar generation, Tata Power Delhi aims to produce 400 MW of solar electricity in the next three years.

On Wednesday, the discom held a workshop which unveiled the results of a US study commissioned by the power utility. The results supported the company's plans for this foray into renewable energy generation.

Tata Power opened tenders to procure solar panels this week. Aimed primarily for commercial and industrial category consumers who have higher tariff, the discom plans to start installing solar panels for interested consumers within the next few weeks.

The results of the study by leading US energy consulting firm Energy and Environmental Economics (E3) were also shared with senior officials of Delhi government, DERC and experts from the power industry. It was commissioned by Tata Power Delhi in June 2014 in line with National Solar Mission.

"We have received approval from DERC and will begin advertising for the scheme within the next two months. The idea is to reduce cost of power, specifically for commercial and industrial consumers who pay higher tariff at peak hours. They will be able to break even within five



SUNNY SIDE UP: The initiative is expected to transform the power scenario

years," said an official. Consumers may either pay the full cost upfront, go for an installment scheme or procure the panels through a third party after which the discom will provide the net metering and grid connectivity. "The cost of the project would be recovered within five years. For the 20 years thereafter, consumers will be

CLEARED BY DERC

able to get free solar power," said an official. The lifespan of a solar panel is approximately 25 years.

Praveer Sinha, CEO, TPDDL said, "With rooftop solar power generation, consumers will have a chance to choose from traditional as well as conventional sources

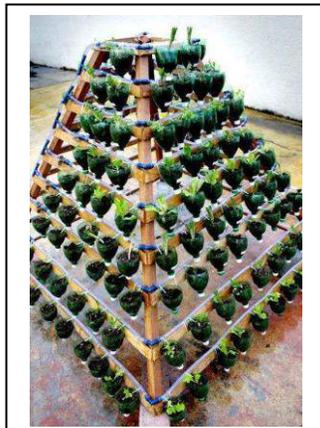
of power. The findings shared by E3 will go a long way in transforming the power distribution scene in our area of operation and will also provide strategic leads to the power industry as a whole."

The installation costs for solar generated power is approximately Rs 80,000 per kW. With Tata Power Delhi purchasing solar panels in bulk at competitive rates, officials said that maintenance charges as well as quality control would be covered by them. The only thing still awaited is smart meters, which can record both outgoing and incoming power. "Smart meters ensure network protection and help generate online data. These smart meters are likely to be approved by BIS soon," said an official.

INNOVATIVE IDEAS

Using empty Plastic bottles of Water & Cold Drinks etc. for Gardening, decorating homes and office space

We often throw empty bottles after consuming contents, use of bottled drinks is on increasing trend and so is garbage. We may use these empty bottles for various purposes please find herewith some pictures which will give us fair amount of idea that how can these bottles be used and prevent them from adding to garbage. If you search on net you will find millions of use of waste material. You may use the links given below for finding so many different uses of empty bottles and other waste materials. These are only a few links there is no dearth of such links.



- [<Source1>](#)
- [<Source2>](#)
- [<Source3>](#)

Presented by: A. P. Singh
Research Associate,
Centre for Business Sustainability

The Times of India, Delhi dated
May 09, 2015

Prepare to foot Yamuna clean-up bill

Every Delhi Household Will Pay Environmental Compensation; Amount Will Be Added To Utility Bills

TIMES NEWS NETWORK

Applying the 'polluter pays' principle, National Green Tribunal (NGT) on Friday imposed an 'environmental compensation' on all households in Delhi which are generating sewage, irrespective of whether they are connected to a sewer or not. "The monthly compensation payable by households will be directly proportionate to the property tax or water bill, whichever is higher," the order said. Households in unauthorized colonies will pay Rs 100 or Rs 500 per month based on their construction.

The amount may be added to the electricity bill or water bill or the property tax demand "in order of preference". In environmental law, the 'polluter pays' principle is applied to ensure that those who are responsible for pollution bear the cost of restoring the environment. NGT was hearing a plea by environmental activist Manoj Misra against pollution in Yamuna and encroachment of Yamuna floodplains.

The order doesn't specify the minimum amount payable by households outside an authorized colonies. During the proceedings, lawyers requested the bench headed by NGT chairperson Swatanter Kumar to specify the minimum amount but it remains unclear. Civic agencies may determine that amount, they told TOI. Delhi government, Delhi Jal Board (DJB), all municipal corporations, the cantonment board, electricity companies like BSES and all other civic authorities have been directed to charge this compensation from all households. "I think the minimum compensation will be determined by the agencies. As far as imposition of this compensation is

concerned, it will be immediate as the court's orders are already effective," said Rahul Choudhary,

things. An expert committee consisting of former JNU professor Brij Gopal, IIT Delhi

met from Delhi government's budget for sewage connection, treatment and water network. It

permission. The bench reminded that its January 13 order imposes a fine of Rs 5,000 on anybody caught throwing municipal solid waste into drains or into Yamuna.

"There is total commonality of the object between all the stakeholders to ensure that sewage system in NCT, Delhi and river Yamuna should be restored to their original and pristine glory," the bench said.

Welcoming the order, Misra said, "This is a very focused project. It is very targeted and has a clear mechanism for how that can be achieved. A lot of money has been wasted on cleaning the Yamuna but this ensures that not a drop of sewage enters the storm water drains. It fixes the root of the problem. I think Delhi's residents should also welcome the order and participate in it."

Phase I of the plan will focus on the Najafgarh drain and its supplementary drain along with Delhi Gate drain, which is responsible for 63% of Yamuna's pollution. About 15 new STPs will be installed to cater to these drains, said professor A K Gosain of IIT Delhi who is a member of NGT's expert committee.

"Our plan also ensures reuse of treated water which is very important in this city," he said. Gosain explained that the compensation paid by Delhi's households is needed for maintenance of the new infrastructure. "My reading is that National Green tribunal is handing an instrument to the government to generate funds for the maintenance of this project. The details and implementation is a policy issue for the government," he said.

PUSHING FOR A CLEAN RIVER

Highlights of NGT order issued on May 8		All new STPs to release effluent to prescribed standards as notified by CPCB	from every household that is generating sewage irrespective of whether they have sewerage connection
Najafgarh and Delhi Gate drains cause 63% of Yamuna's pollution across India. Cleaning them up will be the priority project in phase I of Maile Se Nirmal Yamuna 2017 (MSNY 2017)	DPCC to ensure all CETPs operate to optimum capacity		
DJB to submit action plan; to invite tenders within 45 days; and complete it by 2016	DSIIDC to ensure all industries discharge trade effluents only in designated drain	DJB and DSIIDC, through DPCC, to introduce online monitoring system at specified observation points	Amount directly proportional to property tax or water bill, whichever is higher
	Irrigation and flood control department, in coordination with DJB, to dredge Najafgarh, supplementary and Delhi Gate drains	Total funds for ₹ 3,659-cr project to come from water resources ministry under National Mission for Clean Ganga, UD ministry (through DDA), DJB, Delhi govt	DJB to get de-sludging vehicles
DJB, DDA and revenue dept to take possession of land for sewage treatment plants (STPs) in four weeks	Agencies to fine anybody throwing waste into the river ₹ 5,000 as per NGT's earlier orders		
		All municipal corporations to clean drains	All civic agencies to charge an environmental compensation

an advocate representing the applicant.

Additional solicitor general Pinky Anand represented DJB in the green court. The bench thanked her for assisting in the matter.

The money will fund the "Mailey Se Nirmal Yamuna Revitalization Project 2017" that involves decentralizing sewage treatment, optimizing the output of existing sewage treatment plants and ensuring that effluents from all industries are treated, among other

scientist A K Gosain and IIT Roorkee professor AA Kazmi along with DJB had come up with the Rs 3,659crore plan. NGT directed that, besides the new compensation, funds be made available under National Mission for Clean Ganga and from the ministry of urban development.

On January 13, when NGT gave its judgment on Misra's plea and announced the Mailey Se Nirmal Yamuna plan, it had suggested that the project cost be

had however hinted that if the agencies were unable to raise money they "could require the public to contribute to the expenditure under the polluter pays principle."

NGT ORDER

NGT's Yamuna plan overrides the existing Yamuna Action Plans (YAPs). Friday's order also states that DJB will not continue work on existing projects or any new project, except with NGT's

The Times of India, Delhi dated May 11, 2015

Panel clears Okhla green zone draft

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Noida: The expert committee on the Okhla Bird Sanctuary approved the draft of the eco-sensitive zone in its last meeting on April 15 and proposed a slew of measures, including turning the park's precincts into a 'silence zone', to protect the avian habitat.

Khalid Khan



TO PROTECT BIRDS

The committee, which met under the chairmanship of Hem Kumar Pande, additional secretary in the ministry of environment and forest and was attended by representatives of the Delhi and UP governments, also recommended the formation of monitoring committees by both the Delhi and Uttar Pradesh governments, according to minutes of the April 15 meeting accessed by TOI. These

committees, it proposed, should be headed by the principal secretary (MoEF) and have as their member secretaries the chief wildlife wardens of both states.

The experts agreed to suggestions by the UP government that use of bright lights inside the park should be minimized during the migration season (October 15-March 15). They also recommended lesser use of glass on the façade of buildings nearest to the perimeters of the park to minimize reflection of light and proposed a no-honking zone within the sanctuary so that birds are not disturbed by noise.

Among important decisions taken at the meeting was that the zonal master plan, governing the sanctuary and its precincts, may be approved by the competent authorities in the state governments instead of the MoEF.

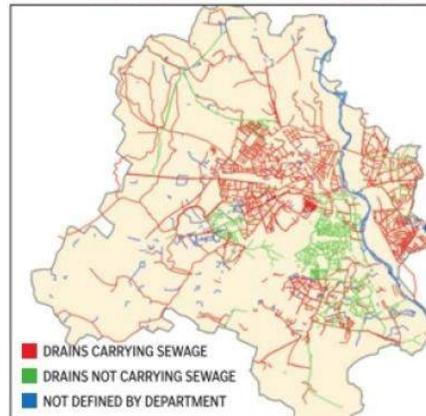
The chief conservator of forests (Meerut) made a presentation on the draft proposal of the eco-sensitive zone on behalf of the UP government. The eco-sensitive zone has been marked at 100 metres to the western, southern and eastern sides of the sanctuary and 1.27km to the north.

The Times of India, Delhi dated
May 11, 2015

Unsewered areas in Yamuna clean-up plan, experts happy

They Say NGT Move Will Check Pollution; Residents Doubtful

HOW RIVER GETTING POLLUTED



RECENT ASSESSMENT OF WATER QUALITY IN YAMUNA

Location	pH	BOD
Palla	7.5	1.4
Surghat	7.6	6.6
Khajori Paltoon Pool	7.2	62
Kudesia Ghat	7.3	45
ITO bridge	7.4	31
Nizamuddin bridge	7.3	28
Agra Canal	7.3	27
After meeting Shahdara drain	7.5	38
Agra canal at Jaitpur	7.2	33

Standard: pH: 6-9;
BOD (Biochemical oxygen demand): 3 mg/l (max)

FUNDS FOR PLANS

YAMUNA ACTION PLAN I & II
Rs 1,500 crore (approx)

➤ Involved pollution abatement work by establishing sewage treatment facility in 21 towns of UP, Haryana and Delhi

YAMUNA ACTION PLAN III (ONGOING)
Rs 1,656 crore (approx) with loan assistance from Japan International Cooperation Agency (JICA)

➤ Involves modernizing sewage treatment infrastructure mainly in Delhi

MAILEY SE NIRMAL YAMUNA REVITALIZATION PROJECT 2017 (TO BE IMPLEMENTED) **Rs 4,000 cr** – a part of it to be raised from residents as 'environmental compensation' under the 'polluter pays' principle

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New Delhi: After thousands of crores have been washed away in the Centre's Yamuna Action Plans (YAPs) I and II, the National Green Tribunal on Friday directed that the residents of Delhi pay an "environmental compensation" to fund a new plan—Mailey Se Nirmal Yamuna Revitalisation Project 2017. The new plan, like the YAPs, aims to address pollution in Yamuna and Delhi's ineffective sewage treatment infrastructure. However, the residents are wondering why they have to pay for the government agencies' failures, especially when most of them are already paying sewerage charges.

The new plan is very different from the YAPs though, say

experts. The ongoing YAP III, for instance, focuses on improving the "operational efficiency of the existing sewage facilities in NCT of Delhi through improvement and construction of new facilities for treated sewage recycle to provide recycled water" but doesn't propose sewage treatment in the unsewered parts of the city, which constitutes 40% of the area, or in addressing sewage in stormwater drains that lead up to the river.

Whereas, the new plan proposes that the sewage from unsewered areas be treated before letting into the river. Laying primary sewer lines for these areas is impossible within a couple of years; in fact, DJB estimates it may take about 20 years. What the plan suggests instead is to intercept sewage from these areas into

proposed STPs. "The phase I will focus on south west and north west villages that are unsewered where 15 small STPs will be set up to treat the water in a decentralized manner," explained a DJB official.

While experts found merit in the idea of raising the money from people, residents TOI

DELHIITES TO PAY

spoke to about the "environmental compensation", said addressing sanitation and pollution are the responsibilities of the government.

"YAPs are a diffused plan, which is why they have not shown improvement. The new plan will address the sewage from Delhi's unsewered colonies and will first treat sewage falling into Najafgarh drain which is responsible for 63%

of pollution in Yamuna," said C R Babu, professor emeritus, DU. On the "polluter pays" principle, "I think the time has come when residents start valuing environment. They will take interest only when they contribute to the river's restoration. Funds to the state governments from Centre have also been trimmed recently and such urgent projects need to be funded by all possible sources," he added.

Babu said the water quality in the Najafgarh drain can be monitored, which will be a proof if the plan is effective.

Professor Brij Gopal, former JNU professor, said, "Even if the government was to take a loan for this, it would have been indirectly repaid by us. The implementation of the project within the next three years is important."

The Times of India, Lucknow dated May 12, 2015

The Times of India, Delhi dated May 12, 2015

Rain harvesting: NGT fines hotels, malls

Hospitals Too Pay For Absent, Neglected Device

TIMES NEWS NETWORK

New Delhi: The National Green Tribunal on Monday imposed fines ranging from Rs 3 lakh to Rs 7.5 lakh on several hospitals, hotels and malls for not having functional rainwater harvesting structures in their buildings.

It fined these establishments after going through a recent inspection report filed by Delhi Pollution Control Committee which found several structures had design deficiencies, observed lack of maintenance, found sewage accumulating in rainwater wells and discovered that some establishments had no harvesting structures at all. The tribunal also issued bailable warrants and showcause notices to 11 other establishments that did not appear in court on Monday despite being summoned.

"These establishments have not complied with the tribunal's order. No steps have been taken by them for the regulation of or benefiting the groundwater level and they are degrading the environment instead," a bench headed by NGT chairperson Justice Swatanter Kumar said.

The bench directed all to deposit the "compensation" with DPCC which will be used for "regeneration and benefiting" of groundwater levels. "We make it clear that subsequently if Central Ground Water Board, Delhi Jal Board, DPCC or Central Pollution Control Board finds any rainwater harvesting structures in these establishments not to be working effectively or not maintained, a heavy compen-

CRACKDOWN CONTINUES

HOTELS	MALLS/BUILDERS
Jaypee Siddharth ₹ 7.5 lakh	Tirupati Infraprojects Pvt Ltd (it also runs hotels and spa) ₹ 5 lakh
Piccadilly hotel ₹ 7.5 lakh	Laxmi Buildtech Pvt Ltd ₹ 5 lakh
HOSPITALS	Life Style Buildtech Pvt Ltd ₹ 5 lakh
Indraprastha Apollo ₹ 5 lakh	Upaj Buildcon Pvt Ltd ₹ 3 lakh
Jaipur Golden ₹ 5 lakh	
Santom ₹ 5 lakh	
BM Gupta ₹ 5 lakh	
Holy Family ₹ 3 lakh	

sation will be imposed and the medical superintendents or CEOs will be held personally responsible," the bench said.

On April 24, NGT, based on DPCC's inspection report, released a list of 23 malls and hotels that had violated its orders. NGT served notices to directors in-charge, CEOs and other "officers responsible for day-to-day conduct of the business of these hotels and malls" to show cause "as to why they not be directed to pay compensation for not providing rain-

water harvesting systems and why they not be directed to pay compensation in terms of Sec-15 of the NGT Act for depleting groundwater levels". Subsequently, on April 27, NGT issued notices to 11 hospitals flouting the norms.

On Monday, representatives of 11 hospitals, malls and hotels present at the hearing pleaded with the bench for more time, saying they will fix the deficiencies in the harvesting structures. "The bench

agreed they had already caused pollution and hence the fines were imposed," said Rahul Chowdhury, lawyer for the applicant.

DPCC's inspections were carried out in August 2014 and October 2014. The ministry of urban development and poverty alleviation had, through a notification dated July 28, 2001, made modifications in the building bylaws of 1963 to make rainwater harvesting mandatory in all building plots over 100 square metres in area. According to DJB, water supply schemes for the institutional category are being sanctioned by it with a condition that provisions for rainwater harvesting will be made. In 2010, the environment department, too, directed that for buildings with plot size over 200sqm, the nod to draw groundwater will be subject to installation of a rainwater harvesting system.

Delhi gets an annual rainfall of 611mm. According to estimates by Centre for Science and Environment, 56 billion litres can be harvested to meet water requirements of 14 crore households for a day.



'TOI's Live Green Lucknow is the need of the hour'

TOI readers share their experiences and suggestions for a greener, cleaner Lucknow



Picture of a purple moorhen shared by Syed Ali Husain, a participant of TOI's Nature Trail at Nawabganj

VANISHING SPARROWS

■ Together we can. Yes, we can enjoy company of birds once again. I am optimistic about the 'Live Green Lucknow' initiative. Around 12 years ago, there were four Ashoka trees in my neighbourhood giving shelter to thousands of sparrows chirping all day. When trees were cut down to turn that space into a commercial utility, sparrows were seen on other nearby trees and the roofs of our houses, but soon disappeared. There are some



Picture shared by Abhiraj Mohan via email

nightingales, doves, pigeons, and humming birds too that visit occasionally. But we sincerely miss sparrows. With the initiative, return of the lovely bird is possible. Kudos to TOI for sensitizing people on this issue. I have planted trees in my neighborhood and in my house, and urge others in the city to do the same

Abu Omama

MORE TO CITY THAN GANJ

■ In the recent past, the state government spent

more than Rs 400 crore in beautifying the heart of the city, Hazratganj. But looking at the present state of the area, one is forced to say that residents of the city, don't deserve such beautification plans. All the footpaths are occupied by hawkers and parked two-wheelers. It becomes almost impossible for pedestrians to walk on the footpaths. Sometimes, two-wheeler drivers drive in high speed and blow horns incessantly. Such riders are especially very dangerous to senior citizens. Traffic police, who are supposed to take action against such violators, park their own two-wheelers on these footpaths. Will the authorities concerned take necessary and quick action to clear the footpaths for pedestrians in Hazratganj?

T N Khanna

ROADS ATE INTO GREENERY

■ There was a vast stretch of big green trees on both sides of the road from Utrethia to PGI and beyond. On the pretext of wider roads, all were hacked and not even few saplings were sown to replace them. Now they are doing the same from Utrethia to Telibagh. Deep trenches have been dug around the trees so they are falling on their own. Till when will old trees bear the cost of road widening? We need to encourage corporate companies to come forward and take measures such as sapling distribution etc.

Ruchika Kishore

The Times of India, Delhi dated May 14, 2015

The Times of India, Delhi dated May 15, 2015

UK set for war on NO2 emissions

Supreme Court Tells British Govt To Meet EU Norms By End Of This Year

Jayashree Nandi
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New Delhi: London and Delhi may be poles apart in character, but they have a common problem—deteriorating air quality.

At a time when National Green Tribunal has directed the Centre, Delhi and other state governments, to ban more than 10-year-old diesel vehicles to tackle air pollution, the UK's Supreme Court has ordered that the new government make plans to tackle high levels of nitrogen dioxide (NO2) in London and other cities.

NGT is likely to take a decision on phasing out of polluting vehicles on Monday.

Environmental groups in the UK say diesel vehicles may be discouraged or even phased out in the country as they are responsible for high NO2 emissions. According to the committee on the medical effects of air pollutants (COMEAP) of UK, air pollution caused about 29,000 premature deaths in the country in 2008.

Delhi's annual mean PM 2.5 levels in 2013 was 156 mi-

HOW THE BRITISH ARE DOING IT

On April 29, the UK Supreme Court ordered that the gov't must draw up a plan to meet EU norms on air quality by the end of 2015

WHAT LONDON HAS DONE SO FAR

Single agency: Transport for London (TfL) runs all modes of transport in Greater London

Congestion fee: It is a fee charged on most vehicles operating within the 'congestion charge zone' in central London between 7am and 6pm (Monday to Friday)



crograms per cubic metre compared to only 8 micrograms per cubic metre in London in 2010, according to the World Health Organization's urban air quality database 2014. The same database found Delhi's mean annual

Integrated transport system:

London has about 400km of underground (Metro) network and around 3 million passengers use it every day. Still 6 million passengers use buses. Public transport network is fully integrated

Single ticket: Oyster Card is an electronic ticket that is a quick, cheap and easy way to pay for any mode of travel—the underground Metro, buses, trams, river boat services, trains etc

Cycling: Santander Cycles is a public bicycle hire scheme in London

PM 10 levels in 2010 to be 286 microgram per cubic metre compared to 23 micrograms per cubic metre in London. But the NO2 in London breach the EU standards. In 2013, the annual mean NO2 levels in London was 58 mi-

crograms per cubic metre compared to a safe limit of 40 microgram per cubic metre.

However, the two cities have different levels of emission with London having far superior fuel standards and a large public transport network.

London had adopted a mix of strategies even before the air pollution became a major issue. For instance, it has a vehicle quota system and a congestion fee for the central part of the city. It has also expanded the public transport system and offered a single card for all modes of travel. "They also have a large number of diesel hybrid buses, which are cleaner than even Euro VI compliant vehicles. Bogota was inspired by London to buy 200 such buses for their BRT," said Amit Bhatt, strategy head, urban transport at EMBARQ India.

Bhatt said a similar integrated transport system can help Delhi. "London has about 400 km of underground (Metro) network and around 3 million passengers use the system every day while 6 million people use

the buses," he added.

In India, civil society groups are eagerly awaiting a strong order from NGT. Sunita Narain, environmentalist and head of Centre for Science and Environment (CSE), said, "We expect NGT will not go back on the ban on more than 10-year-old diesel vehicles and not go by the government's excuse that it can't be done. Fitness-based phasing out of polluting vehicles will not work."

Anup Bandivadekar, passenger vehicles programme director at International Council on Clean Transportation (ICCT), said, "Diesel vehicles are one of the main causes of the high levels of NO2 across the UK and PM2.5 (as well as NOx) in Delhi. As a result of the Supreme Court ruling, the UK government must consider measures such as low emission zones, congestion fee and other economic incentives in the 16 zones where nitrogen dioxide limits are high. ClientEarth, which filed the law suit, is asking for a range of actions, including a national network of low emission zones."

Now, a plane that powers itself with its wing vibration

Indian Pupils Jointly Create Prototype

Kounteya Sinha
@timesgroup.com



NOVEL IDEA

London: A team of Indian students spread across four countries in three continents has jointly created the world's first airplane that generates its own power by the vibration of its wings. The path-breaking idea has made it to the finals of a global competition floated by Airbus.

The team — which includes students studying in India, England, the Netherlands and the US — envisages a future when aircraft wings can be dressed in a composite skin that harvests energy from natural vibrations or flex in the wings. The students will travel to Hamburg, Germany, to make their case for the top prize to Airbus. The winners of 'Fly Your Ideas' competition will be announced on May 27. They will win a €30,000 jackpot.

"There is a natural vibration that exists in every aircraft when it flies, during which energy is generated," team leader Sathiskumar Anusuya Ponnusami from Delft University of Technol-

ogy (Netherlands) told TOI. "At present this energy goes wasted. We intend to harvest the energy from those vibrations which will be sufficient enough to power in-flight operations like lighting and on-board entertainment."

The team also includes Dhamotharan Veerasamy from City University London, Shashank Agrawal and Ajith Moses from the Indian Institute of Science, Bengaluru, and Mohit Gupta from Georgia Institute of Technology. It is among the five finalists.

The team uses piezoelectric fibres that gather electrical charges from smallest movements during flight, storing the energy generated in battery panels integrated in the fuselage and using it to power auxiliary in-flight systems. This reduces the energy footprint of aircraft during flight and could even replace the entire power source for ground operations.

For the full report, log on to www.timesgroup.com

The Times of India, Delhi dated May 16, 2015

Diesel taxis: NGT sends out notices

TIMES NEWS NETWORK

New Delhi: National Green Tribunal on Friday issued notices to Delhi government and app-based taxi services on a petition alleging that the vehicles being used were diesel powered and violated the Supreme Court directive of using only clean fuel in Delhi. The petition was filed by a city resident, Devinder Pal Singh.

A bench headed by NGT chairperson Justice Swatanter Kumar issued the notice to the state government as well as ANI Technologies Pvt Ltd (Ola), Serendipity Infolabs Pvt Ltd (TaxiForSure) and Uber India Systems Pvt Ltd (Uber), seeking their replies by July 3.

The court was hearing a plea filed by Singh against pollution caused by what he described as the "illegal" plying of diesel taxis by Uber, Ola and TaxiForSure. The taxis have All India tourist taxi permits but are being used locally.

"All commercial vehicles, including local taxis operating in Delhi, are required to be run only on clean fuel mode i.e. CNG (single fuel) as per directions of Supreme Court," the petition that was filed through advocate Pankaj Vivek said.

The petition contended that the apex court judgement was passed with a view to check rapid deterior-

ation of air quality in Delhi which is becoming a health hazard. Air pollution and the role of diesel in aggravating it has been making headlines for some time.

"In Delhi, registration of diesel vehicles for commercial use is permitted only if they apply for an obtain All India tourist taxi permits in order to use it for inter-city business as CNG may not be available in locations outside NCR region," the plea said.

The court was hearing a plea filed by a Delhi resident against pollution caused by the 'illegal' plying of diesel taxis

The plea sought direction to punish "offending All India tourist permit holders" who are using diesel taxis for intra-city transport and restrain Delhi government from allowing use of such cabs registered in other states in Delhi-NCR.

"In this mode of business, the diesel vehicles registered in Delhi as well as other states are able to flout the provisions of Motor Vehicle Act, 1988 as well as bypass the directions of the Supreme Court and Bhure Lal Committee Report," the petition said.

The Times of India, Delhi dated May 16, 2015

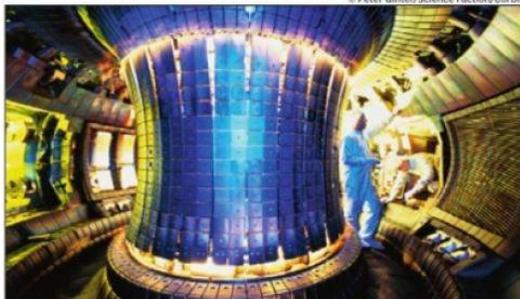
A man-made mini-star to power our future

Experts To Harness Energy From Controlled N-Fusion

Andrew Griffin

© Peter Ginter/Science Faction/Corbis

Engineers and scientists are constructing a huge mini-star, which will produce the same reactions that happen in the sun to provide energy for the future. The project, known as Iter (International Thermonuclear Experimental Reactor), is based in Cadarache, near Aix-en-Provence in southern France. It will weigh three times as much as the Eiffel Tower and be as big as 60 football pitches.



A SUN OF OUR OWN: The 'mini-star' will weigh three times as much as the Eiffel Tower and be as big as 60 football pitches

Inside the new building will be a nuclear reactor that scientists hope can provide power through nuclear fusion. In doing so it could generate clean, safe energy and reduce reliance on fossil fuels.

Earlier this year, the team behind the project appointed a new leader, Bernard Bigot. "We are now entering into manufacturing and preparations for assembly," he said as he joined in March. Bigot said that he had joined as part of a new management team that was set up to deliver "both a research and an industrial facility".

Inside that facility there will be a smaller and controlled version of the same reactions that happen in our sun, nuclear fusion. That happens when two atomic nuclei collide with each other, releasing energy in the form of photons. The scientists hope to harness that en-

ergy and re-use it, to replace the dirty and limited forms of energy that we use today.

A super-hot cloud of hydrogen will rotate faster than the speed of sound while being bombarded with surges of electric current which will leave the hydrogen ten times hotter than the sun's core.

According to the organization's website, it is based on the tokamak concept of magnetic confinement, in which the plasma is contained in a doughnut-shaped vacuum vessel. The fuel, which is a mixture of two isotopes of hydrogen, will be heated to temperatures in excess of 150 million degrees, forming a hot plasma. By scorching it with concentrated

waves of radiation, scientists believe they will be able to harness the energy (in the form of photons) which are created when atomic nuclei collide with each other. It is the same process of nuclear fusion which occurs on the sun.

The project was launched in an early stage in 1987. It is now being pushed forward by a group of seven entities — including the EU, as well as the US, Russia and China.

Since then, the project has repeatedly run into problems, with the schedule being pushed back. But scientists hope that early operations can begin in the 2020s, with harnessed energy coming some time after that. THE INDEPENDENT

The Times of India, Delhi dated May 17, 2015

Two-thirds of sewage in urban areas flow into rivers untreated: Panel

Says Cleaning Could Cost ₹1.8 Lakh Cr

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New Delhi: The government is focusing on managing sewage in towns/cities on the banks of the Ganga, but it could be facing an even bigger difficulty.

A parliamentary panel has expressed its concern at the massive problem of discharge of 'untreated' filth into rivers which requires a huge amount of money (Rs 1,10,000 crore to 1,80,000 crore) for setting up additional sewage treatment plants (STPs) to save these critical water bodies across the country.

The panel, which submitted its report to the Parliament during the budget session, has also noted that nearly two-thirds of the sewage generat-

COST TO TREAT THE WASTE

Countrywide status of sewage in urban areas



ed in urban areas across the country goes into rivers untreated, leaving the water bodies severely polluted.

Incidentally, more than two-third of the sewage generat-

ed in 118 towns, located in the Ganga river basin, also gets discharged into the river untreated. A recent government report has noted that these towns collectively gener-

ate over 3,636 million litres per day (MLD) of sewage as against the treatment capacity of approximately 1,027 MLD of the existing 55 STPs in these towns spread over five states.

The government has already approved Rs 20,000 crore for Ganga cleaning as part of its overall rejuvenation plan. But, the fate of other rivers is yet to be decided by the Centre with matching financial support.

Questioning the Centre for not adequately funding its plan to conserve rest of the rivers in the country under the National River Conservation Plan, the panel — department-related parliamentary standing committee on science & technology and environment & forests — noted that the government had merely made a provision of Rs 40 crore for the financial year 2015-16 which is not sufficient even for the on-going sanctioned works under the National River Conservation Plan.

For the full report, log on to www.timesofindia.com

The Times of India, Delhi
dated
May 17, 2015

The Times of India, Delhi
dated
May 18, 2015



City's green cover slips into the red

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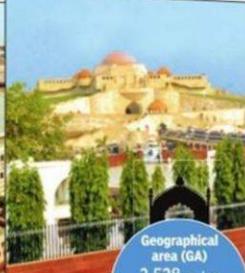
The city has not only lost its green cover over the years, but even the scope to regenerate it. Lucknow/Awadhi division comprises six ranges. Finding space to plant trees like neem, peepal and pakar which require a bigger area is a challenge in the city range which covers urban localities between Alambagh and Jankipuram and also some area near King George's Medical University.

Construction, road widening, housing, electricity poles, government projects and illegal tree-felling has robbed Lucknow of its greens. "Initially, we used to plant trees like pakar and peepal along roadsides but now there is no space for bigger trees," said a forest range officer O P Singh in Lucknow.

In 2008, giant 'Pakar' trees that flanked the Sitapur road for over fifty years were cut for expansion of the road. The railway flyover at Niralanagar led to disappearance of the long rows of road-side trees. Same year, about 680 trees were cut in Bangla Bazaar area and 800 along jail road under city range where a road widening claimed huge number of trees near Ravindra Lalaya, Faizabad road and Hartol road is another stretch which stands deprived of all its age-old trees.

Forest officials agree that new saplings cannot compensate for loss in green cover. A full grown tree covers at least 100 square metres while a sapling covers hardly one square metre which means only a 100 saplings would compensate for a tree in a given time. Planting a tree sapling cannot be an immediate replacement for a full grown tree. But, at the same time, permission to cut down a tree for development activities cannot be denied.

Felled trees also bring considerable revenue to the government.



Geographical area (GA)
2,528 sq km

OPEN SPACES, BUT NO GREEN

Lucknow's Green Cover as per Forest Survey of India Assessment over the years

Green Cover	Year 2003	Year 2005	Year 2009	Year 2011	Year 2013
Very Dense Forest	0	0	0	0	0
Moderately Dense Forest	141	115	116	116	116
Open Forest	118	183	185	185	188
%age of GA	15.6	11.7	11.9	11.9	12

> Very dense, moderately dense and open forest (plantation on forest land) is categorized on basis of canopy density. Very dense has 70% canopy density, moderately dense has 40 to 70% canopy density and open forest has a canopy density of 10 to 40%

> Open forest shows tree cover which is along roadsides, canals and on land other than forest

> Green cover includes forest and tree cover and is mapped through satellite imagery



DEVELOPMENT TAKES A TOLL: (Clockwise from top) Ambedkar Park has lost much of the greenery present around it a decade ago. Same is the case with Baluadda Crossing, which appears fancier, but has markedly less foliage in present day

In between 2007 and 2009, felled trees brought maximum revenue. A single full grown tree when cut not only brings double the compensation cost but also royalty—not less than Rs 1,500. According to rough estimates, forest department might be incurring around 50 to 70 lakhs on care and maintenance of trees on a single sq km of area in three years time. But the agency seeking permission for getting trees cut pays double the cost of plantation on that stretch or double the cost of that land strip along with Net Asset Value of the land.

The money is spent on compensatory afforestation. "Forest Survey of India (FSI) report for 2011 has shown that Lucknow got its green cover increased by 3 sq km that's because of the new trees that have been planted by the department and that's what the forest department keeps doing, regular plantation," said Eya Sharma, conservator, Awadh. The effort to replenish the green cover does not show instantly as it's only after three years that a sapling gets recorded in satellite imagery, she said.

People's participation is must if green cover is to be increased. Protection of a tree is not only the government's responsibility. In Lucknow, various government departments like forest, cooperatives, PWD, irrigation, LDA, LMC, rural development, water resources, industrial and housing plant trees. "There are instances where people uproot saplings, break the brick guard or walk away with the iron tree-guard," said a forest staff.

In 2013, government created a land bank with a mission to prevent development from destroying the green cover in 2013.

Tanks: environment's best friend

Around India's Independence, Telangana had 50,000 tanks. At the time, and it had the best irrigation system in the world. After independence, the focus on building large dams as a solution to all water issues became prevalent because at the time several dams were being constructed in the western hemisphere.



Historically though, the concept was to use rain water harvesting to build additional water resources. A tank network was built by connecting a chain of water bodies, and when one overflowed the water was immediately transferred to a stream or another tank, through the weir. This way, water was never allowed to go to the main river and there was never any disruption of water supply. This was a commonly utilised method of irrigation in the states of Telangana, Andhra, Maharashtra, Karnataka, Tamil Nadu.

After the whole country neglected small irrigation, leaving it to disempowered panchayats to manage all water tanks below 40 Ha, the system virtually dried out. Tank irrigation across the world, interestingly works best if there is a community spirit within the common people.

Any government that rules Telangana, which is a table-land

where rivers flow in the valley, has to deal with this tremendous reality. The only other option is the expensive lifting of water, through rain water. There are many advantages to tank irrigation. Tanks by nature charge ground water levels wherever they exist.

Beyond just water, tanks also provided silt, which reduces fertilizer usage. Done properly, soil fertility is maintained for five years

Tanks recharge ground water, their silt enriches fields, and increases moisture retention dramatically. Flora and fauna thrive near tanks, and several endangered birds have come back where tanks have been revived. There is also a deep cultural aspect here as most festivals in Telangana were celebrated around tanks

and its ability to retain moisture improves dramatically.

Historically, every summer silt would be excavated by the farmer, and taken to fertilise soil. Hence, not having good tanks actually is a tremendous deviation from sustainable agriculture. The high-bird seeds and chemical fertilisers have done more harm to the land. Hence, in the long run, this is a great way to restore the land also.

Where tanks come to life, trees and birds thrive. We have seen birds which were thought endangered, come back to the areas where tanks thrive. Environment is deeply influenced, we also have cultural festivals such as Batukamma in Telangana which are an ode to mother nature through flowers. It is time for us to bring back the self-esteem of villagers and restore their natural life patterns.

K. Parushotham Reddy, eminent environmentalist

EXPERT OPINION



Irrigation Minister Harish Rao meeting villagers in Chada, Aleru constituency, Nalgonda district.



GIVING POWER BACK TO THE PEOPLE

Water management expert **Subba Rao** says that the biggest challenge in agriculture today is that farmers have lost faith in the system. Mission Kakatiya is bringing back the faith and trust

Tanks provided sustenance 800 years ago that was so well designed, it provided opportunity to provide decentralised water and occupation. People's involvement thus became natural in tank maintenance and ceased when only big projects became the norm in water management. India's big dam projects were started during the colonial rule to bring in centralised irrigation. These centralised systems also undermined water flow to minor irrigation, canals and tanks.

The beauty of south India is that for hundreds of years, not only the information about tanks, but its management systems also were well in place.

What reviving tanks has done in the past is that it has revived village communities. There is a traditional village chain of knowledge about the location, the maintenance of tanks handed down from generation to generation. In Telangana, the rules are all available in books 400 years old, in Urdu. So interestingly, understanding the tanks is about understanding history, geography, politics, as much as it is about understanding water.

The biggest challenge in minor irrigation is that farmers have lost confidence in the system. They believe that all the expensive projects are for the financial benefit of the construction sector. How do we reposit trust in villages? Even the Kakatiya Mission, which is now in full gear mission mode, with its 20,000 crore

In Telangana at least, with 60 per cent of the population directly dependent on minor irrigation, there cannot be a more important project that the state can take up for the people than tank irrigation revival

budget, has to think about keeping alive that spirit of community interest and water management, as it is very easy to just desilt, repair, construct and leave. It is heartening to see that the mission has a big community aspect to it.

People underestimate what good tanks can do. Once in 1993, one rainfall of 14 hours in Chittoor had tanks full. During a drought, several mandals were declared drought-prone, but not this one, as the tanks supported it. So this cannot be seen as mere water infrastructure, tanks are the backbone of the village's life.

Water should be considered a common resource. When water becomes an individual resource or project, and people start digging bore wells wherever they want to, the water table level is difficult to manage. This kind of shallow thinking has disrupted entire water basins and we have done very little to stop that.

It's important to maintain benchmarks. In a project as large as this, it is

essential that the Water Board managing about the current status, and the state responds accordingly. With time bound targets, the mission will inspire villagers to gear up for better farming.

The political system also has had a deep impact on water. Shifting governments have rendered several 'start and stop' policies. The advantage here is that this government will stay for five years, being in full majority, and give this project its due importance. So I am very hopeful.

In Telangana at least, 60 per cent people are directly dependent on minor irrigation, and there cannot be a more important, vital project that the state can take up for the people. No one can deny that the Telangana area has been neglected for a very long time. There is always a conflict when the upland is dry versus the richly irrigated coast and plain areas. Civilisation, growth, follows water.

With the agricultural and cultural invasion of upland areas, Telangana always had a second positioning due to lesser waters. The suicide of farmers is also partly because of the centralised irrigation, instead of individual irrigation. Thus Mission Kakatiya gives ample ground to get an overall vision for the state.

K.V. Subba Rao is a highly respected water expert, and specializes in tank irrigation

Deccan Chronicle, Hyderabad dated May 18, 2015

The Economic Times, Delhi dated May 19, 2015

India Seeks Pre-2020 Action Plan on Climate

Press Trust of India

New Delhi: India on Monday appealed to developed countries to present their ambitious pre-2020 action plan to reduce emissions well before the crucial global climate conference to be held in Paris later this year. India

also pitched for a "balanced and realistic" Paris agreement that is not "full of pious statements". The UN climate conference, to be held in Paris from November 30 to December 11, is tasked with finalising a global agreement designed to cut greenhouse gas emissions.

Addressing the Sixth Petersburg Climate Dialogue at Berlin today, Environment Minister Prakash Javadekar said: "India has emphasised that developed countries should present their ambitious targets for pre-2020 action and roadmaps for the same, well before Paris (meeting)." Ambitious pre-2020 actions of developed

countries will create the carbon space required for the developing world, as every poor person has the right to equitable access to the atmospheric resources, he said in a statement issued by the environment ministry.

"It will be ironical that we formulate post-2020 architecture without finalising pre-2020 action plan," he said and suggested the ADP should be directed to come up with the draft decision text on pre-2020 actions. The Ad Hoc Working Group on the Durban Platform for Enhanced Action (ADP), a subsidiary body of the United Nations Framework Convention on Climate Change (UNFCCC), is tasked with drafting climate agreement document. That apart, India demanded that the Warsaw International mechanism, set up in 2013, for loss and damage due to climate change should be operationalised by 2016.

NASA REPORT

Antartica ice to melt by 2020

Disappearance of ice shelves means glaciers will diminish more quickly

Washington, May 17: One of the last remaining sections of Antarctica's Larsen B Ice Shelf is weakening dramatically, a new Nasa study said.

The study predicts that what remains of the once-prominent ice shelf, a thick floating platform of ice, will most likely 'disintegrate completely' before the end of this decade, the CNN reported.

Ice shelves are extensions of glaciers and function as barriers. Their disappearance means glaciers potentially will diminish more quickly, as well, increasing the pace at which global sea levels rise.

A team, led by Ala Khazendar of Nasa's Jet Propulsion Laboratory in Pasadena, California, found evidence of the ice shelf flowing faster and

becoming more fragmented. The flow is creating large cracks in the ice shelf. "The melting of the ice are warning signs that the remnant is disintegrating," Khazendar said in a Nasa press release.

The Larsen B Ice Shelf has existed for at least 10,000 years.

The ice shelf's disintegrating state came into light after it partially collapsed in 2002. Scientists watched in amazement as the ice shelf splintered and vanished rapidly in six weeks. No one had ever witnessed a large ice mass disappear so quickly, according to Eric Holthaus, a meteorologist at Slate.

The collapse of the Larsen B Ice Shelf seems to have been caused by a series of warm summers on the Antarctic Peninsula, which happen during what in the Northern

Hemisphere are winter months. Those trends built up to a particularly warm summer in 2002, according to NASA. Larsen B measured 4,445 square miles in January 1995. It went down to 2,573 square miles in February 2002 after the major disintegration, and a month later Larsen B was down to 1,337 square miles.

At present the Larsen B remnant is about 618 square miles. That's less than half the size of Rhode Island, the smallest US

state. Two decades ago, Larsen B was slightly smaller than the state of Connecticut.

Nasa's Jet Propulsion Laboratory glaciologist Eric Rignot, who co-authored the paper, said the research gives insight into how ice shelves closer to the South Pole will react with the warming climate. "What is really surprising about Larsen B is how quickly the changes are taking place," Khazendar said.

— Agencies

Although it's fascinating scientifically to have a front-row seat to watch the ice shelf becoming unstable and breaking up, it's bad news for our planet.

— ALA KHAZENDAR, Nasa's Jet Propulsion Laboratory



Ice shelves are particularly sensitive to atmospheric warming and changes to ocean temperature.

Larsen C has been somewhat stable with some evidence of thinning and melting, Nasa said.

The free-floating remnant will shatter into hundreds of icebergs that will drift away, and the glaciers will rev up for their unhindered move to the sea.

LARSEN B REMNANT IS ABOUT 1,600 SQUARE KM IN AREA AND ABOUT 0.5 KM THICK AT ITS THICKEST POINT.

AFTER THE 2002 LARSEN B COLLAPSE, THE GLACIERS BEHIND THE COLLAPSED PART OF THE SHELF ACCELERATED AS MUCH AS EIGHTFOLD.

The Times of India, Delhi dated May 19, 2015

'Air pollution causes 8m deaths/yr'

China Accounts For 1.5m Fatalities From Indoor Pollution, India For 1.3m: WHO

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New Delhi: Deaths due to air pollution have increased four-fold across the globe over the past decade, the latest assessment by the World Health Organization shows. The database on which the report is based shows that China and India are by far the worst affected countries.

"Air pollution is one of the main avoidable causes of disease and death globally. About 4.3 million deaths each year, most in developing countries, are associated with exposure to household (indoor) air pollution. A further 3.7 million deaths a year are attributed to ambient (outdoor) air pollution," a report by the WHO secretariat, said. The report, titled 'Health and the environment: addressing the health impact of air pollution', is to be presented at the 68th World Health Assembly which opened on Monday in Geneva.

It highlights the risks of an



WHO has warned of rising pollution in developing countries by 2030 along with advancement of transportation, housing and infrastructure

increasing disease burden due to polluted air at home and outside.

WHO'S 2005 global update on air quality noted that more than two million premature deaths each year can be attributed to the effects of urban outdoor air pollution and indoor air pollution (from the burning of solid fuels).

The latest report does not

give details, but the datasets on which it is based do give break-ups of deaths due to indoor air pollution country-wise and those due to outdoor or 'ambient' air pollution region-wise.

What the data shows is that of the 4.3 million deaths globally from indoor air pollution, China accounted for nearly 1.5 million and India for close to

1.3 million. Between them, the two Asian giants accounted for nearly two-thirds of the global total.

As for outdoor pollution, the south-east Asian region, which includes India in the WHO categorisation, accounted for about 9.4 lakh deaths and the category that includes China had 1.7 million. The two regions were home to over two-thirds of global deaths due to this cause. While developing countries were found bearing the maximum disease burden due to air pollution even in 2005, the WHO report then had warned of rising pollution in developing countries by 2030 along with advancement of transportation, housing and other infrastructure.

The latest report talks in details about the adverse effects of both indoor and outdoor air pollution on health. For instance, exposure to air pollution is a leading risk factor for non-communicable diseases,

in particular: ischaemia, myocardial infarction, stroke, chronic obstructive pulmonary disease and cancers.

Lung cancer deaths due to air pollution have also increased significantly since 2005. According to the latest report, around 30% of all lung cancer deaths can be attributed to the joint effects of household and ambient air pollution, whereas in 2005, 62,000 lung cancer deaths out of the total 1.2 million deaths each year worldwide were attributed to urban outdoor air pollution.

Health ministers from around the world will deliberate on the issue and consider the recommendations made in the report during the ongoing World Health Assembly, where India has assumed presidency after a gap of 19 years. WHO member states are also expected to pass a resolution for prevention and control of adverse impacts of pollution on health during the annual health assembly.

The Times of India, Delhi dated
May 19, 2015

Gaps in IIT emission study: NGT

Extends Stay On Order Banning Polluting Diesel Vehicles

TIMES NEWS NETWORK

New Delhi: National Green Tribunal (NGT) on Monday pulled up the Union road transport ministry for not submitting a "well reasoned" and "comprehensive" report on how much air pollution do more than 10-year-old diesel vehicles contribute to in the city. An NGT bench headed by justice Swatanter Kumar also slammed IIT Delhi scientists, who had drafted the report for the ministry, for not doing proper research in this regard.

The bench extended the stay on its ban on more than 10-year-old diesel vehicles till May 25, while seeking the Centre's response to scrapping of old vehicles and other issues.

Additional solicitor general Pinky Anand who represented the transport ministry submitted in an affidavit that more than 10-year-old old diesel cars contribute to less than 1% of total PM 2.5 (fine, respirable particles) emissions and that the contribution from the transport sector is not as high. The NGT bench found a number of gaps in the IIT study. For instance, it wanted to know why IIT Delhi didn't consider the role of commercial diesel vehicles that ply through the city every night in polluting Delhi's air.

IIT Delhi scientists—Dinesh Mohan, Rahul Goyal and Sarath Guttikunda—in a paper called, "Understanding role of transport in PM 2.5 emissions in Delhi" claimed the actual number of cars on the city roads is only half the official number registered with

WHAT ALL WAS SAID IN THE TRIBUNAL

WHAT IIT DELHI SUBMITS IN NGT

- ▶ Actual number of cars on roads in Delhi is about **half the officially registered number**
- ▶ PUC data indicates that there are about **11,000 to 19,000 diesel cars more than 10 years old**, which drive about 9,000km per year
- ▶ **IIT Team used PM 2.5 data for RK Puram for 2013 and 2014 to compare levels on Sundays and working days. It also compared levels on transport strike days vis-a-vis regular days**
- ▶ Found **significant reduction in traffic on holidays and strike days** but it hardly made any difference to PM2.5 levels
- ▶ It concludes that **a ban on these diesel cars—7% of the car fleet—will mean less than 1% reduction in atmospheric PM2.5 pollution**



Cars more than 15 years old are only 1% of the fleet in Delhi, and those 10 to 15 years old 6%

- ▶ Refers to an emission inventory by Sarath Guttikunda and G Calori which found that **transport department is responsible for 17% of PM2.5 emissions**, domestic sector (coal, biomass, kerosene and LPG) for 12%, brick kilns for 15%

HOW NGT REACTS

- ▶ Why isn't there any reduction in PM2.5 emissions on holidays? **Why hasn't the IIT team analysed what contributes to pollution on holidays?**
- ▶ Are commercial heavy vehicles such as **inter-state diesel trucks responsible for high PM2.5 levels?**
- ▶ Why does study cover only private cars?
- ▶ Findings **contrary to a 2010 study by Central Pollution Control Board which found that over 60% air pollution is caused by vehicles more than 10 years old**

government and that only 6% of cars in Delhi are in the age-group of 10-15 years.

They also documented the PM 2.5 levels at RK Puram for two years—2013 and 2014—to compare the pollution levels on Sundays with weekdays. The same exercise was repeated comparing pollution levels on days when there was a transport strike with that of regular days. But the team found that reduction in traffic did not make any significant difference to PM 2.5 levels on Sundays. For instance on April

30, 2015 when there was a strike by transport workers, most autos, buses and taxis were not operating but they found on



LET DELHI BREATHE

April 30, during the morning hours, PM 2.5 levels were even higher than April 29 and May 1. NGT judges wanted to

know why didn't the PM 2.5 levels reduce when traffic was low. Is it because heavy commercial vehicles from other states were using Delhi's roads? "What is the basis of this report? This report is not comprehensive enough. Merely because you are IIT, you can't be always right," the bench said.

It also said the IIT study seems to be only trying to prove that NGT's order was ineffective. "Don't try to tell us our order is wrong. The whole IIT report is tilted towards proving

YOU alone can stop Delhi's future from going up in smoke



POLLUTION HORROR

AIR QUALITY INDEX PM2.5

Delhi	212	Poor
Tomorrow	229	Poor
Pune	75	Good
Tomorrow	69	Good
Hyderabad	62	Good
Kolkata	25	Good
Mumbai	33	Good

Source: SAFAR@MoES-IITM-IMD (10 stations)

US Embassy data calculated as per Indian standards by SAFAR@MoES-IITM-IMD
Based on 1 Station Data Per City at 4pm

that the ban order is bad. There has to be proper reasoning to what you are saying," the bench added.

NGT also sought clarity on the fact that IIT's findings contradict CPCB's study that had found more than 60% of pollution is caused by 10-year-old vehicles. "Get these issues clarified by the scientists," the bench said. It also sought the ministry's views on capping total number of vehicles, scrapping of old vehicles, car pooling and incentives to those who want to dispose old cars.

The Times of India, Delhi
dated May 23, 2015

AND THEN THERE IS ARSENIC CONTAMINATION

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New Delhi: There's more that ails the Ganga basin than meets the eye—large swathes of the region's groundwater are affected by arsenic poisoning, a health hazard that's been largely ignored while the government focuses on reducing the flow of toxic industrial and municipal waste into the river. While the cause has not been definitively established, the fact is that even though about 70 million people are vulnerable to direct poisoning, there has been no policy intervention aimed at addressing the issue for four decades. The first report of arsenic contamination came in 1976 from Punjab, which warned: "The possibility of more widespread groundwater arsenic contamination, particularly in the Ganga river basin, might be found in the future." The future came six years later. In 1982, West Bengal reported arsenic contamination of groundwater. Between 2002 and 2009, reports came in from Uttar Pradesh, Bihar and Jharkhand—all along the course of the Ganga. It's not clear exactly how widespread the problem is. Depending on the agency reporting, the number of affected districts varies from 71 in nine states to 88 in 10 states; there is no official figure. All the lists have some 40 districts along the Ganga in common. In Uttar Pradesh, 20 districts along the river report arsenic contamination in the groundwater. Of the 15 impacted districts in Bihar, 12 are located along the river. In Jharkhand, contamination has been

reported in areas close to the Ganga and areas where the river has shifted recently and in eight districts in West Bengal. Is there something in the silt that the Ganga brings along and deposits in the plains? Or is increased human activity that led to the spurt of arsenic contamination? Scientists and experts have a range of explanations. KJ Nath, chairman of the Arsenic Task Force of the West Bengal government, says the crisis is due to "geo-morphological reasons" or simply put, natural causes. The problem is that arsenic levels are too high. In many districts, the level of arsenic is as high as 3 mg per litre, way above the World Health Organisation's acceptable safe level of 0.01 mg per litre and even the safe level of 0.05 mg per litre set by the Bureau of Indian Standards. Not all experts are confident of ascribing arsenic contamination solely to natural sources. "The elevated levels of arsenic in groundwater is caused largely by natural process and partly due to anthropogenic activities

like application of fertilisers, burning coal, leaching from coal ash tailings and from mining," according to officials from the Ministry of Water Resources, River Development & Ganga Rejuvenation. Scientists point to the increased usage of coal usage—the average arsenic content in Indian coal ranges from 0.15 to 0.40 mg per kg, way above acceptable limits. Experts say leaching of arsenic during coal washing and combustion leading to ash contaminates water bodies. Add to this the overuse of fertilisers, pesticides, herbicides and fungicides, which often contain high dosages of arsenic. The timelines of reports of arsenic contamination fit with the increased use of fertilisers introduced in the mid-seventies. Arsenic contamination of groundwater is not limited to the Ganga river basin. But given that the Indo-Gangetic plain is the chief food producing area, including the fish obtained from the river, the problem takes on a larger magnitude. The Indian Council for Agriculture

Research says that 90% of the groundwater in arsenic-affected areas is used for irrigation, meaning food crops grown in the area and sold outside carry with them doses of arsenic, making the problem more widespread. The Parliament's Estimates Committee headed by BJP MP Murlu Manohar Joshi submitted a report detailing arsenic contamination of groundwater in December and found that although the problem is four decades old, with more than 70 million people in 35 districts doomed to be exposed to groundwater arsenic, there has been no real policy intervention. The National Water Policy of 2012 has no reference to arsenic contamination. Worse, there is no proper monitoring of arsenic contamination. Arsenic consumed on a sustained basis is harmful to humans, causing illnesses such as hyper pigmentation, keratosis, anaemia, swelling of legs, liver fibrosis, chronic lung disease, gangrene, neuropathy and cancer. Some experts put the death toll on account of arsenic poisoning at 1 lakh and say that there are 2 to 3 lakh confirmed cases of illness. Despite the magnitude of the problem, central agencies don't have any data on arsenic's impact on public health. Although the source of arsenic poisoning is as yet unidentified and may be natural, the increase appears to be on account of human activity. However, there is no proper monitoring and if the Ganga and its basin are to be restored to its glory days, this is one problem that the government can't ignore.



Cooling off in the Ganga in a pool of domestic and industrial waste

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Few steps taken to kill bad air

TIMES NEWS NETWORK

New Delhi: When the AAP government came to power in February, Delhi's air pollution had touched the danger level with PM 2.5 (fine, respirable particles) remaining 10 times higher than the limit prescribed by WHO.

In fact, just ahead of AAP's victory, WHO's urban air quality database had ranked Delhi to be the most polluted among 1,600 cities in the world. There was public outrage over inaction by the government and concerns raised about serious health impacts due to exposure to such high level of PM 2.5.

Though the AAP government took note of the problem, it did not come up with any substantive policy to address it. National Green Tribunal intervened in the matter and issued a slew of directions to governments in NCR, most of which are yet



to be implemented. AAP's Delhi Dialogue Commission held meetings with experts to gather ideas on what action can be taken as well.

The Kejriwal-led government recently told the Centre that addressing air pollution should be priority for all and not just of states. Delhi's environment minister Asim Ahmed Khan said the city government would implement an action plan based on the recommendations of a high-powered committee headed by the

then chief secretary, but the specifics were never shared with the public.

The measures that Delhi could have taken on its own were not paid heed to either. For instance, Centre for Science and Environment (CSE) had prepared a list of interventions that Delhi can make, which include a daily health advisory for residents based on air pollution levels, investigating the sources of air pollution, strengthening the PUC system and linking to vehicle insurance, in-

crease cess on diesel to make it on a par with neighbouring states, improving public transport network, hiking parking fee among others. But the government hardly addressed any of these issues except issuing directions asking sub-divisional magistrates carry out regular inspections and surprise checks at landfills and other areas to check burning of waste.

"As a political party that had a landslide victory we expect it to push through some hard decisions and negotiate with the Centre to take action on air pollution. On its own, the Delhi government can do a lot to address vehicular pollution which is the most toxic, it can discourage diesel vehicles, and can ensure multi-modal transport," said Anumita Roy Chowdhury, head of CSE's clean air programme.

The Times of India, Delhi
dated May 24, 2015

Sea of trash pollutes water, air

Capital Panel Reports Major Groundwater Contamination Near All Four Landfills

TIMES NEWS NETWORK

New Delhi: People living close to some of Delhi's landfills are routinely exposed to extremely polluted air and those drinking groundwater from the area are actually drinking water that's far from being fit for consumption. The Delhi Pollution Control Committee has recently submitted a status report of air and water quality around Ghazipur, Okhla and Bhalswa landfills which shows that the suspended particulate matter levels around these landfills are up to 30 times the standard in some places. The water is hard with very high levels of total dissolved solids which can cause it to taste bitter and be toxic in nature.

The SPM levels near Bhalswa, for instance, were about 3,633 micrograms per cubic metre while the safe standard for PM-10 (coarse air pollution particles) is only 100 micrograms per cubic metre. At another spot close to Bhalswa landfill, it was 1,571 micrograms per cubic metre. At Bawana landfill, SPM was about 777 micrograms per cubic metre and at one of the locations in Ghazipur it was 1,124 micrograms per cubic metre.

Shriram Institute of Industrial Research, which conducted the monitoring work in these areas last month, however, did not measure PM-2.5 (fine, respirable par-

MEASURE OF TOXICITY



Location	pH	TDS	Chlorides	Hardness	Ca	SO4
Permissible limit	6.5-8.5	500	250	300	75	200
Bhalswa SG Transport Nagar	6.9	1,290	490	940	376	37.4
Bhalswa Dairy	7.2	1,130	490	1,200	480	28.2
Bhalswa Landfill	6.9	1,700	1,365	2,176	870	24.7
Bhalswa Janata Colony	7.1	1,360	1,140	1,080	432	33.1
Okhla Landfill	7.2	650	680	1,000	400	33.3
Okhla ESI Hospital	7.4	400	140	300	120	41.5
Okhla Workshop	7.1	680	565	712	285	38.8
Ghazipur Dairy	7.2	560	140	640	256	25.5
Behind Ghazipur Dairy	7.2	600	240	560	224	31.9
Ghazipur Landfill	7.1	850	500	680	272	46.6

All measures save pH are in milligrams per litre | TDS: Total dissolved solids; Ca: Calcium; SO4: Sulphates; Hardness: Presence of calcium carbonate

Air is free. STOP making Delhi's people pay a price for it!



POLLUTION BLIGHT

AIR QUALITY INDEX PM2.5

Delhi	225	Poor
Tomorrow	212	Poor
Pune	55	Good
Tomorrow	58	Good
Hyderabad	57	Good
Chennai	74	Good
Kolkata	71	Good
Mumbai	21	Good

Source: SAFAR@MoES-ITM-IMD (10 stations)
US Embassy data calculated as per Indian standards by SAFAR@MoES-ITM-IMD
Based on 1 Station Data Per City at 4pm

ticulate matter)—a component of SPM that can get lodged in people's lungs. Neither did it estimate the levels of oxides of nitrogen or extremely toxic compounds such as dioxins and furans. Dioxins are often released near landfill sites due to

burning of plastics.

The groundwater quality also seems to be very poor. Even though, DPCC didn't detect any heavy metals in the water, experts say it definitely cannot be used for drinking. "These landfills were made in way such that leachate leaked out from the dump into the soil. When they were made there was hardly any habitation around. But solid waste obviously decomposes here and, when rain falls, the leachate moves into the groundwater system. We have to learn from our mistakes. The authorities should also study how far the leachate has travelled. For instance, has it travelled from Bhalswa to, say, Mayur Vihar?" Shashank Shekhar, assistant professor of geology at DU, said. He added that such water can affect health and cause skin problems. The only saving grace is that carcinogenic heavy metals have not been detected in the samples.

Importantly, a 2012 study by the School of Environmental Sciences in Jawaharlal Nehru University has found high levels of nickel, zinc, arsenic, lead, chromium and other heavy metals in the solid waste samples collected before and after monsoon from Ghazipur, Bhalswa and Okhla landfills which was an indication that the groundwater may also be contaminated with heavy metals.

Recycled water for rail station

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New Delhi: In order to avoid wastage of water at the railway stations in Delhi, the railway department is planning to set up a water recycling plant at the New Delhi railway station that would provide as much as three lakh litres of recycled water everyday, amounting to a saving of Rs 6-8 crore annually.

According to the railway department, at present, all the four - New Delhi, Old Delhi, Anand Vihar and Nizamuddin railway stations consume more than two crore litres of water everyday. 40 percent of this, as much as 80 lakh litres in total is used for washing of tracks, coaches and other cleaning purposes.

GREEN PROJECT "A number of green projects are in line. This water recycling plant will be a first of its kind project to be installed at an Indian railway station. The cost of the project is estimated to be around Rs 70 lakh. The tenders regarding the project will soon be floated and is expected to be operational by the year-end," said Arun Arora, divisional railway manager, Northern Railway.

At present, all the drains connected to the tracks and those carrying waste water from the place where washing of coaches takes place are connected to a bigger drain which will be connected directly to the plant, which will then drain out all the waste water straight away to the plant for recycling. On an average, the New Delhi railway station consumes one crore litres of water everyday, while the Old Delhi station consumes around 40 lakh litres. Similarly, Nizamuddin at an average consumes around 60 lakh litres of water, whereas Anand Vihar has a daily consumption of 20 lakh litres of water.

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60 Puri hotels defy NGT, to be sealed

Odisha Sees Red Over Flouting Of Green Rules

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Annie Owen/Robert Harding World Imagery/Corbis

Bhubaneswar: The Odisha State Pollution Control Board on Sunday decided to seal 60 hotels in Puri for allegedly violating pollution norms laid down by National Green Tribunal.

OSPCB regional officer (Bhubaneswar) Hadibandhu Panigrahi said the board was asked by NGT to serve closure notice on the hotels on May 5. "Despite repeated reminders, the hotels have not applied for the mandatory 'consent to operate' (CTO)," he said, "According to an NGT directive, we had given them two weeks," he added.

The move came a day after Uttarakhand's State Pollution Control Board sealed a five-star hotel in Haridwar for allegedly polluting the Ganga with untreated waste water. OSPCB sources said 217 hotels in the beach town would be served closure notices. This excludes hotels which moved the Orissa HC against the decision, and



People hang out at a beach in Puri. The hotels in question are allegedly discharging untreated waste water into the sea

have been granted a stay.

Besides not obtaining the consent, the hotels in question are also allegedly discharging untreated waste water into the sea near Bankimuhan in Puri.

After the pollution board launched a drive to seal hotels last year, some of them moved the Orissa HC challenging the move. "The hotel association is opposing the Biochemical Oxygen Demand (BOD, amount of

oxygen consumed by microorganisms in breaking down waste) standard fixed by the pollution board," said the senior pollution board officer. "We have fixed the BOD at 75 mg per litre of water." The hotel association argues that the Environment (Protection) Act, 1986, has set the BOD limit at 350 mg per litre of water. "But the state board has power to reduce the limit based on local conditions," he added.

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