

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

## Business Sustainability News

## International

### 3 lessons on resilience from the first Earth Day

By Roya Shariat and David Schreiner



San Francisco is one of the 100 Resilient Cities.

An estimated 20 million people participated in the first Earth Day in the United States on April 22, 1970. The day helped change the national agenda and proved that people in the United States had a deep concern for the state of the environment. In some ways it launched the modern, international environmental movement.

The tactics that made the first Earth Day so successful at building a unified, grassroots movement offer three lessons for global resilience practitioners about garnering widespread support, promoting behavior change and building an enduring global movement:

#### 1. Tap into the existing base of issue-focused activists to build support and energy.

Part of what made the first Earth Day so successful was how its founders incorporated the tactics, priorities, and passions of the anti-war movement of the 1960s and rallied these civil rights and anti-war activists to the environmental campaign.

City resilience practitioners should engage with involved citizens and let them know that their personal efforts and passions — whether it's supporting local businesses and building economic resilience, or job training to help address social inequity — are providing valuable support, and that explicitly engaging with the larger resilience effort would improve their city's resilience.

#### 2. Emphasize local, personal benefits.

Convincing people to participate in efforts to make the world a better place for future generations is challenging. Today's resilience practitioners, especially Chief Resilience Officers and others in city government supporting them, need average citizens and influencers to understand that the work they do now to build resilience will make life in the city better right away — and not just in the future.

The first Earth Day built support by promising tangible local change in the short term in the form of perceptibly cleaner air and water. Similarly, cities can show inhabitants the immediate benefits of building resilience, such as diminishing the negative effects of powerful storms and providing better access to jobs.

#### 3. Create a legacy through legislation.

The first Earth Day prompted the creation of the U.S. Environmental Protection Agency (EPA), which enjoyed broad political support in Congress in its early years, and the passage of the Clean Air Act, as well as several other enduring pieces of legislation in the years that followed.

Institutionalizing the position of the chief resilience officer in city government is an important step to ensure city resilience is an enduring priority. Furthermore, resilience practitioners can take advantage of key moments while laws are being written to shape their path and ensure legislation builds city resilience. For example, multiple Australian states have passed

laws requiring that any new home construction or substantial renovation include installing a rainwater tank to provide a backup water supply during droughts. These laws prepare communities for the next drought, which provides multiple co-benefits to the city and its inhabitants in the near- and long-term.

[<Source>](#)

### Algae Industry Moves Beyond Research to Commercialization

*SustainableBusiness.com News*

We haven't heard much news about the algae industry lately, but apparently it's getting ready for prime time.

This crucial industry has the potential to address many of the challenges facing the world today - it can fuel vehicles and airplanes, recycle carbon, provide nutrition for animals and people and create jobs for millions of Americans. Substituting algae for palm oil would go a long way to stopping deforestation, for example.

By a wide majority of 75%, the industry continues to believe algae-based fuels will reach price parity with fossil fuels by 2020, as they have in the last three annual surveys.

And while 91% of algae fuel producers say the biofuels will cost less than \$5 a gallon by 2020, 48% say the cost be under \$3 a gallon by then.

As for algae products like feed, food, plastics and chemicals, the industry is close to unanimous that they will be commercially available and price competitive by then.

More than 70% expect to increase production and hiring this year and 89% of employers say consistent, supportive federal government policies would accelerate this growth.

"The results broadly show an industry that continues to grow; from increased production of biomass and oils, to increased hiring, to a wider variety of end products," says the Algae Biomass Organization.

The first building to be covered in algae, in Germany. The algae creates fuels to heat the building, provide shade and muffle street noise.

Last year, the industry made widespread progress on both research breakthroughs in yields and algae biology, and on commercialization, with several companies opening or continuing successful operations at pilot or commercial scale facilities, they say. The two biggest companies are Sapphire (New Mexico) and Algenol (Florida).

Research shows the most productive places in the US to grow algae and a standard platform for evaluating strains has been developed.

While funding for research and development are still needed, what's most essential is support for commercialization - tax incentives and credits, and the Renewable Fuel standard.

The industry needs a Manhattan Project to scale commercialization, says the National Algae Association, it's no longer science that's holding it back.

#### Let Us Grow By Cutting Carbon Emissions

It takes 29-33 pounds of carbon dioxide to produce 1 gallon of algae fuel, says Sapphire, and being able to capture carbon emissions from power plants can make it or break it for the industry.

For that reason, the industry wants official recognition in EPA's Clean Power Plan, which provides a menu of options for how states can cut emissions. But so far, the EPA doesn't include reuse as a solution - only capturing carbon and burying it underground.

To us, the prospect of capturing the carbon and turning it into new products makes much more sense - and utilities would be able to sell the carbon - rather than paying exorbitant fees to pump it underground.

[<Source>](#)

## Air pollution spike across England sparks warning from health charities

Dirtest air expected to hit Brighton, Eastbourne and Hastings, where older people and children have been urged to avoid any strenuous activity at all

• [Interactive: How much fossil fuel has been used in your lifetime?](#)

By Karl Mathiesen

A major spike in air pollution across much of England poses a risk to those suffering from respiratory diseases, older people and children, health charities warned on Friday.



A boy is pulled on his bike to the top of Primrose Hill, with the London skyline in the background on April 3, 2014 in London, England. Dust from the Sahara combined with pollution from mainland Europe has contributed to one of the worst smogs of the year this week with record levels being recorded in parts of England and as a consequence 999 have been receiving a rise in calls from people suffering from breathing problems. Photograph: Dan Kitwood/Getty Images

Midlands, the smog levels will be high enough to cause problems for those with pre-existing problems.

Dr Penny Woods, chief executive of the British Lung Foundation (BLF), said: "To reduce the impact, people who find their health affected can take simple steps such as avoiding busy roads, especially during rush hour, and refraining from strenuous exercise outside."

The event closely follows another high level pollution event in March. Professor Malcolm Green, founder of the BLF, said long term exposure to air pollution was "associated with lung diseases including asthma, as well as lung cancer, and can make symptoms worse in those with pre-existing respiratory conditions. The effects of air pollution depend on the severity of exposure, length of exposure, and susceptibility of the individual".

Asthma UK told asthma sufferers to carry their inhalers at all times. Especially as the high pollution event was due to combine with increased pollen counts.

"Poor air quality and pollen allergy can both trigger asthma symptoms, and increase the chance of a potentially life-threatening asthma attack. Children can be more affected by pollution because they have faster breathing rates, and their lungs are still developing," said an Asthma UK advisory.

Woods said it was unfair that those suffering asthma and other lung conditions should be repeatedly forced indoors by air pollution events.

"People living with lung conditions shouldn't have to take such steps simply to avoid being made ill by the air they breathe. With periods of high pollution often resulting from a combination of domestically-produced pollution and that coming from mainland Europe, we need urgent action from government to clean up the air we breathe, across all government departments at home and at a pan-European level."

Keith Taylor is the Greens MEP for the south east, the area most heavily affected by Friday's event, said the problem should be a national priority. "Whoever forms the next government, one of the first things they must do is to urgently address this public health crisis that currently only seems to be getting worse."

Simon Birkett, director of campaign group Clean Air in London, said: "This is the biggest, most serious air pollution or particle episode

The government pushed its smog alert levels to "very high" - its most extreme pollution warning - for some parts of south east England.

In Brighton, Eastbourne and Hastings the official advice is for all residents - regardless of their health - to reduce their physical exertion. Older people and children on Easter school holidays have been urged to avoid any strenuous activity at all.

In other areas of England, particularly the south east and

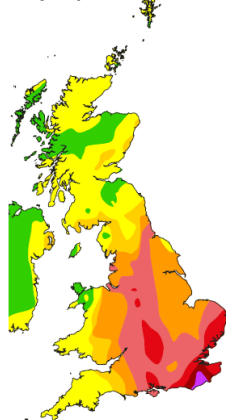
### Air pollution Friday and Saturday

Air pollution forecasts for 10th and 11th April

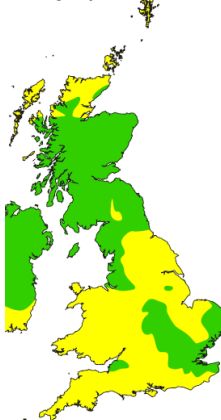
Pollution index



Friday 10 April



Saturday 11 April



Guardian Graphic

Source: Defra

since the so-called Sahara dust episode a year ago.

"If there is one lesson this week, it's that we must follow the lead of cities like Paris that are issuing public health warnings, restricting traffic and putting forward ambitious plans to triple cycling rates within five years."

The slow moving cloud of smog is being fed by a sluggish southerly weather system, which is also responsible for this week's warm spring weather.

Dr Helen Dacre, a meteorologist at the University of Reading, said: "Southerly flow will lead to pollution being imported from the industrialised urban parts of Europe. This pollution will blow across Britain and add to the local pollution produced by British car drivers and heavy industry, creating high concentrations of pollutants in the air. On Saturday however, the weather will change. Clean Atlantic air will spread across the UK and pollution will return to low levels."

Northern Europe, especially France, will be cloaked in a thick shroud of smog for much of Friday. In Paris and northern cities the government has reduced all traffic speed limits by 20km/hr. Residential parking has been made free in Paris to encourage people to leave their cars at home. In March, Paris implemented license plate bans to take half of all cars from the road.

[Source](#)

## April 28 Vatican Summit: Protect the Earth, Dignify Humanity

*SustainableBusiness.com News*

On April 28, the Vatican is hosting a 1-day summit, *Protect the Earth, Dignify Humanity: The Moral Dimensions of Climate Change and Sustainable Development*.

It has these goals:

- Raise awareness and build consensus that the values of sustainable development cohere with values of the leading religious traditions, with a special focus on the most vulnerable;
- Elevate the debate on the moral dimensions of protecting the environment in advance of the papal encyclical;
- Help build a global movement across all religions for sustainable development and climate change.

"The desired outcome is a joint statement on the moral and religious imperative of sustainable development, highlighting the intrinsic connection between respect for the environment and respect for people - especially the poor, the excluded, victims of human trafficking and modern slavery, children, and future generations," it says on the website.

Participants include representatives from the world's major religions, climate scientists and influential environmentalists, such as Jeffrey Sachs, Director of the Earth Institute at Columbia University and Director of the UN Sustainable Development Solutions Network.

The gathering is intended to build momentum for Pope Francis's papal encyclical on climate change, which will be released this summer, followed by speeches in September at the UN and to a joint session of Congress on climate change.

Of course, rightwing non-think tank, Heartland Institute issued a press release that says it is "sending a team of climate scientists to Rome to inform Pope Francis of the truth about climate science: There is no global warming crisis! I'm sure the Pope will appreciate the education."

Heartland proudly declares it is "the world's leading think tank promoting scientific skepticism about man-caused global warming."

Last year, the Vatican convened a 5-day summit to help make the goals of the Rio+20 Summit a reality. It ended with a strong statement from participants, which included scientists and economists.

Here is an excerpt:

"Humanity has entered a new era," moving from the Age of Industrialization marked by remarkable technological change to the Age of the Anthropocene, where humans dominate the planet.

While technological advances from electricity to aviation to the digital revolution have reshaped the world economy into one that's increasingly connected and urban, it is also more and more unequal.

"Human action which is not respectful of nature becomes a boomerang that creates inequality and extends what Pope Francis calls "the globalization of indifference" and the "economy of exclusion."

"Market forces alone, bereft of ethics and collective action, cannot solve the intertwined crises of poverty, exclusion, and the environment."

While conservative Catholics are turned off by the Pope's focus on protecting nature and addressing climate change, others in the faith recently formed the Global Catholic Climate Movement to advocate for an international climate treaty, and "to encourage the conversion of hardened hearts."

[ReadMore](#)





## Boeing aims to quit fossil fuel habit with tobacco-based jet fuel

By Will Nichols



Flickr/XeviV

South African Airways will use the tobacco-based biofuel as part of its plan to become "the world's most environmentally sustainable airline."

The scientific consensus around smoking being bad for your health is famously as solid as that which demonstrates how human activity is contributing to climate change. Now Boeing and partner South African Airways (SAA) may have found a way to tackle both problems by producing renewable jet fuel from a special type of tobacco plant.

The two companies have teamed up for a pilot project that has seen about 120 acres (50 hectares) in Limpopo province planted with Solaris, a nicotine-free, energy-rich tobacco plant. Oil from the plant's seeds will be

converted into jet fuel that Boeing says can reduce carbon emissions by as much as 80 percent.

In the next few years, SAA will conduct a test flight using the fuel, taking the next step on its drive to be "the world's most environmentally sustainable airline." In doing so, it will follow in the footsteps of a range of carriers, including BA, Lufthansa, Virgin Atlantic and most recently China's Hainan Airlines, in experimenting with greener fuels. In fact, more than 1,600 passenger flights using sustainable aviation biofuel have been completed since the fuel was approved for commercial use in 2011.

### Aviation industry embraces biofuels

Two years later, the industry committed to [carbon neutral growth from 2020 \(PDF\)](#), but is still struggling to work out exactly how to achieve that goal.

Darrin Morgan, director of Boeing Commercial Airplanes' sustainable biofuel strategy, said airlines increasingly are turning to biofuels to reduce their emissions as the industry lacks other realistic options.

"Ground transport is electrifying as we speak. Power generation — they have many options to go towards renewables and decarbonize," he told BusinessGreen. "Aviation doesn't. We're going to have to have liquid hydrocarbons for a very long time."

The challenge for the industry is that the oil majors who supply them have made limited progress in delivering the lower-carbon fuels the sector craves. "Aviation uses only about 6 or 7 percent of total oil barrel use, so most of the oil companies view aviation as a very small player and it's hard for them to justify the extra effort to supply our needs," Morgan explained. "So part of why we realized we had to be so active in shaping the fuel landscape for ourselves is because we don't have other options to diversify."

### Biofuels in South Africa

Sunchem Holding S.r.l.



Workers in Africa transplant Solaris tobacco plants.

Biofuels plantations have been blamed for deforestation and other land-use change. Campaigners have warned these problems will get worse if airlines start demanding large quantities of alternative fuels.

Morgan suggests that in South Africa, at least, this should not be a problem. "About 14 percent of the arable land in South Africa is under-utilized or unutilized," he said. "If just a small percentage of that 14 percent were used for Solaris or other similar feedstocks, you would provide enough fuel for all of SAA's needs. It's not displacing essential food crops [and] it's a drop in the bucket in terms of total land footprint to produce quite a bit of what is needed."

If Solaris reaches a critical mass in South Africa,

Morgan can see the potential for investing in refineries in the country, churning out not just jet fuel, but also road transport fuel and renewable chemicals. This could revolutionize a country that as Morgan puts it, "failed to win the oil lottery" and, like many others in the region, relies on expensive imports of already refined petroleum.

Solaris is still in its early stages, so we will have to wait to get a picture of its true potential among the huge range of alternate fuels that will be needed to successfully decarbonize an aviation industry responsible for around 3 percent of global emissions.

### Biofuels around the globe

Boeing is looking at a number of other options, including fuel from plants grown in the desert using saltwater, and it is optimistic that a range of bio-kerosenes promising to be both cleaner than standard fuels and with a greater energy density — essentially offering more power for less weight, a crucial property for aviation — soon will be certified for aviation use.

Currently, these fuels are sold for transport by Finland's Neste Oil and Italian company ENI, but Morgan is convinced of the potential for aviation — he said the three refineries already open in Italy, Rotterdam and near Helsinki currently produce around 4 billion liters of bio-kerosene.

"Now on the global scale, that's not very much, but for aviation that's almost 2 percent of our fuels use with just these initial, first-of-their-kind renewable fuel plants," he added.

The age of greener aviation may not have taken off just yet, but there are encouraging signs it is edging towards the runway.

This article first appeared at BusinessGreen.

[\[Source\]](#)

## Tips:

It's very heartening to note that people are getting more and more environment conscious. Sustainability is not a few people's responsibility it is responsibility of each and every person living on this earth. Though awareness among people has increased but still there are people who behave irresponsibly and do not realize the harm they are causing to the environment. We being responsible citizen must do everything possible to conserve the environment and natural resources.

A few tips are being mentioned below that one might find very useful.

- Please do not smoke, if at all you smoke avoid smoking indoors or at public places.
- Do not burn leaves, paper and other garbage in open, as it will pollute the air. If paper and other recyclable material is removed from garbage and given for recycling will save significant resources.
- Keep your meat intakes to a limit by reducing or eliminating meat products in your diet, you will be able to reduce your carbon foot print and help the environment. If practiced regularly it will also have positive impact on your health.
- The living space is reducing apartment culture is growing and as a result kitchen gardens are vanishing from city life. But if you are fortunate and have a kitchen garden then apart from flowers, lawn, ornamental plants please do grow vegetables and fruits etc. When your garden has more food than you can eat be sure not to let any of it go waste. Preserve it or share it with other community members.
- Rain water harvesting: While constructing house make a system so that rain water is collected and stored in a tank rather than letting it off go down the drain. The collected water may be used for watering the garden and other purposes which does not need purified water.
- If you have an old house where rain water harvesting system is not there but there is space to make storage tank, just channelize the water to the tank. This water can be used later to water the plants.
- Often we buy paints to paint our house after paint is used the container and buckets are left. Wash those containers thoroughly and the buckets may be used for various purposes and other containers can be used for planting trees or storing various items. If they are not of use for you give it to others who need them.
- You may use old saris for making an attractive quilt, so instead throwing away discarded sari get quilt prepared. Thus you may reduce the demand for new cloth for quilt.
- Use glass water bottles in place of plastic or PET bottles. Glass bottles are durable and reusable and at the end of its life it can be recycled. Recycled glass can be used over and over again to make new glassware without deterioration in quality.
- Wherever Bamboo can be used in place of timber one must use it. Because Bamboo is a fast growing grass and does not require much care or pesticides to cultivate it. It is a sustainable and renewable resource.
- Buy larger packs of consumables and eatable products that are regularly used and keep required quantity in reusable containers for daily use, store remaining quantity in air tight large reusable container or air tight zip packs.



## How a greener trucking industry could save \$40 billion per year

By Helen Marks



Shutterstock/Peter Gudella

*The Trucking Efficiency initiative will issue a confidence report on tires later this year.*

In 2013. That's around \$105 billion at average 2013 prices.

With trucking predicted to grow by 2 percent or more each year, improving the fuel efficiency of this industry is critical to reducing greenhouse gas emissions and supporting profit margins in an increasingly regulated industry. Achieving an average fuel efficiency of 9 MPG — a 50-percent increase from the current level of 6.2 MPG — would save North American trucking \$40 billion per year in fuel and reduce greenhouse gas emissions by 20 percent.

Identifying available solutions and market barriers to adoption

The good news is that there are options to make this happen. The adoption of numerous efficiency technologies makes economic sense for fleets and truck owners under current market and policy conditions.



*Aerodynamic hoods reduce drag, making trucks more efficient.*

available in the industry that offer cost savings and relatively quick return on investment, the North American Council for Freight Efficiency (NACFE) and Carbon War Room (CWR) began investigating why — with profitable solutions at-market in the industry — fleets weren't lapping up the solutions. NACFE was launched in 2009 with the help of RMI, as an outcome of the Transformational Trucking Charrette and the NACFE inaugural meeting, both highly supported by the industry.

NACFE and CWR identified several market barriers limiting adoption of efficiency technologies, including insufficient information, finance problems and supply issues.

Lack of credible information on the performance of these technologies, including return on investment and payback times, stifles demand. Another issue is the perception of efficiency technologies as insufficiently reliable.

In some instances, companies lack access to capital to cover upfront costs. Even when management is willing and able to make changes, lack of availability of these technologies from manufacturers or other vendors can slow adoption.

The barriers facing the industry fit well with CWR and NACFE's strengths: CWR could leverage its experience in the shipping industry to fill a gap in market information and NACFE could leverage its knowledge of the trucking industry to study the available technologies. Together, we would be able to encourage technology adoption and work towards shifting industry behavior.

### Overcoming market barriers

In 2013, CWR and NACFE created the Trucking Efficiency initiative to address the information and finance barriers to large-scale deployment of fuel-efficiency technologies and help operators adopt proven technologies with confidence. "It was a great match. NACFE had the industry knowledge and network, and CWR had the boldness, brand, and ability to articulate our work to inspire action," said Mike Roeth, executive director of NACFE and operation lead of Trucking Efficiency.

Trucking Efficiency creates and shares comprehensive, unbiased reviews of available efficiency technologies. It also provides a forum for the industry to come together for open dialogue and collaboration and facilitates greater industry demand for improved efficiency.

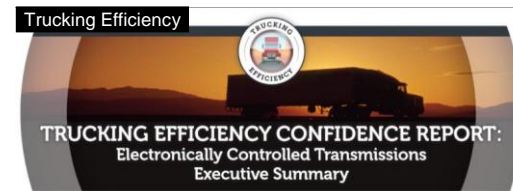
The global trucking industry produces [1.6 billion metric tons of CO2 per year \(PDF\)](#), making it responsible for 5.75 percent of total greenhouse gas emissions. Even when the rest of us are enjoying cheaper fuel, fuel remains the largest cost of operating a truck, costing more to a company than the driver. Heavy-duty tractor-trailers in the United States alone consumed 25 billion gallons of fuel

"If 100 percent of the heavy-duty tractor-trailers in the U.S. invested in a set of aerodynamic devices by 2020, the fleet would avoid 50 million tons of CO2," said Tessa Lee, an associate researcher at Carbon War Room. "This would save nearly \$33,000 in fuel costs per truck over the five-year life of the truck, paying back the initial investment in just 14 months."

Recognizing over 70 efficiency technologies

In the words of trucking heavyweight Mike O'Connell, senior director of the supply chain fleet of Frito-Lay, "the industry needs independent, credible assessments of the best fuel-efficiency technologies. Trucking Efficiency provides that information."

When making decisions, fleets trust their own experiences first, followed by that of other fleets. Two nonprofits would be well-placed to aggregate information from the industry, including offering fleets the option to share their data and experiences anonymously, and be



*Trucking Efficiency issues confidence reports about truck components, helping companies to make fuel-efficient decisions.*

### Generating adoption

To advance our goals, Trucking Efficiency provides comprehensive, unbiased technology reviews through a series of publicly available "confidence reports" and a first-of-its-kind tech guide centralizing all data on available technologies and opportunities for the sector. Each confidence report assesses available technologies, discusses challenges and best practices for their adoption, and provides figures on performance gains and payback periods, along with a multitude of datasets from industry testing.

Confidence reports on tire pressure systems, 6x2 axles, idle-reduction solutions, electronic transmissions and engine parameters are available. In 2015, plans are to publish confidence reports on tires, downspeeding, lightweighting, maintenance, driver coaching and aerodynamics.

"TruckingEfficiency.org has become a trusted source of information in our decision-making process around new components and specification that we are considering deploying within our fleet," said Ezel Baltali, supplier relationship manager of Ryder System, Inc.

Trucking Efficiency also facilitates open dialogue in the industry through a workshop series, which brings together industry leaders and technology experts to facilitate shared learning on available efficiency technologies and provide open debate on the benefits and challenges of adopting them. This leads to connecting fleets with those they trust most, even their competitors.

Lastly, Trucking Efficiency is working to better understand the financial barriers preventing adoption of these technologies and exploring the development of innovative financial models to cover the upfront costs of purchasing technology and conducting performance testing.

Certainly ambitious, the goal is to work with the trucking industry to change decisions and decision making, creating greater efficiency as a part of the new normal for business. The work has benefited incredibly from partnering with the industry and leading NACFE fleets. Reports already affect adoption decisions of large fleets representing more than 100,000 tractor-trailers.

### Successes so far

Steve Phillips, senior vice president of fleet resources at Werner Enterprises, told Carbon War Room, "Werner Enterprises has outfitted approximately 15,000 trailers with automatic inflation systems to improve fuel economy and tire wear while also decreasing roadside breakdowns, in conjunction with Trucking Efficiency's first confidence report on Tire Pressure Systems."

Following a second confidence report on 6x2 axles, UPS changed its 2014 tractor purchases from a 6x4 to a [6x2 configuration \(PDF\)](#) to improve fuel economy by 2 to 4 percent, according to Dale Spencer, director of automotive engineering at UPS.

The technologies that Trucking Efficiency proposes are not only a way for the industry to profitably increase its fuel efficiency, but also will help achieve myriad other benefits for fleets, drivers and the environment.

Along those lines, Frito-Lay has been using the data in these reports for the past few years to accelerate its efforts to improve fuel economy. "In 2014, our trailer aerodynamics efforts were expanded to include tails on the back of the trailers to improve efficiency by another 3 to 4 percent," said O'Connell.

### The future

We continue to see a growing number of fleets shifting their adoption decisions to more efficient technologies. However, success is still a ways off. As Trucking Efficiency's Roeth said, "Success for us is getting \$70 billion back into the pockets of fleets and operators, and cutting fleet fuel bills significantly."

It's a tall order, but we are making progress. And, along the way, we can set the example for what can be achieved in trucking fleets throughout the world.



*Frito-Lay has added trailer aerodynamics, making the process of getting Doritos to you more efficient.*

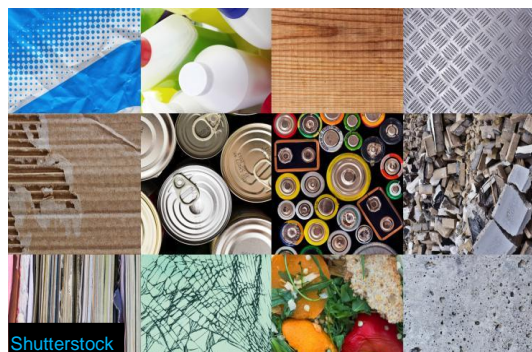
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## It's time to stop managing waste and start preventing it

By Frank E. Celli and Rick Perez

Diverting the world's estimated 12 million tons of daily waste is no easy task. Today's waste management strategies are often costly, cumbersome and bad for our environment.



In order to really reduce impacts on the environment while increasing profitability, companies need to aggressively shift the focus from waste management to waste prevention.

Companies in all industries have the potential for increased profitability, efficiency and reduced environmental impact when they make the

decision to start preventing their waste. Whether it is occurring during production or consumption, a high waste output is an unnecessary expense.

Incorporating a strategic waste-savings plan into your business model, instead of paying for waste removal services, is a great way to tie waste reduction directly to the bottom line.

But waste prevention is also a matter of focus. When businesses start thinking about recycling and zero waste, they tend to start with the more obvious materials: paper, plastic, cardboard, glass and aluminum. These recyclable products are easily monetized and can generate revenue.

In reality, however, food is the largest component of municipal solid waste.

Every year, more than 34 million tons of food waste is produced and when it rots in landfills, it accounts for a significant portion of U.S. methane emissions. That's why it is crucial that businesses start to employ environmentally responsible solutions for food waste disposal.

And in fact, businesses soon may be compelled into action. In recent years, government, businesses and environmental leaders have come together to communicate the fact that traditional food waste management is no longer a viable solution.

Governments across North America, including most recently those in Massachusetts, Seattle, New York City and Vancouver, continue to act and pass legislation banning or limiting commercial food waste.

Maryland state officials recently released a zero-waste plan calling for reducing, reusing and recycling nearly all the waste produced in Maryland by 2040, and California will take its sustainable reputation even further when all food waste from commercial businesses will be converted to energy through anaerobic digestion.

We believe that by 2020, the majority of states will implement similar bans.

Still, local municipalities need to support. They also need to educate companies on new initiatives while encouraging businesses to adapt new waste diversion practices.

### Moving beyond diversion

While there is still plenty of room for improvement when it comes to landfill diversion, leaders around the world are also starting to address the underlying issue of waste prevention.

At this year's World Economic Forum in Davos, for example, several sustainability issues emerged as global risk factors. This year, the importance of prevention and using green technology to ignite a wave of innovation across the food distribution industry also was added to the agenda.

In order to generate the transparency needed to start preventing food waste, we need to invest in new technologies that will allow businesses to easily track, report, analyze and audit waste and recyclables.

Big Data provides information to better address business problems. Having the right data on consumption patterns will allow us to reduce the amount of waste at the source, which in turn encourages product manufacturers to cut down on unnecessary packaging.

When executives are empowered with real-time analytics, they more efficiently can benchmark their performance metrics, implement best practices and make company-wide adjustments to improve efficiency and profitability.

Operational costs are one of the easiest ways to cut back on overall expenses, and efficient recycling practices are a great way to accomplish that goal. But by finding innovative ways to consume fewer resources and generate less waste, businesses will spend less time and money up front.

Unfortunately, many disposable products, including food products, continue to fill landfills quicker than companies choose to make changes to their waste prevention and recycling programs.

With the rise of the zero waste movement and the emergence of better technology to analyze and prevent waste, however, the road to increased profitability and sustainability might just be coming into focus.

[<Source>](#)

## New energy storage plant could 'revolutionise' renewable sector

*Flywheel plant being built in Ireland with potentially unlimited storage capability could solve the problem of clean energy supply shortfalls when there is insufficient sun or wind*

Arthur Neslen Brussels

Foundations for an energy storage plant in Ireland that could "revolutionise" the integration of renewable power into electricity supplies will be laid within weeks.



The plant will use a motor-generated flywheel to harness kinetic energy from the grid at times of over-supply. This will then be released from submerged turbines at times of supply shortfalls.

The project in Rhode, County Offaly, is expected to launch commercially in 2017, with an operating capacity of 20MW.

Although the system will initially feed off all energy in the grid –

clean and dirty alike – it has the potential to resolve the transmission system operators' dilemma of how to store large amounts of energy created during windy or sunny conditions for instantaneous use when the weather changes.

At the moment, such energy shortfalls are compensated for with fossil fuel generators such as coal or gas-fired power plants, or by hydro pump storage. Unlike conventional coal and gas generators which have an efficiency ratio of 35-40%, the flywheel operates at upwards of 85-90% efficiency.

"The hybrid flywheel is a disruptive innovation with the potential to revolutionise the system services market, decoupling its provision from electricity generation by delivering energy-less system services," Jake Bracken, a research manager for the Schwungrad Energie project, told the Guardian.

"In Ireland we have a 50% maximum limit on the amount of intermittent renewable energy that we can take on at any one point. But Eirgrid [the Irish transmissions systems operator] is looking at increasing it to 75% over the next decades and our system has the potential to facilitate that," he said.

In flywheel plants, advanced carbon fibre tubes up to 3m high and 1m wide are floated on magnets inside a vacuum, and spun by electricity in a near frictionless environment, until power is needed back in the grid.

The technology's impact will be keenly watched in Brussels, where the EU's vice president for energy union, Maroš Šefčovič last week called for an overhaul of Europe's last-century grid networks for a future in which they will carry data, products and services, as well as energy.

"Smart grids will do for us what shale gas did for the United States," he told a Brussels conference. "Smart grids should become the EU's shale as, if we had them today, we would need 30% less transmission capacity."

The EU envisions a future in which grids become immediately responsive to consumer demand, allowing people to sell back surplus electricity from their solar panels or electric cars to the electricity network. This would singularly reduce the power of energy utilities, but would require investment now.

Currently, "you have many streets in the EU where, if you plugged in five electric cars at the same time, you would blackout the neighbourhood," Šefčovič said. "We will soon be talking about many thousands of electric cars on our roads and for that we need to make sure our grids are smart, resilient and can handle new demands that are not here today."

One of the Irish project's co-designers, professor Noel Buckley of the University of Limerick, said that it would be able to match variable renewable energy supplies to consumer demand, whenever it arose.

"The grid is designed to run at 50 hertz and when there is an imbalance between supply and demand, the frequency starts to change," he told the Guardian. "When wind goes down, generating capacity goes down, and even if the wind comes back up in a few minutes, you need to have some energy to put back into the grid in the short term."

By using back-up flow batteries which store electricity in tanks in a liquid form, "you can scale up your power and storage capacities separately so that, in principle, the storage can be unlimited," he added.

So far the technology has only been used on a limited basis in the US, but the Irish project is already attracting interest from national grids across Europe, which plan to increase their renewable energy penetration in the years ahead.

The flywheel project has received funding from the European Commission and the Irish government. It is expected to create 50 new jobs.

[<ReadMore>](#)

## Mexico and Russia Among The First to Submit Climate Pledges

*SustainableBusiness.com News*

Only a handful of countries submitted their climate targets to the UN by the March 31 deadline, and Mexico and Russia are among them.

The others are the US, European Union, Norway (same as EU) and Switzerland (cut emissions 50% from 1990 levels by 2030, and 70-85% by 2050). All commitments are posted here as they come in.

### Mexico's goals:

- cut greenhouse gas emissions (GHG) 22% by 2030
- cut black carbon emissions 51% by 2030
- reduce emissions intensity (amount of carbon emitted per unit of GDP) 40% by 2030.

When the targets for GHG and black carbon are combined, the total cuts add up to 25%. The statement says Mexico would raise the goal up to 40% depending on what ends up in a global agreement - whether it addresses an international carbon price, technical cooperation, access to low-cost financing and technology transfer, "all at a scale commensurate to the challenge of global climate change."

Among the many adaptation strategies, these stand out:

- Reach Zero deforestation by 2030
- Reforest watersheds
- Preserve and restore ecosystems to increase ecological connectivity of all protected areas
- Substantially increase programs that protect priority species from climate change.
- preserve and restore coastal and marine ecosystems such as coral reefs, mangroves, sea grass and dunes.
- Guarantee water management for all stakeholders, including ecosystems.

Mexico passed national legislation on climate change in 2012.

### US-Mexico Cooperate on Climate

Afterwards, President Obama and President Nieto released a joint statement, reaffirming their commitment to working together on climate change, calling it "one of the greatest threats facing humanity." The US and Mexico will "seize every opportunity to harmonize their efforts and policies towards their common climate goals."



To that end, the two countries are launching a "high level bilateral clean energy and climate policy task force to deepen policy and regulatory coordination" in areas such as renewable energy, grid modernization, appliance standards, energy efficiency, and more fuel efficient automobile fleets.

They will also work together on air quality, climate policies, such as harmonizing

standards for diesel emissions, and on programs that address carbon forcers - HFCs and black carbon. Lastly, cooperation will also extend to climate modeling, weather forecasting and early alert systems.

Chaired by Energy Secretaries from both countries, the first meeting takes place this spring.

Last year, California signed its own cooperative environmental agreement with Mexico that ranges from attacking wildfires and improving air quality to carbon pricing and expanding the electric vehicle market.

### Russia's Pledge

Russia pledged to cut GHG emissions up to 30% from 1990 levels, subject to conditions.

It says, "limiting anthropogenic [man-made] greenhouse gases in Russia to 70-75% of 1990 levels by the year 2030 might be a long-term indicator." That is, if it can include standing forests as part of the emissions cuts.

While Russia sees this as possible, it won't make a final decision until all major emitters have pledged and how the final agreement turns out.

Russia ranks #5 on GHG emissions (producing 5% of world emissions), after China, the US, EU, and India, according to the World Resources Institute. Only the US and EU have submitted pledges so far.

While people are pleasantly surprised that Russia was among the initial group of countries to submit its pledge, the ambiguous statement leaves many confused, especially given its history.

[<Source>](#)

## Five years after the Deepwater Horizon oil spill, we are closer than ever to catastrophe

*Important changes have been made since 2010, but the oil and gas industry has not learned from the historic oil spill in the Gulf of Mexico*

**András Tilcsik and Chris Clearfield**

In the five years since the Deepwater Horizon accident, the oil and gas industry has not retreated to safety. Instead, it has expanded its technological horizon in ways that make it harder to foresee the complex interactions between drilling technologies, inevitable human errors and the ultra-deepwater environment.

Before its sinking, Deepwater Horizon had drilled one of the deepest oil and gas wells. That



*Before its sinking, Deepwater Horizon had drilled one of the deepest oil and gas wells in the world. Photograph: Lee Celano/Reuters*

depth has since been surpassed, and exploration continues to new frontiers. Not far from the Deepwater Horizon accident site, Royal Dutch Shell is now developing the deepest offshore oil field in history. In the Caspian Sea, an international consortium is exploring the Kashagan oil and gas field, a mega-

project that the consortium itself describes as an enormously challenging endeavour. And the hunt for Arctic oil takes place in some of the most inhospitable waters in the world.

Numerous analyses of the Deepwater Horizon accident have pointed to three contributing causes: the complexity and inherent riskiness of oil drilling systems, human and organisational factors and regulatory challenges. In the past half-decade, we have made little progress in these areas. Indeed, the risk of another catastrophic spill may be greater than ever before.

Offshore drilling is a complex system prone to technological failures that are difficult to predict and challenging to comprehend in real-time. Drilling operations have limited slack to absorb errors; the failure of one part of the system can spread quickly to other parts, and operators cannot simply "turn off the well" while they look for a solution. Unfortunately, major accidents are nearly inevitable in these kinds of systems, as decades of research by Yale sociologist [Charles Perrow](#) has shown.

Human and organisational factors compound these challenges. A well-documented and particularly pernicious tendency of human decision-makers is to interpret evidence in a way that [supports their pre-existing conclusions](#) (pdf).

This was one of many factors in the Deepwater Horizon accident, as operators misinterpreted the results of critical safety tests on the night of the accident. They saw what they expected – and wanted – to see. Additionally, under the false assumption that well cementing had gone smoothly, the BP team decided to skip a cement evaluation test earlier in the day, thus saving \$128,000 (£86,000) in contractor fees and potentially shortening the lease period of the costly rig. These mistakes, of course, did not occur in a vacuum. They occurred in a culture that focused on minimising costs and preventing occupational injuries (pdf) at the expense of an emphasis on preventing catastrophe.

Though engineering fixes have since been implemented (and additional rules recently proposed) to solve some of the specific problems that Deepwater Horizon experienced, cultural and organisational root causes have received less attention in the industry. This is a pattern we see all too often in the wake of catastrophic events. An engineering solution is quickly developed to treat the technological symptoms, but the organisation managing the dangerous technology changes little. Then, as time passes, the initial post-disaster period of caution gradually gives way to increasingly bullish overconfidence – until the next disaster strikes.

On the regulatory front, important changes have occurred since 2010, but the pace of change is slow. The Minerals Management Service has been separated into distinct agencies, reducing conflicts of interest that came from combining revenue generation and regulatory oversight. Its regulatory successor, the Bureau of Safety and Environmental Enforcement (BSEE), has begun to make important changes, such as requiring more comprehensive approaches to drilling safety. But the agency still leans heavily on inspections and prescriptive regulations. Studies of the offshore drilling industry reveal that more effective inspection regimes do not necessarily reduce the likelihood of incidents. This is partly because inspections become rote procedures, with little effect on systemic safety. Safety requires a collaborative culture of information sharing, but research shows that punitive measures hinder the development of such a culture by discouraging the reporting problems for fear of punishment.

To promote information sharing, the BSEE has announced the creation of a confidential industry-wide system to track near misses. The insights afforded by such a system could lead to tangible regulatory changes that improve industry safety. But the system is not yet operational, having missed the intended implementation date by six months (and counting).

[<ReadMore>](#)



## Canada glaciers to shrink 70% by 2100

Glaciers of Alberta and British Columbia to shrink 70% in volume by end of the century, as global warming brings about serious melting



Mountains in British Columbia. Glaciers in the region are set to shrink 75% in area by 2100, compared to 2005 levels. Photograph: Jonathan Hayward/AP

The glaciers of western Canada, one of the world's most picturesque mountain regions, are likely to largely melt away over just three generations, scientists have warned.

By 2100, the glaciers of Alberta and British Columbia are set to shrink by 75% in area compared to 2005 levels, and by 70% in volume, according to their predictions.

But in two out of the three regions that were studied, the decline could be even more dramatic – over 90%.

The loss will hit many sectors, from agriculture, forestry and tourism to ecosystems and water quality, the investigators warned.

The study, published in the journal *Nature Geoscience*, was headed by Garry Clarke, a professor at the University of British Columbia in Vancouver.

"The disappearance of (the) glaciers... will be a sad loss for those who are touched by the beauty of Canada's mountain landscapes," Clarke told AFP.

"When the glaciers have gone, we lose the important services they provide: a buffer against hot, dry spells in late summer that keeps headwater streams flowing and cool, and sustains cool-water aquatic species."

The team used a computer model that combined four well-known scenarios for global warming this century, with data about three glacier-covered regions and dynamics of ice melt.

Even at the lowest projected warming, most of the glaciers are essentially doomed, according to their forecast.

"Few glaciers will remain in the Interior and Rockies regions, but maritime glaciers, in particular those in northwestern British Columbia, will survive in a diminished state," the investigators said.

The study's four warming scenarios, called Representative Concentration Pathways (RCP), are those used by the UN's Intergovernmental Panel on Climate Change (IPCC).

Under RCP 2.6, the lowest scenario, global average temperatures over this century are likely to rise by 0.3-1.7 C.

Under RCP 8.5, the highest scenario, which is based on current trends in carbon emissions, warming would be in the approximate range of 2.6-4.8 C.

For the Interior and Rockies regions, glaciers would lose more than 90% of their volume and area compared to 2005 levels, in all scenarios except for RCP 2.6.

The Coast region, more resistant, would see 75% area loss and 70% volume loss, with a margin of error of 10%.

The regions studied by Clarke's team cover 26,700 sq km (10,308 sq miles) – an area almost the size of Belgium and bigger than the glacial Himalayas, and with an ice volume of 2,980 cubic km (715 cubic miles).

Climate scientists say they have a good overall view of how glaciers respond to global warming, but the picture at regional level is far more prone to error.

One concern is that computer models at this scale are usually based on very broad assumptions – they presume, for instance, that above a certain altitude, a glacier will be stable, whereas local topography and the physics of ice dynamics could mean it is in fact vulnerable.

The new model seeks to overcome this, using 3D simulation to a resolution of just 200 metres (660 ft) and taking into account factors that delay or accelerate glacier melt.

Runoff from the melting ice will peak between 2020 and 2040, the study said, pointing to another risk.

Mountain glaciers currently contribute about 0.7mm (0.03 of an inch) in sea level rise each year, roughly equivalent to the combined runoff from the ice sheets of Greenland and Antarctica, according to the IPCC.

By 2100, the IPCC says, mountain glaciers could raise sea levels by 39cm (15.6 inches).

UN members have set a goal of limiting warming to 2C over pre-industrial levels, and have set a conference in Paris in December as the place to seal a pact to achieve this.

The RCP scenarios do not include warming up to the start of the 20th century from the beginning of the Industrial Revolution – about 0.7C.

"Glaciers respond to climate, not weather, and their shrinkage signals that climate change is real and its consequences are serious," said Clarke.

"It is not too late for good behaviour to be rewarded, but the longer we delay the worse things get."

[Source](#)

## Japan uses climate cash for coal plants in India, Bangladesh

Source Name: Sun Herald

Despite mounting protests, Japan continues to finance the building of coal-fired power plants with money earmarked for fighting climate change, with two new projects underway in India and Bangladesh, The Associated Press has found.

The AP reported in December that Japan had counted \$1 billion in loans for coal plants in Indonesia as climate finance, angering critics who say such financing should be going to clean energy like solar and wind power.

Japanese officials now say they are also counting \$630 million in loans for coal plants in Kudgi, India, and Matarbari, Bangladesh, as climate finance. The Kudgi project has been marred by violent clashes between police and local farmers who fear the plant will pollute the environment.

Tokyo argues that the projects are climate-friendly because the plants use technology that burns coal more efficiently, reducing their carbon emissions compared to older coal plants. Also, Japanese officials stress that developing countries need coal power to grow their economies and expand access to electricity.

"Japan is of the view that the promotion of high-efficiency coal-fired power plants is one of the realistic, pragmatic and effective approaches to cope with the issue of climate change," said Takako Ito, a spokeswoman for the Foreign Ministry.

Climate finance is money promised by rich countries in U.N. climate talks to help poor countries limit their carbon emissions. Japan announced at a U.N. climate conference in Peru in December that it has provided \$16 billion in climate finance since 2013. Yet the U.N. has no rules defining climate finance, meaning governments decide for themselves what projects to include in their accounting.

Environmental activists are demanding that at the very least, climate finance should exclude coal and other fossil fuels that scientists blame for warming the planet.

"Japan's support for new coal-fired power plants not only destroys the climate — it also displaces communities, is likely to cause untold local environmental damage, and primarily benefits Japanese companies instead of recipient countries," said Brandon Wu of ActionAid.

"This is unacceptable on its own, and the fact that it is being done in the name of 'climate finance' makes a farce of the entire concept," he said.

Climate activists are now urging the recently created Green Climate Fund, which is supposed to become a key channel of climate finance, to explicitly ban funding for fossil fuel projects. The issue is likely to be discussed at the GCF's board meeting this week in South Korea.

The Matarbari plant is financed with a Japanese development loan agreed with the government of Bangladesh last June.

The Kudgi project is partially financed by the Japan Bank for International Cooperation, which supports Japanese companies abroad through export credits. JBIC agreed in January 2014 to provide \$210 million in loans to Indian power company NTPC Ltd. to finance the purchase of steam turbine generators and boiler feed water pumps to be used in the coal plant from a local subsidiary of Toshiba, a major Japanese company.

Construction there has resumed after coming to a standstill following violent protests last July when police opened fire on angry demonstrators. Two farmers were wounded in the shootings.

One of them, Chandappa Holleppa, said he was shot in the stomach and left hand.

"I fell on the road and was bleeding badly," he told the AP. "Policemen picked me up and took me to a hospital," where he remained for two months, he said.

The protesters have set up a makeshift shed of bamboo sticks and tin sheets and plastic in the nearby village of Muttagi. They are focused on the plant's local environmental impact, such as potential air pollution, rather than its contribution to global carbon emissions.

"We want more power but not this one," said Sidramappa Ranjanagi, who leads a local farmers' organization. "In America they have stopped coal-based plants because it affects people's health. Why can't the government come up with solar power plants? We use solar power units at home here and they're good."

A. Sathyabhama, a technical services manager at the plant, said NTPC is trying to assure the villagers that the plant is environmentally safe.

Japanese environmental activist Yuki Tanabe has met with JBIC officials several times to urge them to withdraw funding for the Kudgi plant, citing concerns over human rights violations and environmental damage.

"JBIC responded that the human rights situation has been improved, and environmental concerns have been addressed," Tanabe said. "The project was approved, and no possibility to stop it now."

Japan's Foreign Ministry, which compiles the list of projects that get the climate finance label, said there was no change in policy regarding Kudgi.

"We are aware that the project mentioned was temporarily halted due to the protests by local residents," Ito said. "But we also understand that the project company responded to them properly and the project is being continued with appropriate monitoring in line with JBIC guidelines" for environmental and social considerations.

[Source](#)

## These robots take a shine to cleaning solar panels waterlessly

By Heather Clancy



Solar panels already face enough technical challenges when it comes to efficiency — that is, the amount of power they produce per module.

Israeli robotics startup Ecoppia wants to ensure that dust or other airborne particles don't compound the problem. Generally speaking, soiled panels can reduce potential production by up to 35 percent, according to the

*Using Ecoppia robotics technology, panels can be cleaned daily. Alternative methods are far more time-consuming*

company's estimates.

Ecoppia's technology, which cleans panels daily through a water-free process that maximizes energy production, can be programmed to combat dirt based on schedules or knowledge of weather conditions. The company actually incorporates data from The Weather Channel into its analytics dashboard, so customers receive severe weather alerts in real time.

The most common alternative is manual cleaning, often through cleaning services offered by installers.

This is not only time-intensive (it can be performed maybe once per week), but it wastes water not readily available in these locations, according to company CEO Eran Meller.

"By ensuring high day-to-day performance and an accelerated ROI from their solar assets, we've created a new standard for plant output that is changing the way operators, investors and governments view the benefits of solar power," Meller said last fall, when the company signed five new projects in the Middle East.

Meller said most of his company's installations will show a return on investment (ROI) of less than two years. One new 100-megawatt solar park will recognize its ROI in just 14 months, for example, saving 66 million gallons of distilled water in the process.

"Even under conservative assumptions, our technology will increase production by 150,000 megawatt-hours," he said.

The robots that Ecoppia uses were designed for arid climates. They are already deployed on more than a half-dozen installations in the Arava and Negev deserts. That's roughly 6 million panels cleaned, collectively, every month.

Right now, the company's main sales focus is near its headquarters in Herzeliya, Israel, although Ecoppia is studying India for expansion. Future installations in arid climates in Arizona, New Mexico and California make sense.

"We're looking at locations that are solar-park intense that do not have an abundance of water," Meller said.

To encourage adoption, Ecoppia is certifying its technology to work with technologies from major solar manufacturers.

Its latest certification came in mid-March, covering modules and panels from Trina Solar. According to the Ecoppia Website, the technology also has been cleared to work with technologies from Canadian Solar, Suntech, First Solar, Mitsubishi Electric, Kyocera Solar, Photowatt Technologies, Solar Frontier, JA Solar, Jinko, ReneSola and Texas Instruments.

[Source](#)

## Chocolate company Ferrero to make packaging using Nutella leftovers

*The Italian company is putting waste hazelnut shells to practical use, while in Turkey pistachio nutshells could fire up a new eco-city*



*Ferrero makes 180m kg of its Nutella spread each year, giving it plenty of hazelnut shells to put to practical use. Photograph: Petr Štěpánek/Alamy*

Nut producers around the world send tonnes of nut shells to landfill each year. But a few innovative projects suggest they might be binning a valuable resource.

### Hazelnuts

Ferrero, the largest chocolate producer in the world, has come up with a particularly neat use for its hazelnut shells. The

Italian company is the

world's biggest buyer of hazelnuts, using 25% of the world's supply and making 180m kg of its Nutella spread each year, according to the Italian Trade Agency. As a result, it has plenty of hazelnut shells to play with.

"We have access to large amounts of residual by-products which we realised could be used constructively," said a project co-ordinator at Ferrero. The company's idea is to use the nuts' natural wrapping to create packaging for its chocolates.

Ferrero has teamed up with renewable packaging company Stora Enso, and PTS, a German Research institute, to develop the so-called EcoPaper, as part of a €1.2m (£870m) project, which is 50% funded by the European Union.

Miguel Sánchez, mill manager at Stora Enso says that visually there is no way to tell a hazelnut board apart from regular carton board. He explains: "We are still experimenting on the ideal mixture of nutshell fibres in the pulp, but so far it works well for stiffness and bulk. The hazelnut fibres are used in the board's middle layer and have been tested for allergy aspects without any problems."

The project is in an experimental, pre-industrial phase that ends this year but Sánchez says that in the future we will be able to buy chocolate with hazelnuts wrapped in hazelnut board. "We are even making tests with cocoa skin as a raw material for fibre in pulp, but that is still in a very early stage."

### Cashew nuts

In Japan, the technology firm NEC is experimenting with using cashew nut shells to create a durable bioplastic. Until recently, most bioplastics have been created from starch, taken from plants such as corn. But as concern grows about the land needed to feed the world's population, researchers are looking for non-edible raw materials to use in manufacturing.

NEC is focusing on cellulose, the principal component of cashew nut shells. This is an abundant resource, with supply peaking at 80bn tonnes a year; compared with the annual supply of starch of just 1.4bn tonnes annually. Still in the laboratory stage, the bioplastic is strong, heat resistant and water resistant, meaning it can be used for electronic devices. Dr Masatoshi Iji, the research fellow who has led NEC's product development in this area, says it could be used to make the casings for computers, petrol pumps and in car interiors.



Production of the bioplastic is relatively energy efficient. NEC estimates that producing 1kg of its plastic generates 1.3kg of CO<sub>2</sub>. Iji says, "The consumption energy of its production is about half when compared with current plastics for durable products and therefore, when it replaces them, a large amount of energy and CO<sub>2</sub>

generation will be reduced (more than 10m tonnes of CO<sub>2</sub>)."

A more common use of cashew nut shells is as a biofuel. With their high energy content, nut shells are an obvious source of energy.

### Peanuts and almonds

In parts of sub-Saharan Africa and India where peanuts are a major crop, peanut shells are used as a solid biofuel. Combined with tar or tapioca paste, the shells are used as a regular fuel in coal-burning boilers and domestic coal burning stoves. Similarly, a company in Spain uses almond shells to develop briquettes for biomass boilers.

### Macadamia nuts

In Australia, one macadamia nut producer is burning its shell waste on a larger scale. Suncoast Gold Macadamias is one of the world's largest processors of macadamia nuts, processing 6,000 tonnes of nuts a year, which generates around 4,000 tonnes of shell waste.

Following a A\$3m (£1.6m) investment in a waste-to-energy plant, it now burns that waste to produce 9,500 megawatt hours (MWh) of renewable energy. The processing plant uses around 1,400MWh of that per year and sells the rest back to the grid. Chief executive Jim Twentyman says the project has a range of more subtle benefits beyond the cost savings. "While the sugar industry has been co-generating for some time this is the first time the macadamia industry has generated power in this way. It's a marketing plus for Suncoast Gold Macadamias."

### Pistachio nuts

They litter the floors of Spanish bars but pistachio shells could soon be used as an abundant source of renewable energy. Turkey — the world's third biggest producer of pistachios behind Iran and the US — is developing plans to burn pistachio shells to heat its first eco-city.

The planned city, which is still awaiting approval, will be built at the heart of Turkey's pistachio producing region and will house some 200,000 people. The city will use a variety of energy-saving systems, such as green roofs, solar power, innovative waste management and rainwater collection. Muftuoglu Gulec, a green building expert for the municipality, said: "When you plan such environment-friendly systems, you take a look at natural resources you have. If the region was abundant in wind power, we would utilise wind energy."

[Source](#)



## Green Technology Spotlight: Tapping Electricity From Moss

*SustainableBusiness.com News*

First he developed a moss-powered radio, then a bus shelter, and the next goal is solar panels for Paolo Bombelli, who specializes in Biophotovoltaic technology.

A scientist at England's Cambridge University, he is working on creating renewable energy by tapping into the photosynthesis of plants like moss and algae.

He can actually harness a plant's excess energy from photosynthesis by wiring it to an electro-chemical system, reports *Daily Mail*.

Bombelli demonstrates the process by powering a digital clock with moss the size of a smartphone. The moss charges four AA batteries in one hour on a sunny day. All he needs is some moss, water and wires.



The next step is to increase the energy that can be harvested to build the first "biological solar panel." He's shooting for a panel that generates just 5 watts per square meter, which could power certain home appliances, off-grid agriculture, or even a camera that captures images of animals in the wild.

He doesn't expect to scale to typical solar panels anytime soon - which generate 150-200 watts per square meter - but people could build these small systems on their own. And "If 25% of Londoners charged their mobile phone for 2 hours every other day with moss, we would save enough electricity to power a small town," says *Dezeen Magazine*.

[<Source>](#)

## A mini hydropower plant for charging mobile devices

Source Name: Giz Mag

The all-new Blue Freedom kit offers yet another alternative to solar panels, fuel cells, muscle-powered dynamos, wind turbines, AC-charged back-up batteries and other portable power solutions. "The world's smallest hydropower plant" transforms the power of running water into phone chatting, internet browsing, music listening, GPS navigating and other mobile device activities, and it does so from a package built to fit in a backpack.

The micro turbine flows in the current while the base station stays on land. The Blue Freedom weighs just under 1 lb and fits in a backpack. The Blue Freedom charges its 5,000 mAh battery in about three to four hours. The Blue Freedom can charge devices directly or save electricity for later.

We've covered other portable hydroelectric generator systems in the past, and some like the HydroBee were rather compact. Blue Freedom claims its kit is the smallest. It's close to 2 oz (57 g) lighter than the HydroBee and looks considerably more compact. The relatively lightweight, slim Blue Freedom package can be carried in a backpack.

Developed in Germany, the Blue Freedom charging kit consists of a 4.7-in (12-cm-) - diameter micro turbine, a 5W generator and a 5,000 mAh lithium-polymer internal battery. The turbine takes a plunge into a running water body and the unit's base stays ashore, letting you charge devices directly by way of the USB 2A and 1A ports. You can also store energy in the integrated battery for later use. A built-in LED light helps you see at night.

Blue Freedom tells us that the micro turbine doesn't need to be situated in a specific way in relation to the direction of current, and is instead designed to flow with the water and deliver efficient charging. The kit is designed to operate in temperatures between 41 and 104 °F (5 and 40 °C) and altitudes up to 16,400 feet (5,000 m).

The idea of a small, packable hydropower system is certainly interesting, and the Blue Freedom appears to be a slickly designed package, but it left us asking: Why? It seems like solar panels are more versatile and easier to set up, allowing you to charge your device on the move as well as in place. Sunlight also tends to be a more readily-available commodity than running water when traveling off the grid.

According to the governments of US and Canada, two world leaders in hydropower production, hydropower is the most efficient means of generating electricity, transforming up to 90 percent of available water energy into usable electricity. Compare that to around 15 percent for solar panels, and you can start to see why a portable hydropower charger could prove quite superior.

Now we have no expectations that a micro turbine bobbing around in a ripple is going to be anywhere near as efficient as a full-sized hydropower plant, but Blue Freedom's estimates do look promising. The company tells us that the hydropower kit should charge its internal 5,000 mAh battery in three to four hours, assuming a water flow rate of 1.2 m/sec (2.7 mph). An iPhone 6 would take about one to two hours at that same water rate.

The Blue Freedom's times are much better than portable solar kits we've covered. For example, the Powertraveller Solarmonkey Adventurer takes 8 to 10 hours to charge its 2,500-mAh lithium-polymer battery. The Solar Joos Orange has received high marks for device-charging speeds from publications like *Wired*, but its internal 5,400 mAh battery takes 12 hours to charge via solar. So the simple answer to our question of "why" is "because you can power up the internal battery in a few hours, rather than over the course of half a day."

The micro turbine flows in the current while the base station stays on land.

Blue Freedom's charging times are only a manufacturer estimates based on a prototype, so they're not worth getting too excited over yet. Still, assuming the Blue Freedom is well designed, it should be able to offer quicker, more efficient off-grid charging than other portable options.

Depending upon the nature of the trip, the Blue Freedom may or may not be more convenient than other types of chargers. It'd be a good solution for camping (near a suitable stretch of creek or river), in which you're staying in one place for an extended period and would be able to charge at night, when there's no sunshine to harvest. On the other hand, it wouldn't be very useful for trips through the city, desert or any stretch of land not adjacent to a flowing water body, which breaks down to a lot of stretches of land. The base station does include a microUSB port for charging the internal battery, so you could use other forms of energy, including solar panels, in the event that you can't find running water. That will of course add to its 0.9-lb (400-g) pack weight and 7.9 x 2.2-in (20 x 5.5-cm) size.

In addition to charging gadgets during outdoor travel and adventure, Blue Freedom sees its technology as a viable solution for those that live off the power grid. Assuming they have access to running water, they could harvest their own electricity to use for cell phones, lighting and other important everyday devices.

Blue Freedom's designers are now trying to move out of the prototype stages and into mass production. They've reached out to the Kickstarter community to help, and are offering the charging kit for pledge levels starting at US\$179. The cheapest levels are sold out, but the kit is still available at the \$219 level. If all goes as planned, deliveries will get underway in October. The project is just over 80 percent of the way to its goal, with 38 days left to go.

We like the potential of the Blue Freedom, but we'd prefer to actually see some third-party testing before plunking down that kind of money. If indeed its charging speed advantages are for real, it would be a nice alternative to solar panels and other charging options. If not, it might just be more trouble and expense than it's worth. As always when it comes to crowd-funding projects, proceed with caution.

[<Source>](#)

## EV trend in Asia: Electric three wheelers finding more users than electric cars

Source Name: EE Herald

In Asia, there is interesting trend of growth of electric three wheelers in countries such as India and Philippines. In India the electric three wheelers called e-rickshaws are increasingly used in cities such as Delhi. Government in India is also providing new regulations for e-rickshaws. In Philippines the two wheeled motorbike is altered/fitted with a side-car (see the picture below) which is called in local lingo as trike.

The above type is now replaced by somewhat similar looking electric three wheeler (see another picture below) which is called as e-trike.

Advanced technology is used to manage various aspects of electric power driven three wheelers. Global Mobility Service, Inc. (GMS) has conducted a trial in Metro Manila that ran from September 2014 through January 2015 using electric tricycles with proprietary sensing technologies and ICT, such as remote vehicle-control systems, fare-authentication systems, and anti-theft systems. The company plans to begin actual services the second quarter of the calendar year.

Fujitsu said it is working with GMS to connect their system to the FUJITSU Intelligent Society Solution SPATIOWL, for a field trial of additional services in Metro Manila that will begin in late 2015. These services will include a feature for estimating the available driving range based on the battery reserves and power-consumption profile, a service showing the routes to charging stations, and a service that plans routes to consume the least amount of power. Following the trials, these functions will be added to the service that GMS is launching in the second quarter, and will be put into operation in the Philippines in fiscal 2016.

"This collaboration between GMS and Fujitsu will support more widespread use of electric tricycles in the Philippines and contribute to an improved environment and convenience. The companies are considering services in other Southeast Asian countries and China as the market for electric vehicles is expected to expand," stated in the release by Fujitsu.

[<Source>](#)

## LED Lighting That Can See, Smell, Feel

*SustainableBusiness.com News*

LED lighting has quickly gone mainstream thanks to strong federal policy, and now manufacturers are taking it to the next level.

Terralux has developed LEDs that can "sense" how warm or cold a room is and whether there are odors and potentially toxic chemicals in the air including smoke, carbon monoxide and VOCs.

It does this by inserting a microprocessor into each fixture that integrates with a building's management system through the cloud.

"A light is no longer simply a device that allows you to see in the dark," says CEO Steve Hane. "We are deploying a LED platform that goes beyond basic illumination. Our LEDSENSE® technologies enable a light fixture to monitor air quality in a room, detect room occupancy and provide information directly via smart phones. Technologies available in buildings today will pale in comparison to the capabilities of what will be emerging in the cloud lighting space."



LEDSENSE® makes lighting brighter when it senses people are in a room and lowers it as they leave. If it detects odors, it switches on an exhaust fan or an alarm if a dangerous gas is in the air.

And staff can remotely monitor all these issues - including energy consumption - on a computer or smart phone.

Utilities can even issue 'Demand Response' alerts, which automatically

adjust lighting levels in a building to balance grid demand.

Terralux says these sensors can cut energy consumption in a building by 90% through simple retrofits. It's pretty amazing that the most efficient lighting technology ever is available to everyone without an expensive overhaul.

Based in Longmont, Colorado, Terralux just raised another \$11 million in venture capital after an \$18 million round in 2012.

LEDs can also be programmed to create light in multiple colors that can make you feel more alert, calm or sleepy. They can be used to improve health, moods and food production by taking advantage of their ability to shift colors.

[<Source>](#)

## 'The world is finally producing renewable energy at an industrial scale'

**Source Name: The Guardian**

Renewables are finally becoming a globally significant source of power, according to a United Nations Environment Programme report released in March by Frankfurt School UNEP Centre and Bloomberg New Energy Finance. Driven by rapid expansion in developing countries, new installations of carbon-free renewable power plants in 2014 surpassed 100,000 megawatts of capacity for the first time, according to the Global Trends in Renewable Energy Investment report. It appears that renewable energy is now entering the market at a scale that is relevant in energy industry terms - and at a price that is competitive with fossil fuels.

The numbers are compelling. Renewables such as wind, solar and biomass generated an estimated 9.1% of the world's electricity in 2014, up from 8.5% in 2013, according to the report. These sources made up the majority of new power capacity in Europe, and also brought electricity to new markets.

They also caught the eyes of investors: in 2014, energy investment rose 17% over the previous year, surging to \$270bn, according to the report.

**Conventional wisdom meets unconventional growth**

Some experts still predict that fossil fuels will supply the majority of our energy for decades to come, but the evidence strongly points in another direction. As the Global Trends report points out, the clean energy investment that funded almost half of all new power plants in 2014 came at what would, seemingly, be a very bad time for renewables. While oil prices were rapidly falling and China's coal consumption was decreasing, both commodities were, if anything, more economically viable.

But at the same time, renewables appear to be increasing rather than decreasing in competitiveness. For example, a large-scale solar plant in Dubai has recently bid to provide electricity at less than \$0.06 per kilowatt-hour. To put this in context, this is less than what the vast majority of consumers around the world pay to keep the lights on. It's a third of the cost of electricity in Africa. Grid parity for solar is already available in many countries; in others, it's just around the corner.

In developing countries, where renewables are best positioned to address the chronic lack of energy access, clean energy investment rose 36% to \$131bn. It's well on track to surpass investment in developed countries, which amounted to \$139bn last year.

When it came to investment, China led with \$83bn in clean energy funding, but many other countries followed closely behind. Some of the most promising states - like Brazil, India and South Africa - are expected to lead the way. Others, like Kenya, which boasts one of the largest solar rooftop system on the continent and shortly the largest wind farm, are more of a surprise.

It's hard to overstate how vast and impressive this change is. In the first years of this century, it was simply unthinkable that, between 2004 and 2011, 70% of new power capacity added in Europe would come from renewable energy sources. For that matter, the 100,000 megawatts of renewable capacity that were added around the globe in 2014 are equivalent to the total installed nuclear power capacity in the US.

[<ReadMore>](#)

## Some Good News: Forests Are Being Restored

*SustainableBusiness.com News*

**By Rona Fried**

Lately we have written some depressing articles about a return to deforestation in the Amazon and about widespread degradation of the world's forests.

We don't enjoy being the bearer of bad news and it's just as hard for us to write as it is for you to read it. Believe me, there's plenty more bad news in other forests, in Indonesia and much of south Asia.

But here's some good news - whew! Nations have committed to restoration projects that add up to 147 million acres - close to half the goal of 350 million acres by 2020.

The announcement was made at last week's Bonn Challenge conference in Germany. New projects announced at the conference: El Salvador is launching a restoration partnership for Central America; the Great Green Wall is growing in Africa; and cooperative agreements between businesses and governments are progressing in Southeast Asia.

Planting the Great Green Wall, an amazing wall of trees and vegetation that will span the continent, below the southern edge of the Sahara.



Last fall, 30 countries signed the NY Declaration on Forests, which increased the acreage and set a goal to eliminate deforestation by 2030. In December, Initiative 20X20 launched, to restore 20 million hectares in Latin America by 2020, and it is close to achieving the commitments to make it happen.

Besides saving countless species from extinction, "We are now at the point where just reducing emissions will not be enough," to stave off climate change, says Tine Sundtoft, Norway's Minister of Climate and Environment. "We must actively remove carbon out of the atmosphere. Forest restoration is the most cost-effective carbon capture option we have."

Achieving the restoration goal would generate \$170 billion a year in net benefits from watershed protection, improved crop yields and forest products, in addition to carbon sequestration, concludes New Climate Economy. It would reduce the gap in emissions reductions needed by 11-17%, according to the International Union for the Conservation of Nature.

"Political and financial momentum is building across every continent," says Andrew Steer, CEO of the World Resources Institute, which co-hosted the event.

[<Source>](#)

## Tribes Fight Climate Change With Ancient Farming Techniques

*SustainableBusiness.com News*

Last week an exhibit opened that showcases Native American efforts to preserve farming techniques that have allowed them to flourish during droughts for thousands of years.

As the US southwest dries out, it is crucial this information is passed on, say the organizers. "Preserving Our Seeds and Farmer Knowledge" also shows how to protect their ancient crops from GMO contamination.

The exhibit honors six years of work by 12 Colorado Plateau tribes to make sure traditional farming and ancient food preparation practices, as well as tribal teachings and stories key to adapting to climate change, are passed on to the next generation, reports *Indian Country Today*.

*Growing corn doesn't have been water-intensive:*



In "Hopi agriculture, we're seeing climate change on a scale that I never thought I'd see ... that will greatly impact the way we grow and produce and self-sustain," farmer Leonard Selestewa told *Indian Country Today*.

"Our young farmers are totally confused by rising temperatures, drying springs, volatile wind patterns, and genetically modified seeds invading our communities. Our best chance at survival is to preserve our ancient knowledge,"

says Tony Skrelunas, who is facilitating the program.

Besides mentoring farmers on growing practices, they have local "planting parties" to preserve heirloom seeds, restore watersheds, build rainwater catchment systems and plant crops to be sold at local farmers markets, which they also create.

Monthly workshops on these topics begins March 25 and the exhibit runs through September 31 at the Colorado Plateau Intertribal Learning Center in Tuba City, Arizona.

[<Source>](#)



## Half of India's rivers are polluted, says government report

Number of rivers defined as 'polluted' in India has risen from 121 to 275 in the last five years, with increased levels of sewage a primary cause

By Jason Burke



Rubbish on the side of the river Ganges. The number of polluted rivers in India has more than doubled over the past five years. Photograph: Sean Gallagher

More than half the rivers in India are polluted, with the developing economic power unlikely to meet demand for fresh water from its still-growing population unless dramatic measures are taken, a new report by government scientists has found.

The number of rivers defined as "polluted" in India has more than doubled in the last five years, from 121 to 275, an assessment by the central pollution control board (CPCB) says.

A primary cause is the quantity of sewage generated by cities and towns along polluted stretches the CPCB's report found.

"In view of population increase, demand for freshwater for all uses will be unmanageable," it said.

The survey, reported by the local Mail Today newspaper, will add to the pressure on the Indian government to act to protect the environment in the country of 1.2 billion.

On Monday, Narendra Modi, the prime minister, blamed the changing lifestyles that have come with India's 25 years of rapid economic development for rising pollution levels that have given the country some of the world's dirtiest air.

A survey released last year by the World Health Organisation (WHO) found that Delhi, the Indian capital, was the most polluted city on the planet, with an annual average of 153 micrograms of the most dangerous small particulates, known as PM2.5, per cubic metre.

The level was six times the WHO's recommended maximum, 12 times US standards and more than twice the level considered safe by Indian authorities. In all, 13 of the world's 20 most-polluted cities were in India, according to the WHO.

The country's waterways have also suffered badly in recent years, with vast quantities of municipal and industrial waste discharged into them every day.

Modi has made cleaning the Ganges, the major river that is holy to Hindus, a key policy goal. There has been little progress so far on a project which has defeated successive administrations, despite substantial funding.

Ministers have said they consider clean air to be a "birthright".

Speaking at the launch of a new national air quality monitoring index, Modi also urged Indians to curtail waste and conserve resources even as they become wealthier, in order to prevent an environmental catastrophe.

"Until we focus on our lifestyle and get the world to focus on it, we will not succeed despite all other measures being taken," Modi told state environment ministers in Delhi.

"It is difficult to convince the developed nations about this," he added, saying that India should set an example.

"We have given a perception to rest of the world as if we are not bothered about climate and environment. The world is tackling with the challenge of global warming, but they still haven't been able to find a way. No one can question India's sensitivity towards nature protection," Modi said, and called on his compatriots to pledge that "once a week we will not use any kind of products that use any kind of energy".

India is under pressure to disclose its plans to cut green house gas emissions before UN talks from 30 November to 11 December in Paris.

Delhi has so far balked at committing itself to major cuts, arguing that it will not set itself targets that undermine efforts to end poverty.

China announced its plan to cap its emissions by about 2030 in a joint announcement with the US last November.

Experts have previously criticised Delhi's readings as erratic and unreliable, calling for more transparency and rigour in the data. Much of India's air pollution comes from coal-fired power plants, crop burning, domestic cooking with firewood or cow dung, and vehicles burning diesel fuel.

Black carbon, which constitutes most of the PM2.5 that can lodge and fester in human lungs, is also blamed for up to 20% of global warming.

[Source](#)

## World Water Day: the cost of cotton in water-challenged India

Severe water scarcity in India is exacerbated by the cotton industry. Concerns are high, but are businesses, consumers and government doing enough?

You might not realise it, but India exports enormous amounts of water when it exports raw materials such as cotton and products such as automobiles.

The water consumed to grow India's cotton exports in 2013 would be enough to supply 85% of the country's 1.24 billion people with 100 litres of water every day for a year. Meanwhile, more than 100 million people in India do not have access to safe water.

### Virtual water

Cotton is by no means India's largest export commodity — petroleum products followed by gems and jewellery follow closely behind. All of these exports require water to produce, and the quantities needed are staggering. Not only does it take water to grow anything, it also takes water to make anything: cars, furniture, books, electronics, buildings, jewellery, toys and even electricity. This water that goes largely unseen is called virtual water.

What's easy to forget is that virtual water is as real as the water you drink. Producing 1kg of



More than 100 million people in India do not have access to safe water. Photograph: Jack Laurensen /Alamy

cotton in India consumes 22,500 litres of water, on average, according to research done by the Water Footprint Network. In other words, this 22,500 litres of water cannot be used for anything else because it has either evaporated or is too contaminated for reuse.

By exporting more than 7.5m bales of cotton in 2013, India also exported about 38bn cubic metres

of virtual water. Those 38bn cubic metres consumed in production of all that cotton weren't used for anything else. Yet, this amount of water would more than meet the daily needs of 85% of India's vast population for a year.

### Doing things differently

Cotton doesn't usually consume this much water. The global average water footprint for 1kg of cotton is 10,000 litres. Even with irrigation, US cotton uses just 8,000 litres per kg. The far higher water footprint for India's cotton is due to inefficient water use and high rates of water pollution — about 50% of all pesticides used (pdf) in the country are in cotton production.

Most of India's cotton is grown in drier regions and the government subsidises the costs of farmers' electric pumps, placing no limits on the volumes of groundwater extracted at little or no cost. This has created a widespread pattern of unsustainable water use and strained electrical grids.

Recent reports show that India's water consumption is far too high. In 54% of the country 40 to 80% of annually available surface water is used. To be sustainable, consumption should be no more than 20% in humid zones and 5% in dry areas, to maintain the ecological function of rivers and wetlands, [experts say](#) (pdf).

India's extensive groundwater resources are also rapidly being depleted, with 58% of wells in the drier north-west India experiencing declining water levels. By 2030 demand will outstrip supply by 50%, according to the World Resources Institute.

"India's water problems are well-known in the country and pollution is everywhere. Disagreement lies in the solutions," says Arjen Hoekstra, professor in water management at the University of Twente in the Netherlands.

The new Indian government's solution to the spectre of growing severe water scarcity is the \$168bn (£113bn) National River Linking Project, which will link 30 rivers with 15,000km of canals. This will transfer 137bn cubic metres of water annually from wetter regions to drier ones. However, the country exports far more water than that, in the form of virtual water, in cotton, sugar, cereals, motor vehicles and its many other exports.

### Faltering forward

All of these exports could be produced using far less water, says Hoekstra, who pioneered the water footprint concept. "It's not just improving water efficiency that could dramatically reduce India's water consumption, it's growing and producing things in the right place," he said.

Most of India's water-rich crops such as cereals and cotton are grown in the dry states of Punjab, Uttar Pradesh and Haryana, which have very high evaporation rates, unlike wet states such as Bihar, Jharkhand and Orissa. This perverse situation greatly exacerbates India's water problems and is largely the result of government policies, Hoekstra's [2009 study](#) (pdf) states.

[ReadMore](#)

## Could India's Coal Plans Derail the Global Climate?

Source Name: The Energy Collective

If India were to grow its electricity system based on coal (as China has done), would it derail the global climate? According to our calculations, under a "coal-heavy" scenario, India would need to increase its coal-fired power generation capacity from the 156 GW in early 2015 to 677 GW in 2035. What would be the CO2 implications of such a strategy?

Globally, we have used up 58% of the carbon space we have available to us, if we want to keep climate change to less than 2 degrees

India's share of the carbon space should be high, based on its large population and low historical emissions

Still: a coal-strategy would break the bank, with potentially terrible consequences to the world and especially to highly vulnerable countries like India

India's Power Minister, Piyush Goyal, has made it clear on a number of occasions that India plans to significantly ramp up its coal-fired power plant capacity in addition to the renewables. It needs to, he argues, in order to generate the vast amounts of power the country needs. In January 2015, India had a total installed capacity of 259 GW, of which 156 GW, or 60%, was coal (CEA, refer). Due to an above average plant load factor, coal contributed 67% to the electricity generation (World Bank, refer). If this were to grow to 677 GW of coal in 2035 to enable a 7% annual increase in power generation for a development growth trajectory, could the global climate cope?

First, let's look at the carbon budget that is available to us as mankind. If we want to have a reasonable (2/3rd) chance of limiting global warming to 2 degrees (which would already have serious implications, but might not set in motion self-reinforcing effects), then our global carbon budget is 1,000 gigatons of CO2 equivalent. This is the total amount of greenhouse gases we can emit into our atmosphere starting at beginning of industrialization in the late 19th century, when we first burned large amounts of fossil fuels.

Until today, we have already emitted 589 gt of CO2e. That leaves us with 421 as our remaining global carbon budget (refer). At the current rate, we will have exhausted this sometime in the year 2039. Now, let us assume that India is historically unburdened and has not emitted anything yet and let us assume that it is entitled to 1/6th of the global carbon budget because it has 1/6th of the world's population. Then, India's total carbon budget would be 167 gt of CO2e.

Another way of looking at it is to take only the remaining budget into account (if you prioritize survival over justice). One could take the 421 and divide it by 6 to adjust it for India's population. That would come to 70 gt of CO2e. To take into account historical emissions (fact is, that countries like the US, Germany or Japan have already exceeded their budgets), one could add, say, 50% to that. So India's budget would be 105 gt of CO2e. Thus, taking into account both India's population and historical justice, the carbon budget India has is limited to 105-167 gt CO2e.

Power generation typically makes up around 25% of a country's greenhouse gas emissions. Applying that factor to India would give a range of 26-42 gt CO2e. Now, let's assume that India goes for a "coal-heavy" scenario and builds an additional 521 GW of coal (on top of the existing 156 GW it already has). A best-in-class coal-fired power plant currently emits 790 kg CO2e per MWh (Indian plants emit on average more than 1,000). We can expect that efficiencies will improve due to technological process. So let us assume that India's future coal plants will emit on average 600 kg CO2e per MWh.

Let us further assume that a plant's lifetime is 30 years (currently many Indian coal-fired plants are significantly older) and that it runs for 6,500 hours per year (a 74% plant load factor). Then the emissions of these new plants alone, over their lifetime, will be 61 gt of CO2e.

[<ReadMore>](#)

## DU students harness wind energy produced by Metro trains

Source Name: Economic Times

A group of Delhi University students has discovered an innovative way of harnessing wind energy churned out by Metro trains to generate electricity.

The project, undertaken by Kalindi College, has also got the backing of Delhi Metro Rail Corporation (DMRC), which allowed the students to install a turbine on trial basis at one of the underground metro stations.

"While standing at a metro station one day, the students realised that the wind energy produced in the tunnel by these fast moving trains gets wasted, and they decided to find out how it can be harnessed," says Dr Punita Verma, Principal Investigator of the project.

The team, involving ten students of Physics and Computer Science departments, proposed setting up a turbine at an underground metro station to check if it can be successful in harnessing the wind.

DMRC officials found the project interesting and gave the nod to install a turbine at Chandni Chowk metro station.

"Without obstructing the operation, safety and security of Metro services, it was decided to put up turbine along the underground tracks at the mouth of tunnel where the maximum wind velocity available is 6.5 m/s.

"In the first phase, we installed a three-blade turbine and later a five-blade light rotor turbine with a cut-in speed of less than 1.5m/s. We connected it to a battery and measured the power it generates. We also discovered that different stations have different construction and the same turbines cannot be used at all the metro stations," Verma said.

The project, which has been started by a different group of students in 2013, has received a grant of Rs 15 lakh from the university.

While the first phase involved the research work, the DMRC engineers were later roped in to test the feasibility, who have asked the team to develop the concept further.

"We are now working on different designs of the turbines whose size, shape and orientation will be customised according to the wind velocity and frequency of trains at different stations. Once the design is approved by DMRC, turbine firms will be approached to make these turbines," Verma says.

[<Source>](#)

## Scania and Swedfund invest in Indian biogas

Source Name: Biomass Magazine

Scania and the development financier of the Swedish state Swedfund are establishing a partnership to develop the production of biogas as an automotive fuel in the Indian city of Nagpur, which is located in the state of Maharashtra and has 2.5 million inhabitants. The biogas will be produced from digested sludge from one of the city's wastewater treatment plants in collaboration with local companies. Nagpur is participating in the Indian government's initiative to improve the environment and transport systems in the country's 100 largest cities.

"This is a Swedish venture, which in a sustainable and profitable manner can create many new jobs and contribute to India's shift towards renewable fuels. Biogas is the fuel of the future, which will contribute to solving India's huge pollution problems while taking a comprehensive approach to the major environmental challenges," says Swedfund's CEO Anna Ryott.

The plans for the biogas project were presented in connection with the inauguration of Scania's bus facility in Narasapura in Karnataka state.

Today India occupies third place in terms of global carbon dioxide emissions, and these emissions are expected to double in the next few decades. In line with the country's continued urbanization, the quantity of waste produced in the cities is also increasing.

"Scania has vehicles and technologies that can contribute to this shift, here and now. We see great opportunities for Sweden as a country to lead the development towards sustainable cities in the world in general and in India in particular. For this reason, we are extremely happy to be able to take this step together with Swedfund," says Scania President and CEO Martin Lundstedt.

Initiative in 100 cities with international support

The Indian government led by Prime Minister Narendra Modi is working actively to improve the environment and accessibility in 100 large cities in the country. The initiative is called Smart Cities. The government is also approaching international companies that want to invest in technologies and systems that can promote the development of sustainable cities.

Producing biogas from waste in major cities and residual products from agriculture represents an important part of the solution to India's problems with air pollution, waste management and the cost of imported energy.

Swedfund, which is owned by the Swedish state, offers risk capital, competence and financial support for investments in growth markets in Africa, Asia, Latin America and Eastern Europe. The task is to reduce poverty by creating sustainable business, which contributes to economic, environmental and social development. Since 1979, Swedfund has been an active, responsible and long-term investor in more than 230 companies.

[<Source>](#)

## Green sub station to power Faridabad Metro corridor

Source Name: The Hindu

The upcoming Badarpur-Faridabad corridor of Delhi Metro will be powered by a Green Sub-station as the Delhi Metro Rail Corporation has constructed a host of eco-friendly features at Faridabad including its first ever 'green' electrical Receiving Sub-station (RSS).

The RSS, constructed at Sector 46, Faridabad, will provide power to the 13.875-km Badarpur – Escorts Mujesar (Faridabad) elevated corridor. Officials said the DMRC has already applied for its "Green Building" certification to the Indian Green Building Council.

The sub-station has a series of eco-friendly features, which makes it the first ever 'green' RSS of the Delhi Metro network. Solar power panels with a capacity of 50 kWp have been installed at the RSS. The power generated will cater to requirements of the RSS building and the remaining power will be used for the station's electrical load.

"A Wetland Sewage Treatment Plant has also been constructed from where retreated water will be reused for horticulture and sanitary purposes. Water meters have also been installed to monitor the consumption of water. All the indoor and outdoor lighting has been done with LEDs to ensure minimal power consumption. Carbon dioxide sensors have also been installed at the control room to maintain good quality air," a metro spokesperson said.

Similarly, provision for rainwater harvesting has been done inside the RSS premises for optimal utilisation of rainwater. Low CFC refrigerant and Inverter Compressor type VRV air conditioning system, which is more environment friendly and consumes less energy, has been installed inside the premises.

[<Source>](#)



## How Debartha, Ritwik and Jayant are revolutionizing waste collection systems in India

Source Name: Your Story

"Being good means nothing unless you are willing to do what needs to be done when it needs to be done," said an angry Abraham Setrakian in the US vampire apocalypse show 'The Strain.' And while our planet may not be under threat from vampires, the danger to its environment from the waste-dumping activities of human beings is not just real, it is critical.

When Debartha Banerjee, Jayanth Nataraju and Ritvik Rao set out to change the way waste is handled in India, they had to battle not just ignorance but also apathy. Armed with degrees in engineering and masters in social entrepreneurship, they founded Sampurn (e)arth- a Mumbai based startup focused on urban waste management. Vijaya Shrinivasan, a client, shares that the residents of her neighbourhood were initially very reluctant.

They didn't want to go through the whole process of having 2 separate bags and segregating food at the source. Six months of tireless campaigning later, the efforts of the team are starting to make a difference. Though there is a long, long way to go in changing people's attitudes about how they deal with their waste, these grass root changes seem seismic and signal for a better time to come. "Targeting 'Out of sight out of Mind' and 'Not in My backyard' approach is one of our key strategies.

That is the reason all our solutions are decentralizes and waste-generator has to take extra responsibility of waste-segregation to keep their waste management system active. Monetarily incentivising people by creating value from waste is also what helps us penetrate," shares co-founder and director Debartha Banerjee. India generates more than 1, 00,000 metric tonnes of waste daily. 90 % of this sector is disorganized.

Consequently the decomposition of biodegradable waste generates huge amounts of methane, a harmful greenhouse gas. But scary statistics aside, there is another ugly side to the waste management system in India- the waste pickers. Though their work is essential, actually crucial, to a well-functioning society, the humiliation and degradation they have to face on a daily basis is inhuman. Sampurn(e)arth works to provide them with dignity. Earlier they would be scavenging inside dumps.

Now the waste pickers employed by Sampurn (e)arth work under proper conditions. They earn more money, thanks to their recycling efforts. Above all, instead of being just 'waste pickers', they proudly wear on their sleeve the new title of 'waste managers.' Like all great and meaningful initiatives, Sampurn (e)arth was born out of a feeling of discontent and disenchantment. Debartha was working as a software professional in Pune. In his free time, he started volunteering extensively in NGO's.

Though this gave him great exposure about social causes and an appetite for helping people, he could not shake off the feeling that he needed to create a greater impact and part time volunteering just wasn't going to cut it. He signed up for a masters in social entrepreneurship at Tata Institute of Social Sciences and it is here that the idea of Sampurn(e)arth was born. Ritwik, Jayant and Debartha met at Tata Institute of Social Sciences, where they were batch-mates pursuing Masters in Social Entrepreneurship in 2010. With engineering backgrounds and an entrepreneurial heart, they held the belief that technology can solve big problems. Their love for environment and keen interest in sustainable development made them ponder over waste-management. As before, the trio of soon to be founders started volunteering when their academic duties were done for the day. While pursuing their 2 year course at TISS, they actively started working and freelancing for NGOs and other outfits operating in the sector. During this, they worked for Stree Mukti Sanghatana, a NGO working for rights of waste-pickers and also involved in waste-management.

It was here that they realized the deep cracks in the waste collection and aggregation system and the harmful consequences that followed. "We realized solving the current waste-management problem would require an approach which is not only environmentally sustainable, but should also be socially inclusive, involve different stakeholders, be financially viable and profitable. Waste management has always been seen as a few good examples developed by a few good people that has not scaled to reach out to a wider audience.

Though all of us have heard about composting, biogas and recycling, there are very few companies doing the same and providing professional services around it. The bigger companies, however, which are mostly involved in the collection and disposal of waste hardly recognize the environmental challenges that the cities face today because of indiscriminate dumping and the role that the informal sector plays," says Debartha. The team recognized the gap and thus the opportunity of creating a complete waste-management service which is built around triple bottom lined returns. Their efforts early on went not only into optimizing and finding the right technology for waste-management but also coming up with appropriate business models. Non-Profits extended their support with their resources and gave them an opportunity to experiment their ideas till the time Sampurn(e)arth, a private limited company was formed.

The co-founders Ritwik and Jayant enthusiastically delved into the roots of language to procure a name befitting the beauty and importance of the work they were doing. "In Sanskrit, sampurna means complete, arth means purpose as well as money and (e)arth represents our planet. Sampurn(e)arth embodies our vision of creating purposeful venture which benefits both planet and economy." Since its inception in 2012, Sampurn(e)arth has developed not only into an efficient and sustainable, but also a profitable venture of waste management. Sampurn(e)arth provides context based waste management solutions which are environment friendly and actively engages waste pickers.

They work along with Municipal corporations, corporates, educational campuses and residential complexes to manage both biodegradable waste (handled through compost units or biogas plants) and non-biodegradable waste (channelized to recyclers). Waste pickers are also trained and employed to manage these systems. Apart from client specific solutions, they also run vehicles and manage dry waste trading centres in Mumbai along with the Municipal Corporation and a federation of waste-pickers named Parisar Bhagini Vikas Sangha. DBS Bank India plays the role of an active partner and has helped them right from providing seed funds to helping in strategizing and executing as well as managing their revenue. "DBS Bank has helped us in covering our losses. They also conduct meet-ups after every three months to help us overcome our drawbacks," says Debartha. The venture also conducts waste audits, supply recycled paper stationery and do impact assessments. They have ambitious plans for their startup.

Debartha explains, "Considering that Mumbai alone generates 10,000 MT of waste daily, there is 1000 times scaling up opportunity here itself. We also are looking for installation of Biogas Plants on a PAN India basis and with different Municipal Corporations. We are especially targeting small towns and villages for a complete transformation and overhaul of their waste management practices," he continues, "We see that one of the ways of further scaling up will be developing franchises or help group/individuals to develop and run solutions at a local level. We have also recently developed portable biogas plants of 20 Kg/day ad 50 Kg/day capacity." Sampurn (e)arth started out attempting to be self-sustainable, but has come a long way since then. "Though we are trying to self-sustain our venture through profits being made, we also have been supported by DBS-TISS incubation program and also Unlimited India. We have been winning business plan competitions and have recently raised our first round of equity investment," shares Debartha.

The venture has been well received from all over and will soon cross servicing 100 clients. Over the past three years, they have provided their services to over 80 clients across various contexts which include corporate houses, housing societies, townships, hotels, restaurants, hospitals, educational institutions, etc. They provide complete waste management services of collecting, processing, and recycling waste for corporate parks like The Capital(Bandra Kurla Complex) and Adlabs Imagica to name a few. They are involved, in various capacities, at biogas plants in Tata Institute of Social Sciences, Tata Power Thermal Power Station, and Tata Consultancy Services Powai Campus.

They have installed and are operating composting pits at various colleges across the city and several Residential colonies in Chembur, Bandra and Navi Mumbai. They are involved in collection and management of recyclable waste from reputed corporate entities like Reliance Corporate Park, Axis Bank, Mahindra & Mahindra, Bajaj Electricals, Ernst & Young, Mahanagar Gas, etc. We are also working with construction/real estate companies to design waste management systems for their upcoming projects aside from working with various facility management companies. They have also started our association with few Municipal Corporations and cities in Maharashtra. The kind of work they do is gaining more attention and legitimacy every day, thanks to the government's, 'Swachh Bharat' campaign. Says Debartha, "With the Swachh Bharat campaign kicking in, waste-management and cleanliness is gaining more attention. However it needs to be understood that Swachh Bharat not only means clean streets but also clean air and water which will only happen if collected waste is also processed properly. We also see CSR money supporting such initiatives and paying a role in future.

Globally also waste-management is getting more importance as it is directly related to sustainable livelihood and sustainability of the planet breaking away from the recent cradle to grave system." Debartha is quick to acknowledge the army of well-wishers and mentors that helped shape Sampurn (e)arth into what it is today. "I would like to share one of the best advices that I received, for people who wish to start-up but getting lost or bogged down with the initial inertia to start an enterprise. Instead working on venture every day in at-least some areas and taking at-least one step everyday will make sure down the line you start getting momentum and things starting to fall in place," says Debartha. While things may be falling into place rapidly now for Sampurn (e)arth, it was an intensely uphill battle to begin with.

They share, "One of the biggest challenges is to keep one motivated for emotionally roller-coaster which is part of every day. Keeping the entire team motivated and in sync and also running short of money are few of the problems which do trouble us, however each of them comes with huge learning opportunities." But they managed to retain their optimism through the worst of times. "If each of us is able to play our role right, we are sure some way will emerge out. As people who understand and identify with the problem, it is our duty to make sure the word spreads out. All we can do is give our best shot and see what happens," they share. What has happened for the co-founders is infinitesimally rewarding. "We have an opportunity to dedicate our time to create something that we want to see and can impact the lives of many in a positive way. It is also a huge learning opportunity and completely transformative experience," they grin.

When asked about what the future of Sampurn (e)arth looks like, Debartha delivers a pragmatic rather than poetic reply, but one that is just as spirited. "This will keep being a confident endeavour to successfully transform our waste management system into an economic, environment friendly and efficient system." The co-founders have a strong sentiments on what the legacy of Sampurn (e)arth should be. They say, "We want to be somebody who have played their roles and also acted as a catalyst in tomorrow's changing waste-management systems. We would like to demonstrate more cases, create more examples in a profitable way so that more people join the initiative." In the parting shot, the three share that fear of failure is an insane reason for not going after your dreams. "It is worth taking a shot. Even if you fail you don't lose much, maybe a couple of years. But you will go back much more enriched and transformed. Bringing that entrepreneurial attitude is going to be the key," they sign off. ... read more on social.yourstory.com

[<Source>](#)

## Iconic Lotus Temple turning yellow due to pollution

**Source Name: Zee News**

Activists on Thursday said that the pollution in the national capital's air is corroding the iconic Lotus temple made of pristine white marble. Delhi-based lawyer, Sanjeev Ailawadi, who filed a petition with the National Green Tribunal (NGT), said he had filed a petition in February to protect the Lotus temple.

"Lotus temple is an international symbol of what Delhi stands for, it's a pristine white monument, it's a monument which has over a period of time started representing this Delhi, and it is the ethos of this city. Now this is the monument which has started getting affected. If you kindly look around, when you will have a look at the monument, you'll be able to find out the pristine white marble is now turning yellow. And the reason why this is happening is because of the vehicular pollution and because of the other airborne pollution which is there in the surrounding areas," said Sanjeev Ailawadi.

General Manager of the Lotus Temple, Shaheen Javed has seen its colour change from a white to a depressing yellow over the years. "No one has helped us, in fact this is my constant request to the municipality and authorities around here that at least this approach road should be clean because thousands and thousands of visitors come every day. Last year we had 56 lakh visitors," said Shaheen Javed.

Javed said that corrosion of marble is a natural process due to the pollution, the process has accelerated and if the marbles completely turns yellow, then it cannot be replaced. He added that if nothing was done about the deteriorating air quality, the house of worship will soon turn into a deserted place.

Other than the vehicular traffic around Lotus temple, the other major contributors of acceleration in the decaying process are huge construction in the zone around the monument, an incinerator burning the majority of Delhi's municipal waste and another waste dump not too far from the monument where almost the entire south Delhi's waste is dumped.

Meanwhile, NGT has swung into action by banning vehicles older than 15 years from plying on Delhi roads to improve air quality.

A petition filed with the NGT said that heavy vehicular pollution from one of Delhi's commercial hubs located next to the monument was hurting the structure's white marble.

The white marbled Lotus temple, which is visited by thousands of domestic as well as international tourists every day, is fighting to survive under the polluted air.

The marbles making the temple were specially exported from Greece as they were also used in monument. But it is in a sorry state as the governmental authorities were turning a blind eye.

[<Source>](#)

## India turns back clock to save water, as climate concerns mount

**Source Name: RTCC**

School textbooks in India have been telling children for generations that Rajasthan is an inhospitable state in the northwest of the country, constrained by the hot, hostile sands of the Thar Desert. But the driest state in India has a softer, humane face as well – that of Rajendra Singh, known as the "Water Man of India", whose untiring efforts in water conservation in arid Rajasthan have led to him being awarded the Stockholm Water Prize, commonly referred to as the Nobel Prize for Water.

Singh did not attempt to design a new technology to address Rajasthan's water problems.

He began simply by de-silting several traditional surface level rainwater storage facilities – called "johads" in the local Hindi language – that fell out of use during British colonial rule. And, in doing so, he has quenched the thirst of villages that were dying.

Thousands of villages followed his example, and so much water was captured and soaked into aquifers that dry rivers have begun to flow again.

### Water wars

Singh believes that water conservation is vital to combat the effects of climate change and to avoid "water wars" in the future.

And such is his reputation on water issues that he received a call from Prince Charles, heir to the UK throne, seeking advice on how to handle the devastating summer floods in England in 2007.

In an interview with Climate News Network, Singh recalled how he began making water flow again in perennially dry Rajasthan by inculcating do-it-yourself initiatives in the villagers.

He explained: "I imbibed Gandhian ideals during my school days that emphasised working for empowerment of villages.

"As an Ayurvedic (traditional medicine system in India) doctor, I went to the Alwar district of Rajasthan early in 1982 to start a clinic and spread awareness among youth about health and hygiene.

"I was perturbed because the majority of young men had already left the village, and the rest were about to leave for green pastures in the cities as they were unable to battle the water scarcity. Besides, they also wanted to earn good money.

"Women, old people and children were left behind in the village. I reworked my doctor plans to address the water scarcity, as that would actually save people from several diseases.

"Along with the support of the villagers, I de-silted a couple of johads in Alwar. When rains filled them, people in neighbouring villages trusted my initiative and over 8,000 johads are renovated now.

"Hordes of youth have returned to their villages as water filled tanks and the standard of living in hamlets rose in a big way."

He said that five rivers in this region had revived and started to flow again.

Johads are simple tanks built across a slope, with a high embankment on three sides and the fourth side left open for rainwater to enter. They hold water during rains and recharge the aquifer below to ensure continuous water supply to the neighbourhood in the dry season.

But Singh explained: "After the advent of bore wells and pipelines connecting every hamlet in India, we forgot the traditional water conservation facility used by our ancestors."

### Having won the Stockholm prize, what does the future hold for the Water Man?

"My immediate plans are to take up a global-level campaign on water conservation and peace," he said. "As predicted by several experts, the next world war will be for water. Unless every one of us starts at least now to save water and protect the water bodies, we face severe conflicts – apart from suffering climate change impacts. I will be leading the global water walk in the UK in August 2015.

"During his two visits (2004 and 2006), Prince Charles told me that he was impressed by the johad model of conservation. He then called me in 2007 to be part of his team of water engineers to work out all possibilities to address the crisis during the floods in England. They listened to my suggestions on creating the johad model on hilltops and downhill to arrest water in the hills and prevent floods in the future."

In India, however, he is not confident that the government has the right ideas. "Our government is pushing a different idea of inter-linking of rivers, which will only politicise the water crisis. I was part of the national-level body to clean up the holy Ganga River from 2010 to 2012, but I quit as there was lack of accountability and it ended up as a toothless organisation.

"Inter-linking of rivers is not a solution for flood and drought. As far as India is concerned, it will result only in inter-linking of corruption and politics.

### Hearts and brains

"What we need is inter-linking of the hearts and brains of people to take up water conservation in their homes and community. If exploitation of river water and polluting the river are stopped, every river will flow. Water engineering should be focused on conservation of each drop, and not on changing the course of rivers, which are designed by Mother Nature."

Singh is also against the idea of privatising water supplies, and does not believe it would result in people using water more judiciously.

"Water is not a commodity," he said. "In my own example, johads are de-silted by the people and used by people. Community-based water management yields long-lasting results and is the only solution for water shortages.

"When people realise their need and de-silt lakes and ponds as a group, they can use the water without having to pay for it. Right to water is every man's right, and monetising water will increase conflicts in the society.

"Helping a community to have access to clean and safe water means helping the community to have a dignified life."

[<Source>](#)

## Electric, Hybrid Vehicles to Get Cheaper in India; Govt Announces Incentives

**Source Name: NDTV**

In a bid to promote green cars in India, the government recently launched the Fame India scheme- 'Faster Adoption and Manufacturing of Hybrid and Electric vehicles in India' - as a part of the National Electric Mobility Mission Plan. Under the scheme, the government has announced to offer incentives on hybrid and electric vehicles up to Rs. 29,000 for two-wheelers and Rs. 1.38 lakh for cars. The government will spend Rs. 795 crore in the first two fiscal years under this scheme.

Starting with metropolitan cities, the scheme will be launched in all major and smart cities of the country. Under the scheme, battery-run motorcycles and scooters will be eligible to get incentives in the price range of Rs. 1,800 to Rs. 29,000. Similarly, one can demand incentive in the range of Rs. 13,000 to Rs. 1.38 lakh if he/she is buying an electric or hybrid car. For the three wheelers and light commercial vehicles, the incentive is in the range of Rs. 3,000 to Rs. 61,000 and Rs. 17,000 to Rs. 1.87 lakh, respectively. Whereas, for buses it is from Rs. 34 Lakh to Rs. 66 lakh.

"We are starting the scheme in metropolitan cities. Eventually the scheme will be launched in Smart Cities and all major cities across the country," Union Heavy Industries Minister Anant Geete said.

At the launch of the scheme, the government officials also revealed that several leading carmakers including Maruti Suzuki India and Tata Motors will soon bring a few such vehicles in the country.

Talking about the country's largest carmaker, Maruti Suzuki India, it is ready with a hybrid version of the Swift - the Range Extender- that was showcased at the event. The same vehicle was earlier showcased at the 2014 Delhi Auto Expo.

CV Raman, executive director (engineering) at Maruti Suzuki said to NDTV that the company would develop their hybrid models commercially only after "getting further clarity on key aspects, including technology development fund, charging infrastructure and demand incentive."

[<Source>](#)



## European car charging solution provider, is planning to invest Rs 1,000 crores in India.

**Source Name: Rush Lane**

New Motion, a Dutch tech company specializing in charging solutions for electric vehicles, plans investments to the tune of INR 1,000 crores. While charging a car with a regular power socket can be carried out in 6 to 7 hours, this is possible in just 15-30 minutes via the New Motion smart chargers.

With the electric vehicle industry set to increase by leaps and bounds, fast charging solutions are the need of the hour. It is for this reason that New Motion, one of largest smart charging companies in the world is planning to set up a manufacturing base in India while plans are afoot to make India the company's global manufacturing hub.

New Motion expects that in Europe there could be about 3 million electric vehicles in the next five years, while there will be much more EVs in India by then. Setting up a manufacturing facility in India will not only bring down cost of charging but significantly reduce time of charging as well.

Ritsaart Montfrans, founder and CEO at New Motion draws attention to the fact that the government has been very supportive where building of electric vehicle ecosystem in India is concerned. However, experts feel that the government needs to offer more incentives to encourage more people to start using both electric two and four wheelers while there is an urgent need to also use electric vehicles for public transportation. However, this will require added investments to the tune of INR 13,000-14,000 crores over the next few years.

[<Source>](#)

## India Inc must use sustainability as a key driver of growth

**Source Name: Business Today**

The Asian Development Bank has forecast that India's economic growth will outpace China's in 2015/16, thanks to improvements in the country's political and macroeconomic conditions. Not surprisingly, PwC's latest Annual Global CEO Survey suggests that 71 per cent of Indian CEOs are very confident about growth over the next three years (the highest number among all CEOs surveyed worldwide).

Indians may feel proud about overtaking China as the world's economic engine without realising that this #1 position comes with a huge cost: the rapid depletion of scarce natural resources and increased pollution levels.

China is paying a high social and environmental price for its two decades of unbridled growth: air pollution has curbed life expectancy by five-and-a-half years in northern China while contamination and shortage of water has led to problems of land deterioration. The World Bank estimates that environmental degradation costs China nearly 10 per cent of its gross national income.

China's current woes are a cautionary tale: India could find itself in a similarly dire situation by 2025 if Indian companies pursue growth single-mindedly without consideration for the environment. Developed countries and now China are learning at their expense that what matters most is not the quantity of growth but its quality. Policy makers in the US, Europe, Japan, and China now reckon that producing more is less important than producing better.

According to a recent UN Global Compact - Accenture study, 94 per cent of Indian CEOs reckon that sustainability issues are key to their long-term business success. Yet only 44 per cent think that business is doing enough to effectively deal with global sustainability issues. This discrepancy could be explained by the fact that most Indian CEOs are at a loss when it comes to finding proven best practices that would enable them to "do better with less"-that is, simultaneously generate inclusive and sustainable growth while minimizing the use of increasingly scarce resources.

In our book Frugal Innovation, we show that such "frugal" business practices do exist, and are being adopted by visionary companies worldwide that have made sustainability a key pillar of their growth strategy. Based on our research, here are five frugal innovation strategies that Indian firms can adopt to integrate sustainability into their core business models and "do better with less":

- 1) Design eco-friendly products. Over 70 per cent of a product's life cycle costs - including its environmental cost-are determined during its design phase. As a result, R&D teams must adopt eco-design techniques like "cradle-to-cradle" to create products that minimize the use of resources through their entire life cycle and that can be easily recycled at the end of their life. For instance, in 2011, Levi Strauss launched Levi's Water<Less collection, which is produced using only one litre of water: 96 per cent less water than for regular jeans. Similarly, when designing new buildings, engineering contractors can use tools like Autodesk's Tally to choose the right materials that can help reduce the environmental impact of a new building during its entire lifecycle.

- 2) Build resource-efficient supply chains. Beyond R&D, companies need to make their production and distribution processes more energy efficient and less dependent on scarce natural resources. PepsiCo's Indian plants, for instance, generate two-fifths of their energy needs from renewable sources such as wind turbines and biomass. Similarly, Unilever is investing in energy-efficient warehouses and lower-emission trucks to meet its goal of improving the carbon dioxide (CO2) efficiency of its global logistics network by 40 per cent by 2020. Pioneering companies like Novartis have gone one step further by building "micro-factories" that manufacture small batches of goods faster, cheaper, and cleaner. In 2017, Novartis plans to roll out a new production technique called "continuous manufacturing" which takes place in a micro-factory the size of a container. Compared to large plants, this

micro-factory can make drugs ten times faster, costs 50 per cent cheaper to build and operate, improves product quality, and reduces carbon emissions by up to 90 per cent.

- 3) Turn waste into valuable new resources. Rather than viewing waste as something that needs to be disposed of, firms should use "circular economy" principles to reuse waste in a productive way. Tarkett, a world-leading flooring and sports surface solutions provider, makes products using recycled plastic material that comes from used windscreens and structural safety glass. Tarkett has set up a recycling centre that processes not only its own products but also those of other manufacturers. Tarkett has set a goal of eliminating waste going to landfill by 2020.

Similarly, Siemens' Indian R&D team has developed a cost-effective, energy-saving wastewater treatment method using a bioreactor. This solution could be a boon for India, which produces over 40 billion litres of waste water daily, of which only 20 per cent is treated.

- 4) Share assets and resources with others. Indian consumers are jumping into the "sharing economy" by exchanging goods and services among themselves thanks to peer-to-peer platforms like Blablacar (car sharing) and Airbnb (home sharing). By tightly integrating their supply chains, companies can also share resources and keep their fixed assets fully utilised while saving on costly raw materials and energy. In Denmark, companies co-located in the eco-industrial park of Kalundborg exchange their waste, energy, and information, thus collectively reducing their use of water and electricity and their carbon emissions. Similarly, chocolate makers Ferrero and Hershey share warehousing and transport assets and systems across North-America, thus reducing their logistics costs and environmental impact.

- 5) Team up with clean-technology start-ups. Rather than reinvent the sustainability wheel, Indian companies could partner with nimble clean-tech start-ups in India and abroad that have developed promising "green" technologies. Ventana, a start-up with a base both in India and Silicon Valley, has invented a disruptive technology to convert waste plastics into petroleum fuels on a large scale faster and cheaper. Sea6 Energy is a spinoff of IIT-Madras that is developing breakthrough technology to grow and convert seaweeds into biofuel. Indian firms should also reach out to clean-tech start-ups in tech hotspots like Silicon Valley. Take gThrive, a Valley start-up that makes wireless sensors designed like a plastic ruler that farmers can stick in different parts of their fields. The sensors collect detailed info on soil conditions, air temperature, and sunlight and help farmers reduce their use of water, labour, fertiliser, and energy while boosting their yields and crop quality.

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## Now, an eco-friendly toilet that saves cost, minimizes water use

**Source Name: Times of India**

A city-based researcher has developed an eco-friendly toilet which can convert dry human faeces into humus (organic matter) and utilize urine for vermicomposting in an odourless, pollution-free manner. "The system does not require extra water or an expensive drainage system. It will especially help green-zones, parks and agri-rich areas where water is scarce," said Mohan Ketkar, who has conceptualized and developed the eco-friendly toilet.

Ketkar worked for the Indian Council of Agricultural Research through Nimbkar Agricultural Research Institute, Phaltan. The eco-friendly toilet was made under the aegis of Jaysingpur-based Utkarsh Foundation. It took him three years to develop the model at an installation cost of approx. Rs 1,000.

The toilet structure could be made of metal or brick and cement. While the design of the toilet is the same as that of a conventional one, what sets it apart is the way it collects and treats the faeces and urine. Minimal water is used that too only for personal cleaning.

A working model of the toilet has been put up near Ketkar's home in lane no. 5 of Tulshibaugwale colony in Sahakarnagar number 2 for a fortnight.

The faeces is collected in a movable trolley through a drop-hole on the platform. A shovelful of soft and loose soil has to be poured onto the faeces through the same hole. A rake has been provided in the trolley for levelling. Once filled (in approximately 40 days when used by four persons per day), the trolley is emptied on the ground which is lined by a layer of dry organic matter and also covered with the same from the top. The faeces gets converted into organic matter in approximately 90 days, which is then ready to be used in farms.

Meanwhile, urine and wash water gets collected in a tray that has a hole and drains out evenly onto the vermicompost bed through a pipe. It helps generate NPK (Nitrogen, Phosphorus & Potassium) rich vermicompost in about 60 to 90 days.

Ketkar said the idea was to provide a sustainable sanitation solution, especially for rural areas. "The Utkarsh Foundation, founded by Suresh Patil, was surveying villages for health and sanitation. I took a cue from a book I had read on the subject to develop this eco-friendly toilet. We collaborated and have been since working together. The first experimental model that I made has been installed in a school about 10km from Jaysingpur in Kolhapur. One has been installed in the office of the Swabhimani Shetkari Sanghatana in Kolhapur while another is being utilized by people on a 5-acre farm in Jaysingpur for the last nine months," he said.

The Utkarsh Foundation has written to the state and Union governments to consider public utilization of the toilet, given its advantages in water-scarce areas, as also in agricultural belts or even in parks and open public places. "The humus generated from the human faeces is very high in micronutrients as is the vermicompost, which is much better than the artificially-produced varieties," Ketkar said.

Patil hopes the toilet can find use in rural areas, especially those facing water shortage. "In rural areas, villagers have been provided with toilets by the government, but they entail heavy infrastructure cost and plenty of water. This toilet needs neither of the two and can be very useful for rural areas in Osmanabad, Jalna and other drought-prone regions of Marathwada," he said.

[<Source>](#)

## Solar helmet charges cellphone, cools head

**Source Name: Times of India**

Would you like to recharge your smartphone or laptop while riding a bike in cities like Bengaluru?

Say hello to the solar bag (backpack) and solar cap. Mahesh Shivashimpiger, a Hubballi-based solar energy expert, developed this bag and helmet, which is also equipped with a small fan to keep your head cool. He has designed these devices for trekkers, sales executives, civil engineers and other professionals who spend a large part of their day out in the sun.

Mahesh, who has been involved in solar energy use for over 25 years, said these devices also help minimize global warming and prevent production of carbon dioxide. "We need to start thinking as individuals about using solar energy. If one starts using solar energy, these problems can be addressed in a few years," he said.

He said he got the idea of a solar backpack when he saw a medical representative struggling with his appointments and low battery charge on his mobile. "I thought of developing a solar backpack for such professionals on the move.

There are two options in this backpack - one can charge a laptop or smartphone by connecting it to the solar panel. Or it stores the energy in a battery bank and you can recharge the device later," he said.

"Many hesitate to wear a helmet because of the heat. If sunshine can cool your head and charge our devices, why won't they use it?" he said.

He said he has fixed an efficient solar panel above the motor so that cool breeze starts when the cap comes into contact with sunlight. As the panel is close to the %DC motor, there is no voltage loss. Just by removing the screws, the panel can be fixed to any other cap or helmet. The mobile phone can be charged by connecting it to the panel," he explained.

[<Source>](#)

## How France Is Helping India Meet Its 100 GW Solar Target

**Source Name: Clean Technica**

During Modi's recent visit to Paris, India and France signed a memorandum of understanding to expand cooperation in the fields of solar and other renewable energies.

The memorandum was signed between the Ministry of New and Renewable Energy and France's Ministry of Ecology, Sustainable Development and Energy. France is eyeing major cooperation with India in the field of solar energy. So far, French firms are involved in the production of 10% of the solar electricity output in India.

A joint statement issued by the two countries read:

France welcomes the very ambitious objectives set by the Indian government in terms of energy access to all and the development of renewable energy. France is already supporting India's efforts to secure its energy supply and develop its sources of renewable energy, including solar power. India welcomed the target set by French companies aimed at developing 8 to 10 GW of solar energy in India by 2020-2022. France is also willing to support other renewable sources in India, such as wind, biomass and hydropower.

The Indian government was in talks with the French Development Agency (Agence Française de Développement, or AFD) among others, to raise low-cost debt finance for both utility scale and rooftop solar power projects. President Hollande confirmed the target of AFD credit line of 1 billion euros over the next three years for sustainable infrastructure and urban development in India.

French solar projects developer Solairedirect SA has been present in India almost since the start of India's National Solar Mission. While the majority of the company's installations are located in France, India represents the second largest market for the company.

As of now Solairedirect has four solar projects in operation or under construction, with a total capacity of 72 MW. This includes a 21 MW solar PV plant inaugurated in Fazilka district of Punjab in February 2015. Very recently, the company won a new tender from the state of Telangana for three projects with a total installed capacity of 57.5 MW. As per its announcements at the Indian RE-INVEST international renewable energy investors summit, Solairedirect has set goals to install 2 GW of solar PV capacity in India over the next few years. If the company achieves its target, it could see India becoming its largest market terms of generation capacity.

The renewable energy arm of French state-run utility Electricite De France SA (EDF), EDF Energies Nouvelles (EDF EN), and Luxembourg-based EREN have a 25% stake each in ACME Solar Energy Ltd, the solar energy arm of New Delhi-based ACME Cleantech Solutions.

In the deal notified in December 2013, ACME was to get Rs 5.5 billion spread over three years. Only last year, ACME Solar declared plans to own 1,000 megawatts of installed solar power projects by 2017.

PR Fonroche, a joint-venture between PR Clean Energy (India) and Fonroche Energie S.a.s (France) commissioned two solar photovoltaic based power plants (5 MW and 15 MW) in Bikaner, Rajasthan. These projects were awarded to the company under the Jawaharlal Nehru National Solar Mission's Phase I Batch II scheme.

Incidentally, the first of the two projects of 5 MW capacity, which was commissioned in December 2012, was the first Indo-French collaboration in the Indian Renewable Energy sector.

Areva Solar (now closed), the CSP arm of nuclear major Areva had been awarded a contract by Reliance Power Limited to build a 250 megawatt (MW) concentrated solar power (CSP) installation in India.

[<ReadMore>](#)

## Modi Tops Obama Solar Pledge With First India Green Dollar Bond

**Source Name: Bloomberg**

As Indian Prime Minister Narendra Modi was winning headlines garnering U.S. support for a \$160 billion solar-power push, the bond market was putting together more concrete funding plans.

Export-Import Bank of India, which has lent to solar and wind programs, sold the country's first green dollar bonds in a \$500 million issue of 2.75 percent notes March 24. India's issuance of overseas securities meeting environmental criteria overseen by the Zurich-based International Capital Market Association could surge to as much as \$1.5 billion annually in the next two to five years, according to Commerzbank AG.

Modi got a pledge from U.S. President Barack Obama for unspecified funding to raise solar production to 100 gigawatts by 2022 from about 3 gigawatts, and is fishing for more aid ahead of a climate summit in Paris in December. The former leader of the state of Gujarat pioneered India's first solar incentives and restored wind-farm tax benefits in July after a two-year hiatus. That's driven a rally in convertible notes of Suzlon Energy Ltd., the turbine maker that caused India's biggest default of such debt in 2012.

"The government's thrust is on building green renewable sources of energy, and that should prompt more local issuance," said Jaideep Iyer, Mumbai-based group president for financial management at Yes Bank Ltd. "We'll continue to seek the development of the market for green bonds."

**Expanding Appeal**

Exim Bank priced its five-year securities to yield 147.5 basis points over similar Treasuries, Bloomberg-compiled data show. That compares with an average 263 basis points on international bonds from Indian issuers, according to Bank of America Merrill Lynch indexes.

The sale from Exim Bank was the third U.S. currency green note in Asia outside Japan. The first were 1.75 percent notes sold by Export-Import Bank of Korea in 2013 and 2.125 percent securities from Taiwan's Advanced Semiconductor Engineering Inc. in July, data compiled by Bloomberg show.

Yes Bank sold the nation's first local-currency notes tied to climate projects last month in a 10 billion rupee (\$160 million) offering of 10-year securities. The lender is in talks with International Finance Corp. to offer the equivalent of \$50 million more in such securities, Iyer said.

Global investors are seeking to expand profits in climate finance amid negotiations among more than 190 nations on a new agreement to fight climate change effective in 2020.

**'Mega Trend'**

Deutsche Bank AG said last month it wants to boost green bond investment to 1 billion euros (\$1.1 billion), joining Citigroup Inc. and Barclays Plc in expanding in the market.

"Green bonds will be a mega trend which we have already seen in Europe," said Xuanlai He, Singapore-based Asia credit research analyst at Commerzbank.

While interest in green bonds is mounting globally, Indian issuers must vie with overseas peers investors may be more familiar with, according to Yes Bank's Iyer.

"The pocket of investors who have the mandate to invest in such issuance may not take India risk due to lack of history of investing in India and low awareness about the country," Iyer said. "However, given the expected resurgence in the Indian economy, this should change over the next few years."

**Debut Offering**

More explicit government support for green bonds would help differentiate them from other securities, according to Arun Srinivasan, a Mumbai-based senior vice president for investments at ICICI Prudential Life Insurance Co., which manages assets equivalent to \$15 billion.

"It's a great initiative from the government to promote the use of renewable energy," Srinivasan said. "But unless there is some tax benefit for investing in these bonds, it wouldn't make much difference for the investor."

Modi must balance efforts to add more environmentally sustainable power with promises to bring universal access to electricity to India's 1.24 billion people. While he's stressed coal will continue to dominate for now, environmental problems including smog in New Delhi worse than Beijing's by some measures is adding to pressure to develop cleaner alternatives.

The world's third-biggest emitter of greenhouse gases will raise the duty on coal to 200 rupees a ton, Finance Minister Arun Jaitley said in his budget for the year starting April 1. The money will be used to promote clean energy, he said.

India's solar ambitions would require \$160 billion, according to Arunabha Ghosh, chief executive officer at the New Delhi-based Council on Energy, Environment & Water. It would spread solar panels across an area the equivalent of three times the size of India's most populous city, Mumbai.

While green bonds carry risks to issuers including the costs of additional reporting and breaches of use-of-proceeds clauses, expanding demand will "drive increasingly favorable terms," according to a March 19 report by KPMG International.

[<Source>](#)



## Transforming our cities: On water, Singapore shows the way

Source Name: Indian Express

Most Indian cities suffer from acute shortages and poor quality of water. Singapore, a country whose water challenge was perhaps the worst faced by any country in the world in the mid-1960s, has transformed its water scenario. We often dismiss outside experience as being irrelevant for India's development efforts. With a water crisis staring urban India in the face, perhaps it is time we understood how Singapore turned its water story around.

Singapore imported 55 per cent of its water for consumption from Johor, in the neighbouring state of Malaysia, in August 1965. By proclaiming that "every other policy has to bend at the knees for our water survival," Lee Kuan Yew, the iconic leader and first prime minister of Singapore who passed away recently, communicated to his people and to the world in no uncertain terms his government's commitment to water sustainability.

Singapore has successfully combined simple conventional means to capture and store rainwater and treat used water with innovative solutions, such as producing recycled used water and desalinated water to address the water challenge within a financially sustainable framework.

The Public Utilities Board (PUB) of Singapore has been in charge of all elements of the water management system: water catchment network, drainage and sewerage system, water treatment and distribution, production of clean recycled used water, and desalination. The basic philosophy is that "every drop of rain that can be captured, should be captured, and every drop of wastewater that can be safely reclaimed, should be reclaimed."

Singapore has neither much groundwater nor many natural freshwater bodies, and though its rainfall is adequate, its compact 710 square kilometres landmass poses a major challenge for storing rainwater. Up to the mid-1970s, rivers were not suitable catchments as rainwater would quickly get contaminated by the large amounts of sewage and pollutants that they carried. With only 5 per cent of land area as "protected catchment", Singapore started demarcating a large number of "partly-protected catchments" where prior treatment of wastewater is mandatory before discharging it to the streams. Waterways were cleaned up to act as water catchments. The cleaning up of the highly polluted Singapore River, Stamford Canal and the Kallang basin, over the period of 1977 to 1987, made it possible later to use the river as a key urban catchment that fed into the Marina reservoir.

In 1971, only 57 per cent of Singapore's population was connected to sewerage. A Sewerage Master Plan in the late 1960s divided the island into six used water catchment zones, with a water reclamation plant for each zone. The Drainage Department was set up in 1972 to manage storm water. Separation of storm water drains from sewers was critical for developing water catchment areas in the urban zone. By 1973, Singapore was ready with its first Water Master Plan.

Efforts at recycling used water began in the early 1970s, but the recycling plant had to be closed in 1975 because production was not financially viable. In 2000, using superior technology of water reclamation imported from the US and adapted to local conditions, a demonstration plant of 2.2 million gallons per day (mgd) capacity was set up at Bedok. With a 50 per cent decline in the cost of membranes over the 25-year period, the plant could economically produce recycled used water (known as NEWater) to WHO standards in 2002. The quality was even better than of water supplied by the PUB. There was no looking back after that. The next innovation came in 2005, with desalination of seawater.

Water demand in Singapore has grown from 77 mgd in the 1960s to 400 mgd in 2014, but access to clean water has been 100 per cent for over three decades. NEWater currently meets 30 per cent of Singapore's water needs, while desalination plants and the Marina reservoir each meet another 10 per cent. Singapore has built adequate capacity to reduce its vulnerability to imports of water.

Water is priced to recover the cost of production with progressively higher rates for higher uses, and there is cash subsidy for the poor. Initially, the water tariff covered only operation and maintenance costs of the system, but in the 1970s they moved to a full cost pricing regime. A water conservation tax (WCT) of 5 per cent was levied in 1991 above a specified threshold of consumption. In 1997, Singapore moved to marginal cost pricing, such that the water tariff plus WCT would cover the cost of producing the next drop of clean water (from desalination or NEWater). For the low-income families, there were U-SAVE vouchers. In 2013, a voucher of about \$20 to \$22 per month was given against an average water bill of about \$35 per month.

Building awareness through community engagement and good governance were the other major factors behind Singapore's success. To this day, the water situation in Singapore is reviewed by the cabinet every month. Unaccounted for water has been brought down from 11 per cent in the 1980s to 5 per cent in 2015, by far the lowest of all countries.

What lesson does all this hold for India? Investments in expanding the distribution network are necessary for equity considerations but are not sufficient to ensure better delivery of water. Simultaneous attention needs to be paid to the following: expansion of sewerage; maintaining separate storm water network; treating wastewater and industrial effluents; protecting urban catchments; and improving efficiency through better governance.

In Delhi itself, only 55 per cent of the area is covered by sewerage network; 40 per cent of the sewage is treated; drainage infrastructure is in a very poor condition; and sewage finds its way into the Yamuna without treatment. Large capital investments are needed to fix all this, including drainage, which is not with the Delhi Jal Board (DJB). At the same time, the financial viability of the DJB is eroded by the inability to cover costs through pricing, corruption in billing, metering and collection, and more recently, by the free water policy of the Delhi government.

For the past three years, the DJB had started meeting its operation and maintenance costs (not including interest charges) from a progressive water tariff structure, thus enabling it to access grants from the government of India under the JNNURM for capital investments and

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## Plastic waste to fuel trains

Source Name: Telegraph India

Indian Railways is mulling a plan to turn waste plastic bags, bottles and cups into diesel through a waste-to-wealth technology developed by a government research laboratory in Dehradun.

Union science and technology minister Harsh Vardhan today announced the railways plan to set up plants to produce diesel to run trains through the technology that can turn 1,000kg plastic waste into 800 litres of high quality diesel.

"Plastic waste will henceforth be viewed more as a resource than a nuisance," Harsh Vardhan said. "We... have the capability to convert broken buckets, mugs, bottle caps and other polyolefin products into the cleanest grade diesel."

Scientists at the Dehradun-based Indian Institute of Petroleum - a laboratory under the Council of Scientific and Industrial Research - who developed the technology are currently discussing plans to scale up the process with senior railway officials.

The railway ministry estimates that the nation's vast fleet of locomotives use up over 2 billion litres of diesel every year, for which the bill is over Rs 15,000 crore.

"We began our experiments about 10 years ago with table-top glass apparatus, then scaled it up to a 10kg-per-day plant," Madhukar Garg, director of the IIP, told The Telegraph. "We began talking with the railways about a year and a half ago."

Garg said the railways is initially examining the feasibility of setting up three plants to process 1,000kg plastic a day, primarily to manage the internal plastic waste generated by passengers.

The sites for the three plants are yet to be finalised by the railways, Garg said. The diesel extracted from the waste plastic is expected to be priced competitively, he said.

India's Central Pollution Control Board had over two years ago estimated that 60 cities across India cumulatively churn out about 15 million kg of plastic waste every day, or enough of waste polythene of the type used in shopping bags to fill a tower the size of the Qutb Minar every second day. Much of the country's plastic waste is disposed in landfills despite efforts to reuse it in road construction and cement kilns.

"Plastic is a part of our civilisation - we can't just eliminate it," Garg said. The IIP technology can process polyethylene and polypropylene - which account for about 60 per cent of plastics consumed - into fuel.

[<Source>](#)

## Successful Swedish water project ensures cleaner textile production in India

Source Name: SIWI

By participating in a unique project for cleaner production, Sustainable Water Resources (SWAR), suppliers to the Swedish retail brands Indiska, KappAhl and Lindex have reduced their environmental impact and improved capacity through training on resource efficiency.

For a garment production factory in Noida, India, the idea of coupling sustainable practices with significant financial savings was initially far-fetched. However, through SWAR they have succeeded.

Now, the factory has reinvested these savings in new technology which ensures efficient use of natural resources.

– We are now all aware of how important it is to save water, energy and chemicals, which is helpful in cutting factory costs. Building capacity and educating at every level in the garment industry needs to be an ongoing process, says Mr Ravinder Hand from garment manufacturer Radnik.

The SWAR project is a cooperation between the Swedish brands and their Indian suppliers, the Stockholm International Water Institute (SIWI), Sida, and India-based consultancy cKinetics. SWAR was co-financed by the brands and Sida, in a public-private partnership that linked business and international development goals.

More than 40 factories participated in the project. The project has contributed to saving 284 million litres of water and 402 tonnes of chemicals annually. The factories were also able to save an average of three per cent of their energy cost and three per cent of their operational costs.

– Being able to save costs through resources use efficiency is important, but it is not sustainable without a mind-shift. This is best achieved through continuous training and capacity development, says Rami Abdelrahman, Programme Manager at SIWI.

The project trained more than 13,000 factory workers and managers in the past two years.

The Indian textile industry contributes with three per cent to India's GDP and employs more than 45 million people. The industry is one of the largest industrial water polluters in India, and is facing serious growth limitations due to increasing freshwater shortage.

### The project expands

More than half of the participating factories will continue to work on their own, continuously communicating their development to their clients in Sweden. Others have joined a network created by SIWI and the three fashion brands for continuing the learning journey.

SWAR has inspired SIWI, Sida, the piloting brands and an additional 16 Swedish fashion brands to catalyse a shift toward sustainable production and continuous learning in major production hubs in Asia and Africa.

Starting in 2015, the project scales up to include several Indian states and four other countries in the world. It involves more than 120 suppliers globally and is a part of the project Sweden Textile Water Initiative, STWI.

[<Source>](#)

## Forthcoming Events

### 3rd INTERNATIONAL CONFERENCE

on

### Sustainable Solid Waste Management,

**Tinos island, Greece**

**2-4 July, 2015**

3<sup>rd</sup> International Conference on Sustainable Solid Waste Management is being organized between 2<sup>nd</sup> and 4<sup>th</sup> July, 2015 in Tinos island, Greece. The Conference aims to address the significant issue of sustainable solid waste management through the promotion of safe practices & effective technologies. The Conference focuses mainly on modern solid waste technologies. It aims to stimulate the interest of scientists and citizens and inform them about the latest developments in the field of municipal solid waste management. The Conference will provide an opportunity to bring together scientists & professionals from government departments, Municipalities, private institutions, research & education institutions, being a forum for the exchange of the most recent ideas, techniques & experiences in all areas of solid waste management.

Renowned speakers from Italy, Belgium, UK and other European countries are expected to give key note deliberations. Also delegates from different countries are expected to attend the conference. Topics of interest also include Source separation schemes for solid waste, Biological treatment techniques (composting & anaerobic digestion), Recycling, Solid waste prevention techniques and Energy from Waste (biomass, oil sludge, syngas, etc.).

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International Conference on Information and Communication Technology for Sustainable Development (ICT4SD - 2015) will be held at Ahmedabad, India during 3 - 4 July, 2015. It will target state-of-the-art as well as emerging topics pertaining to ICT and effective strategies for its implementation for Engineering and Managerial Applications. The objective of this International conference is to provide opportunities for the Researchers, Academicians, Industry persons and students to interact and exchange ideas, experience and expertise in the current trend and strategies for Information and Communication Technologies. Besides this, participants will also be enlightened about vast avenues, current and emerging technological developments in the field of ICT in this era and its applications, will be thoroughly explored and discussed.

The conference is anticipated to attract a large number of high quality submissions and stimulate the cutting-edge research discussions among many academic pioneering researchers, scientists, industrial engineers, students from all around the world and provide a forum to researcher. the conference tracks are: 1. ICT for Infrastructure, 2. ICT for computation, 3. ICT for Research, 4. ICT for Engineering Applications, 5. ICT for Policy Framework and 6. ICT for E-Governance and Digital India.

[<Brochure>](#)

[<Official Website>](#)

### Sustainable Development Conference 2015

**July 5th - 7th, 2015**

**Bangkok, Thailand**

An International conference "Sustainable Development Conference 2015: Green technology, Renewable energy and Environmental protection", will take place during July 5th to 7th 2015 in Bangkok, Thailand. The Conference is organized by Tomorrow People Organization- internationally recognized non for profit organization with head quarters in Belgrade, Serbia. The conference targets Government officials and policy makers, NGOs, students, representatives from corporate, scholars and those who are interested in making some positive changes around them and becoming more useful to their own communities.

The topics of interest also include very important and most sought topics like Advanced Energy Technologies, Air pollution control and equipment, Bio fuels, Clean Coal Technology, Climate and climatic changes, Environmental policy in developing countries, Hazardous waste and waste treatment, Innovative clean technologies, Pollution prevention in industry, Recycling technologies, Renewable energy technologies and Solid waste Management.

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## Forthcoming Events

### ICNSE – 2015

July 12, 2015

London, United Kingdom,

2015 IIER Third International Conference on Natural Science and Environment will be held in London, United Kingdom, during **July 12, 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.

ICNSE 2015 aims at providing a leading forum for the presentation of new 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 interest from around the world. Accordingly, Topics of interest for submission include, Atmospheric sciences, Environment, Environmental Science and Technology, Environmental dynamics, Geophysics, Atmospheric physics, Global environmental change and ecosystems management, Climate and climatic changes, Global warming, Ozone layer depletion and Carbon capture and storage. It is expected that delegates from several European and Asian countries, US, Middle east etc will participate in the conference.

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**5<sup>th</sup> International Conference on  
Environmental Pollution and Remediation**  
**Barcelona, Spain - July 15-17, 2015**

**ICEPR<sup>15</sup>**

**ICEPR'15 – 5<sup>th</sup> International Conference on Environmental pollution and Remediation** is being organized in Barcelona, Spain. ICEPR is a series of international conferences which are held yearly. These conferences focus on all aspects of Environmental Science, Engineering, and Technology. The aim of ICEPR'15 is to bring together the Canadian and international community working in the field of environmental sciences, engineering, and technology, and to foster an environment conducive to present advances in this field. This conference will also provide a golden opportunity to develop new collaborations and gather world experts on the different topics including pollution detection, environmental remediation, and pollution prevention.

Keynote speakers at the conference include **Dr. Rajasekhar Bala**, Professor, National University of Singapore, **Dr. Fabiana Corami**, presently Research Fellow working at DAIS (Department of Environmental Sciences, Informatics and Statistics) University Ca' Foscari, Venezia, Italy, and at CNR-IDPA (Institute of the Dynamics of Environmental Processes), Venezia, Italy and **Dr. Akira Kondo**, Professor, Osaka University, Japan.

The topics of conference include Air pollution and treatment, Desalination, Environmental Education Programs, Environmental Sustainability and Development, Pollution Prevention, Greenhouse Effect, Global Warming, and Climate Change, Renewable and Non-Renewable Energies, Soil Pollution and Treatment and Wastewater Management and Treatment.

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### WORLD ENGINEERS SUMMIT (WES 2015)

21-24 July, 2015

Singapore

The Institution of Engineers, Singapore (IES) will hold **WES 2015** (World Engineers Summit) between 21<sup>st</sup> and 24<sup>th</sup> July, 2015 in Singapore at SUNTEC SINGAPORE CONVENTION & EXHIBITION CENTRE. World Engineers Summit on Climate Change 2015 is primarily an Engineering Conference focusing on engineering and technology applications and solutions for mitigating and reversing Climate Change. Plenary keynotes shall be given by Dr Bindu N. Lohani, Vice-President, Knowledge Management & Sustainable Development, Asian Development Bank, Philippines, Mr Tan Gee Paw, Chairman, Public Utilities Board, Singapore and Mr. Philippe Joubert, Senior Advisor, Non-Executive Director, World Business Council on Sustainable Development. Speakers from Austria, Australia, Kenya, Singapore, U.K., will also give their deliberations.

The event will also present the Climate Change Expo 2015 – a regional showcase of the latest sustainable and green engineering solutions that could act as valuable game-changers in the battle against climate change. The tracks of the conference are Clean Environment & Water Resources, Sustainable Development & Infrastructure, Sustainable Energy and Adaptation & Resilience against Climate Change.

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*Deccan Chronicle, Hyderabad  
dated March 28, 2015*

## ■ Javadekar talks tough Green crimes soon to earn jail terms

DC CORRESPONDENT  
HYDERABAD, MARCH 27

Prakash Javadekar, the Union minister for environment and forests, visited the Forest Academy in Dulapally on Friday. Mr Javadekar said that to control encroachment and destruction of forests, works are in progress to bring out amendments in five environmental laws to make them more stringent. The steps include the introduction of non-bailable offences with jail term and increase in penalty for some of the offences.

The minister also said that conservation of forests and wildlife will become hi-tech soon and real-time monitoring of

conservation efforts will be done through satellites, drones, camera traps and GPS. Mr Javadekar added that he would be visiting KBR Park on Sunday to interact with people there and get their views of how to increase urban greenery. He also spoke on the necessity of creating arbore-tums in all the cities across the country like the one in the AP Forest Academy.

When asked about the current state of tiger conservation in the country, Mr Javadekar said that the tiger population had increased to about 2,400 from 2,226, as revealed by the latest tiger census. He said such conservation measures will also be extended to save the one-

## Pollution control body rapped for not keeping track of hazardous waste

DC CORRESPONDENT  
HYDERABAD, MARCH 27

The CAG's audit report has found multiple lags in the functioning of the Pollution Control Board of erstwhile AP. From lack of equipment and laboratories for monitoring air and water quality, to conducting irregular inspections of highly polluting units, the issues pointed out in the report were many.

One of the most shocking findings was that the PCB was not even aware of the quantity of hazardous waste being generated in Hyderabad from 2013 onwards. Between 2009-2013, only about 36

per cent of the generated hazardous waste was managed, with no reply from the PCB on what happened to the rest. It was also found that in Visakhapatnam, no action was taken when it was found that three units were releasing highly toxic effluents causing mortality of test organisms.

The laxity of PCB was further proved as it was found to have not developed any Annual Action Plan since 2012 and the Board actually failed to spend even the money in its own yearly budget estimates. Failure in expenditure was attributed to non-utilisation of funds for essential works.

### ISSUES POINTED OUT IN THE CAG REPORT

- Inadequate inspections of industries
- Failed to initiate legal action against parboiled rice mills flouting water quality norms
- Inaction against pesticide/metal residues in Kolleru, India's largest freshwater lake
- Inadequate monitoring of air quality
- Ineffective monitoring on implementation of Plastic Waste Rules
- Failed to impress upon municipalities to comply with MSW rules
- Lack of monitoring of veterinary institutions
- Non-filling of 46 per cent vacancies in various technical and non-technical cadres
- Non-availability of qualified legal officers
- Failed to take legal action against many violations

*The Times of India, Delhi dated  
March 28, 2015*

## Agricultural waste to power cars

**London:** Agricultural by-products, such as straw, sawdust and corncobs, can be used to create environment-friendly biofuel to power cars, scientists say.

Researchers from the University of East Anglia (UEA) have identified five strains of yeast capable of turning agricultural by-products into bioethanol — a well-known alcohol-based biofuel.

Researchers estimated that more than 400 billion litres of bioethanol could be produced each year from crop wastage.

Processes to generate bioethanol from straw and other by-products are currently complex and inefficient. This is because high temperatures and acid conditions

© Rainer Holz/Corbis



**GREEN MILE:** Over 400 billion litres of bioethanol can be produced from crop wastes each year, which can power cars

are necessary in the glucose-release process. But this treatment process causes the waste to break-down into compounds which are toxic to yeast, making fermentation difficult.

However, the new research has found five strains of naturally occurring yeasts which could be used successfully in the fermentation process.

"Bioethanol is a very attractive biofuel to the automotive industry as it mixes well with petrol and can be used in lower concentration blends in vehicles with no modifications," said lead researcher Dr Tom Clarke, from UEA's School of Biological Sciences.

The research team investigated more than 70 strains of yeast to find the most tolerant. They found five strains which were resistant to the toxic compound furfural, and which produced the highest ethanol yield. **PTI**



The Times of India, Delhi dated  
March 28, 2015

# Yamuna revival: NGT pulls up govt

## Threatens To Penalize Officials, Departments If Orders Not Implemented

TIMES NEWS NETWORK

**New Delhi:** The National Green Tribunal has warned the Delhi government that it would use all its powers as a civil court to penalize officials and departments not implementing its orders on reviving Yamuna.

A bench headed by NGT chairperson Justice Swatanter Kumar said on Friday that it will be compelled to take over bank accounts of officials and even cause authorities to suffer civil imprisonment if the court's orders on various aspects of the river including ecological flow, demarcating floodplains, cleaning of storm water drains and fining those who dump waste on floodplains or throw religious offerings into the river go unimplemented.

On January 13, the bench issued 27 directions under a plan—Mailey se Nirmal Yamuna Revitalization Plan 2017—meant to address all issues ailing the river. The bench ordered a fine of Rs 50,000 on anyone caught dumping construction material on the banks of the river and a fine of Rs 5,000 on anyone caught throwing reli-

### REMOVING FILTH FROM HOLY RIVER

#### NGT'S DIRECTIVES ON REVIVING YAMUNA

- No industry which is operating or discharging any effluent or any other industrial waste or which has not obtained consent of DPCC to be permitted to operate in non-conforming areas or non-industrial areas

- Such units to be given a month to shut down
- DPCC and CPCB to submit a report on effluent quality from all 13 treatment plants in Delhi. To point out whether these plants can treat effluents depending on nature of industries and effluents
- To submit a report on

Authority concerned to issue notice for ending any industrial activity that involves discharge of effluents in non-conforming areas

pickling industries in Wazirpur

- Principal committee, headed by additional secretary of environment ministry, to file a report before NGT within a week from Friday on overall implementation of tribunal's orders

- Corporations and DJB to

submit a report on cleaning of drains

- DDA and all other authorities to file a report on amount of fines recovered from the people found throwing waste into Yamuna or dumping waste on the banks

- DPCC and CPCB to submit report within two weeks on emissions and dumping of fly ash by Indraprastha Power Station



gious offerings into the waters. It restrained real estate developers from carrying out construction on floodplains.

On Friday, the bench found that no progress has been made on these fronts.

"It's unfortunate that, though this is a matter of serious environmental consequence and relates to restoration and revitalization of river Yamuna, authorities concerned have failed to act with requi-

site seriousness. No reports have been filed," the bench observed. The bench on March 2 directed the irrigation department to demarcate the floodplains of the river both through maps and by

physically identifying the outline. But, "even that has not been done", it noted.

On March 2, NGT stated that authorities of all states sharing the river water shall determine how its ecological flow can be achieved. "This is largely dependent upon water released by Haryana from Tajewala. We were informed that there is an agreement between five states dating May 12, 1994, according to which 10 cumecs of water is released. Surely from 1994 till date, there has been drastic growth," the bench said, pressing that the 1994 MoU may not be relevant any more as it's not satisfying the need for environmental flow in the river. The bench directed the lawyer representing Haryana to look into the issue of the amount of waters being released from Haryana.

It further directed the irrigation department to provide DDA and the Uttar Pradesh government a map of the floodplains in the scale of 1:5,000 within three days. The UP government shall inspect it and give its measurement data to DDA which will demarcate the area physically within one week.

*The Economic Times, Delhi dated  
March 28, 2015*

## SAVING THE YAMUNA

# NGT Gives States Deadline to Mark Out Flood Plains

Illegal industry must be closed, report given

**Urmi.Goswami**  
@timesgroup.com

**New Delhi:** In a bid to speed up cleaning of the Yamuna, the National Green Tribunal has set timelines for the governments of Delhi, Uttar Pradesh and Haryana to demarcate the river's flood plain, close unauthorised industrial units and report on the state of common effluent plants.

Delhi had been asked to demarcate the Yamuna flood plain and submit a compliance report to the tribunal, a fast-track environment court, according to officials.

The state government informed the green court that it has not been able to finalise a detailed flood-plain map as some areas of the Yamuna flood plain fall within the limits of the NCR of Delhi and Uttar Pradesh. A bench headed by NGT chairperson Swatanter Kumar directed the Delhi government to provide the Delhi Development Authority (DDA) and the Uttar Pradesh government with a detailed flood plain map within three days. After which, the Uttar Pradesh government has seven days to provide the requisite data on the area of the flood plain—from Palla to Wazirabad and downstream of Okhla—that falls within the state's limits.

Following this exercise, the DDA will have to ensure physical demarcation of the flood plain area within a week. Simultaneously, the DDA will have to provide the map to the

committee set up to oversee efforts related to cleaning of the river to ensure cases of unauthorized constructions and occupations are dealt with in accordance with the tribunal's judgment of January 13.

Voicing its approval of the Delhi government's decision not to allow polluting units in residential areas, the bench said that industries that are operating in residential areas are violating the master plan, but the more serious issue is

that these units "present a very pertinent and prominent source of pollution of drains. They discharge their effluents in to the drains without any treatment and majority of them are operating without the consent of the Board".

The bench said even if a sewage treatment plant is established, water would not be reusable as it would contain industrial effluents. "They are a source of continuous pollution and are prejudicial to restoration of Yamuna."

The tribunal has directed the Delhi government to strictly enforce the rule that no polluting industry would be allowed to operate in residential areas. It has ordered that the relevant authorities issue notices for "complete prohibition" on industrial units which discharge effluents in residential areas.



**Tribunal made specific mention of pickling industries located in Wazirpur**

# City switches off for Earth Hour

Yogesh Kumar



**DARKNESS DISPELS APATHY:** Rashtrapati Bhavan marks Earth Hour

TIMES NEWS NETWORK

**New Delhi:** Many parts of Delhi got dark on Saturday evening for an hour in the hope that the gesture will help fight climate change. Iconic landmarks in the city, including the Rashtrapati Bhavan, India Gate, Akshardham and the PM's residence, turned off the lights between 8.30pm and 9.30pm as part of the global campaign, Earth Hour.

BSES Rajdhani saved 82 MW and BSES Yamuna 42 MW

owing to so many establishments switching off power connections. North Delhi Power Ltd saved 65 MW. "Overall, Delhi saved about 200 units of power this year. It is slightly less than last year when the power savings touched 250 MW (175 MW in BSES areas)," said a senior discom official.

Earth Hour 2015 was observed in 7,000 cities in 172 countries and in over 100 cities and towns in India. WWF also organized an eco-fair at Central Park in Connaught Place.



*The Times of India, Delhi dated  
March 31, 2015*

# Waste-to-energy plants 'toxic, costly, inefficient'

Jayashree.Nandi  
@timesgroup.com

**New Delhi:** Waste-to-energy incineration plants may not help Delhi deal with its massive trash problem. They may instead end up adding to its air pollution burden and cost the government a fortune.

At a time when two such plants in Narela and Ghazi-pur are about to start operations, experts at a conference organized by Toxics Link, an environmental NGO, said incineration plants are expensive, but unviable. Mixed trash is unsuitable for incineration, as it's not only polluting but extremely inefficient due to its low calorific value.

Shyamala Mani, professor at National Institute of Urban Affairs, that assists the ministry of urban development in formulating policy, quoted a study by NEERI and Central Pollution Control Board that found high carcinogenic content in non-methane volatile organic compounds emitted from Dhapa landfills near Kolkata. Since composition of waste in cities is similar, the findings apply to Delhi as well. The study concluded that cumulative cancer risk is 2,792 per million population. Workers at landfill sites are at greatest risk.

NIUA has requested from the ministry of environment, forests and climate change and CPCB a policy on hazardous waste. "Mercury in Indian waste is 10 to 15 times the standard. Unless MoEFCC supports us with a detailed description of how these can be handled, we are sceptical," she said. The calorific value of mixed waste is about 50% low-

## A POTENTIAL GREEN HAZARD

### WASTE GENERATION IN INDIA

**1,50,080** metric tonnes of municipal solid waste per day (Census 2011)

### WASTE COLLECTION EFFICIENCY

**70-90%** in major metros but less than **50%** in small cities

### DELHI BASICS

**Waste generation**  
**8,000** metric tonnes per day

**Collection**  
**4,500** metric tonnes per day

**Treatment**  
**2,500** metric tonnes per day

**Composting plant | 3**

**Vermi-composting/ bio-methanation/pelletization plant | 0**

**Waste-to-energy plant | 3**

er than what's required for incineration. It leads to less energy being generated. Pollution control for these plants is also expensive.

The Okhla waste plant, for instance, cost Rs 200 crore. Area residents alleged that plastics and other hazardous wastes are routinely burnt here putting their lives at risk. Dieter Mutz, director of GIZ, too, said that the plant burns valuable reusable material in construction and demolition waste.

Saurabh Khatri of Delhi Dialogue Commission, a thinktank under the new AAP government, asked experts if segregating waste in



### WHY WASTE-TO-ENERGY (WTE) INCINERATION PLANTS MAY NOT BE A GOOD IDEA

- Due to low calorific value of waste, incinerators are only able to make small amounts of energy while often destroying reusable materials
- Can be extremely expensive to set up; costs up to 140 million euros per plant
- Can release toxic gases like dioxins and furans due to use of mixed waste
- Needs stringent pollution control norms; otherwise can cause serious health impacts

Delhi can help address the problem. DDC is likely to hold a stakeholders' meet with civil society organizations and waste workers early next month.

Industry bodies have, however, tried to justify incineration. "Incineration can be done in a small space whereas biomethanation requires a large amount of space that Delhi doesn't have," said Gyan Misra of IL & FS, that's setting up plants in Ghazi-pur and Timarpur. CPCB scientist Vinod Babu, too, claimed that the issue of dioxin release in Okhla plant has been addressed and the plant is functioning properly.

## Plan of unit for harmful waste sought

TIMES NEWS NETWORK

**New Delhi:** The National Green Tribunal directed Delhi Pollution Control Committee and Delhi State Industrial and Infrastructure Development Corporation Ltd to submit a complete plan on establishment of a hazardous waste disposal unit in Bawana and Narela.

A bench headed by NGT chairperson Justice Swatanter Kumar issued notice to the managing director of DSIIDC and directed him to be present on next date of hearing with all the details of the plant. There is currently no hazardous waste plant in the city.

During the hearing, the lawyer appearing for North Municipal Corporation, informed the tribunal that a meeting was held on March 12 in which the corporation decided to hand over 14 acres of land for setting up a hazardous waste plant in Bawana and Narela.

Earlier, the bench directed the chief secretary of Delhi government to hold a meeting along with vice-chairman of DDA, commissioners of North Municipal Corporation and others to identify the site for treatment of hazardous waste. The bench had said that it was a "matter of not only concern but of great surprise" that the capital city of our country does not even have a treatment, storage and disposal facility for hazardous waste. Delhi generates 5,000 tonnes of hazardous waste annually which, in the absence of a treatment facility, is being sealed and stored by industries.



The Economic Times, Delhi dated  
March 31, 2015

## NGT Raps Green Ministry over Illegal Mining in Yamuna

Ministry hasn't yet appointed its member on panel formed to look into illegal mining

Urmi.Goswami  
@timesgroup.com

**New Delhi:** The environment ministry has come in for criticism from the National Green Tribunal for its slow response in tackling the problem of illegal mining on the Yamuna riverbed between Noida and Faridabad.

More than a month after the green court set up a committee to look into the magnitude of damage caused by illegal mining on the riverbed, the environment ministry is yet to appoint its representative.

"The directions contained in the order dated February 18, 2015, have not been complied with. Furthermore, the committee constituted under the order has not even met as yet. We are informed that the ministry of environment and forests has not appointed its representatives," the bench headed by Justice Swatanter Kumar observed, expressing displeasure at the lack of progress.

The NGT constituted the committee comprising a representative of the environment ministry, a senior officer of the Indian Air Force, senior scientists from the Haryana State Pollution Control Board, a senior officer of the Haryana mining department and a professor from Guru Jambhesh-



NGT had formed the committee to survey Tilpat Forest Range and submit a report to the tribunal on illegal mining carried out in the area

war University, Haryana, nominated by the vice-chancellor.

The committee was asked to survey the 4,000-acre Tilpat Forest Range and submit a report to the tribunal on the illegal mining carried out in the area and its extent in terms of money.

It was also asked to recommend immediate measures for the restoration of the environment, particularly on the riverbed of the Yamuna in that area. In February, the tribunal had said that the Haryana government had reported having recovered ₹70 lakh on account of royalty, price of sand, and penalty for illegal mining.

"This is a sufficient indicator of the extent to which this activity is going on. If it is taken even for last 10 years, the cumulative ef-

fect on ecology and environment, particularly on the riverbed of Yamuna, would be terrific and the revenue loss huge," it said.

The bench had expressed concern over how despite directions, no study has been carried out to find out the ecological and environmental damage to the area.

It was on account of persistent inaction that the tribunal set up the committee.

The green court ordered the Haryana and Uttar Pradesh state governments and the environment ministry to ensure continuous surveillance of the area, as well as use of satellite monitoring, reports of which must be submitted to the tribunal.

The tribunal has put the onus of ensuring that the committee's report is submitted to the tribunal on the member secretary of the Haryana State Pollution Control Board, who will serve as the committee's nodal officer. The bench will resume hearings on May 1.

The Economic Times, Delhi dated  
March 31, 2015

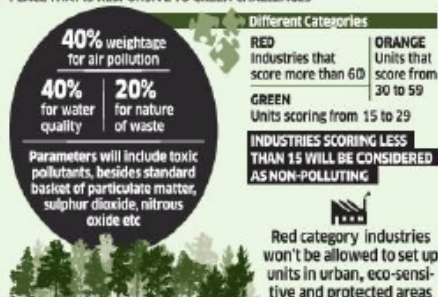
## Green Ministry Plans New Scale to Categorise Polluting Industries

**FIXED PARAMETERS** Industries which seek nod to set up units will be graded on basis of score comprising weightage for air pollution, water quality and nature of waste

Urmi.Goswami @timesgroup.com

### Green Score Card

ENVIRONMENT MINISTRY WANTS A SYSTEM IN PLACE THAT IS RESPONSIVE TO GREEN CHALLENGES



The environment ministry is considering revisiting the system of categorising industries that seek permission to set up and operate units. It has suggested giving higher consideration to air pollutants, effluents and nature of waste -hazardous or otherwise-produced as part of an industrial unit's operations.

The proposed system, which will be discussed with the states, will be based on

"scores" that industrial units will be given on the basis of these pollution-related parameters. The new classification is part of the ministry's effort to put in place a system that is responsive to environmental challenges while providing industries with a more conducive set up. The proposed classification will be on the basis of a composite score -comprising 40% weightage for air pollution, 40% for water quality and 20% for nature of waste.

The parameters will include toxic pollutants, besides the standard basket of particulate matter, sulphur dioxide, nitrous oxide, benzene, ammonia, the pH (to ascertain the level of acidity of water quality), total suspended solids and level of dissolved oxygen. Industries

that score more than 60 will be classified as red, those from 30 to 59 as orange, from 15 to 29 as green while units with less than 15 will be considered as non-polluting.

Consent to operate will be specified for a time limit, after which there will be a review --red category industries will be given consent for five years and orange for eight. Green categories will require a one-time consent for the life cycle of the unit, while nonpolluting industries will not require any consent.

Industries are currently classified into three categories in decreasing order of severity of pollution -red, orange and green. Introduced in 1989, this system was geared to link the pollution potential of industries at a particular location to help people un-

derstand the severity of pollution from a specific industry. Given the location-specific component, it is not possible to have a uniform classification throughout the country, although the Central Pollution Control Board has tried to harmonise the industries in the three categories.

The environment ministry is of the view that the present system does not take into account sectorspecific plans for controlling pollution and instead classifies industries and industrial activities on the basis of size, manpower and consumption of resources.

The view in the ministry is that pollution parameters and their impact on health are not considered primary criteria in this classification. The ministry has proposed that no red-category industries will

be permitted to set up units in urban, eco-sensitive and protected areas.

The classification of industries will be undertaken by a team comprising officials for the central pollution board, state boards and the ministry.

Experts say a dynamic classification that takes into account the actual levels of pollution of an industrial unit and the carrying capacity of a particular area is preferable. However, the efficacy of the proposed system will depend on the manner in which it is implemented and monitored.

The proposed classification will be on the basis of a composite score - 40% weightage for air pollution, 40% for water quality and 20% for nature of waste.



*The Economic Times, Delhi dated  
March 31, 2015*

## GLOBAL PACT ON CLIMATE CHANGE

# India Wants Climate Talks to Focus on Efforts Prior to 2020

Emphasises that onus to deal with global warming is more on developed countries

Urmi.Goswami@timesgroup.com

New Delhi: India wants a global agreement that will address intensified efforts to tackle climate change between 2015 and 2020 and has questioned the single-minded focus on finalising a global compact for the post-2020 period, which is to be inked in Paris in December.

With barely nine months left for the crucial climate change meeting in Paris, the pressure on countries to draw plans to reduce the amount of carbon produced after 2020 has increased. New Delhi has told the UN climate change body that there needs to be equal focus on the pre-2020 period, arguing that without active efforts to tackle climate change between 2015 and 2020, slowing down the rate of global warming will be different.

Sources said India has submitted a written request to the chairs of the negotiations being held under the aegis of the United Nations to consider an agreement that will spell out the efforts to reduce the amount of carbon being produced and to adjust to the impacts of climate change.

At the talks in Geneva in February, Indian negotiators had raised the issue that countries, especially

## Action Plan for Now

Now the climate change talks are solely focused on post-2020 deal

New Delhi has told the UN climate change body that equal focus should be on period up to 2020

It seeks measures spelt out to tackle global warming in period up to 2020

### What was Durban Platform pact in 2011 about?

Intensifying efforts to address climate change in pre-2020 period



Finalising the new global pact by 2015, which would be implemented after 2020

**BEFORE 2020 PERIOD, THE ONUS OF REDUCING CARBON FOOTPRINT IS ON DEVELOPED NATIONS**

Developing nations can take steps voluntarily

Lack of attention to the pre-2020 efforts will put burden on developing nations

Developed nations had promised financial & technological support to developing nations to address climate change

the industrialised nations, need to do much more to address rising emissions and the impact of unchecked climate change between 2015 and 2020.

"We have given it in writing to the chairmen of the ad hoc working group on the Durban Platform.

In 2011, when countries decided to craft a new agreement to address climate change, it was also decided to accelerate efforts to tackle global warming in the period up to 2020. But now the discussions are solely focused on the post-2020 agree-

ment. The Durban Platform is both about the pre-2020 period and the post-2020 period," a senior member of the government said.

The Durban Platform agreed to in 2011 at the annual UN-sponsored climate change negotiations has two planks of action — accelerating and intensifying efforts to address climate change in the pre-2020 period and finalising the new global agreement by 2015, which would be implemented after 2020.

In the pre-2020 period, the onus of reducing the amount of carbon

produced is on the industrialised countries, with developing countries taking steps on a voluntary basis. Industrialised countries are required to provide financial support, which was agreed in 2009 and 2010 to be to the tune of \$100 billion a year, and were also committed to provide technology to developing countries to address climate change. India's demand has the broad support of developing countries. At Geneva, where negotiators from 193 countries met for a week to finalise a draft of the post-2020 global compact, representatives of countries including China, South Africa and other African countries and small islands consistently stressed on the need to focus on increasing the efforts being made to tackle climate change before 2020.

Developing countries have argued that the lack of attention to the pre-2020 efforts only serve to transfer the burden of action to poor countries.

The new agreement that comes into effect in 2020 is applicable to all countries, unlike the current regime, where the onus of action rests with the industrialised countries.

Scientists and the Intergovernmental Panel on Climate Change maintain that delayed action will prove to be more expensive and many of the efforts that can be taken to slow global warming will be ineffective if not implemented as soon as possible.



*The Economic Times, Delhi dated  
April 01, 2015*

*The Times of India, Delhi dated  
April 01, 2015*

# India May Submit Climate Change Plans in September

EU, the US, Switzerland, Norway & Mexico have submitted their plans

Urmi.Goswami@timesgroup.com

**New Delhi:** India is likely to submit its plans to tackle climate change, including steps to curb the amount of carbon pollution, in September.

Tuesday was the first informal deadline for "countries that are able to do so" to file their pledges to combat climate change. All countries have agreed to put forward their plans ahead of the crucial Paris meet in December.

So far, the European Union, the US, Switzerland, Norway and Mexico have sent in their plans to the UN climate secretariat.

Before the UN-sponsored climate change negotiations in Lima in December, India had said it would not submit its climate change plans before June. In February, environment minister Prakash Javadekar announced that India would tender its pledges in June.

In recent weeks, amid consultations on preparation of pledges,

there had been indications that India would not submit its plans by June-end and would instead push it to August-September.

"There is thinking on those lines that we should take more time to

## ON GREEN MISSION

All countries have agreed to put forward their plans ahead of the crucial Paris meet in December

work out the post-2020 plans. Because once we make a commitment, we should be prepared to meet it," a senior official said, stressing that India has always fulfilled its international obligations.

The environment ministry is non-committal about when the plans will be submitted. However, officials say that work is on in full

swing. Experts say that given the government's thrust on manufacturing, demands of urbanisation and ensuring total electricity coverage by 2022, working out India's post-2020 pledges to tackle climate change, especially curbing the amount of carbon it produces, is a challenging task. India is yet to provide electricity for about 350 million people.

Javadekar has assured that the pledges will be submitted "in time." Countries can tender their plans till end September. The UN climate change secretariat will publish on November 1 a synthesis report on all submissions made before October 1.

The environment ministry has commissioned two studies on its greenhouse gas emissions profile and is awaiting the final report. Officials have held meetings with various stakeholders, including a two-day consultation with the states, on the national and state action plans to address climate change.

## FASHION GOES GREEN IN INDONESIA



**DETOX CATWALK:** An Indonesian model sports a gas mask during a fashion show in a polluted river basin in Rancaekek district near Citarum river in western Java island. The event was held by an environmental organization to highlight the fact that rivers are being contaminated by hazardous chemicals discharged from big textile factories supplying materials to local and international fashion labels

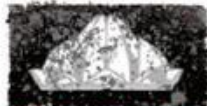
*The Times of India, Delhi dated  
April 01, 2015*

# Delhi has to act on pollution: Javadekar

Pulls Up State Govt For Delay In Submitting Action Plan To Improve Air Quality

TIMES NEWS NETWORK

**New Delhi:** Union environment minister Prakash Javadekar on Tuesday criticized the Delhi government for delaying the submission of an action plan on air pollution, sewage treatment and solid waste management. He also asserted that the state has to act to tackle these problems.



He said the Centre had held three meetings with the state government where actions to be taken to address these issues were discussed and timelines decided. But the latter is reportedly still sitting on the plan that will be crucial in improving air quality in the city. Javadekar said he would re-

serve his comments till Wednesday as Tuesday was the deadline for the submission of the plan.

"I will wait till the end of the day to see if they manage to submit their plan. The deadline was decided by Delhi government officials so they should deliver on it. I make it clear that the state government has to work now," he said replying to a question on the waste dumped on roads by the East Corporation sanitation staff in protest against non-payment of salaries.

"We will monitor the implementation of their plan," he added. Environment department officials of the Delhi government seemed clueless. One of them said: "The plan has already been discussed in meetings with the Centre. I don't think we were supposed to submit any plan in writing."

Delhi's environment secretary Sanjiv Kumar could not be reached for comment while the environment minister



**DANGER IN THE AIR:** Tuesday was the last day for submitting a plan

Asim Ahmed Khan's office declined to make any statement in this regard.

Last year, World Health Organization had ranked Delhi to be the most polluted city in the world. PM2.5 (fine, respirable particles) levels, which were alarmingly high during winter months, continue to be much above the safe limit. Civil society groups have been demanding immediate steps

such as switching to superior fuel standards, upgrading public transport and easing traffic congestions in the city.

Meanwhile, Javadekar refused to comment on Arvind Kejriwal's request to relieve Indian Forest Service officer Sanjiv Chaturvedi from his current posting. The AAP government seeks to appoint Chaturvedi as officer on special duty but the Centre is yet to

take a call on his transfer. To a question on this issue, Javadekar said: "We are discussing policies and not persons. Let's discuss people's problems. We don't give running commentary on movement of files."

Javadekar, who was addressing a press conference on a national meet of environment ministers to be held next week, said MoEFCC is in talks with the transport ministry to address the rising air pollution. "There is a need to discourage diesel cars. Talks are also on advancing the transition to superior fuel norms," he said.

"The population of vehicles is doubling every six-seven years. We have also asked the Delhi government to focus on dust and the pollution caused due to the stubble burning that takes place during Kharif and Rabi crop seasons. We should clean roads with machine and not with broom so that dust doesn't blow up," he added.

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



## POLLUTION FRIGHT

AIR QUALITY INDEX		PM2.5
Delhi	89	Good
Tomorrow	97	Good
Pune	77	Good
Tomorrow	80	Good
Source: SAFAR@MoES-RTM-IIMB (11 cities)		
Hyderabad	86	Good
Chennai	32	Good
Kolkata	78	Good
Mumbai	50	Good

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



The Times of India, Delhi dated  
April 01, 2015

# Govt moves high court to enforce plastic bag ban

Abhinav.Garg@timesgroup.com

**New Delhi:** A day after banning all forms of chewable tobacco in the capital, the government has approached the Delhi high court seeking to enforce a similar curb on plastic bags.

In an urgent application filed on Tuesday, the Delhi government requested the court to quickly dispose of a petition challenging the ban which has been pending since 2012. In December 2012, the HC had stayed the ban, taking on record an undertaking by Delhi Pollution Control Committee that it won't book plastic manufacturers and traders till the petition is pending in court.

Filed by All India Plastic Industries Association, the petition challenges the decision of the then government to ban even manufacture of plastic along with use of products, including carry bags.

Showing alacrity, the environment department now wants early hearing and a verdict on the issue. "The government, on account of the pendency of the present matter, is not able to implement the banning of plastic carry bags. It is receiving RTI applications with regard to applicability of the ban order," the latest plea says.

It underlines the need for speedy disposal of the matter, saying "due to heavy board of HC, the petition failed to come up for hearing on March 20 and earlier dates". Moreover, the plea adds, all the stakeholders have already stated their arguments by way of written submissions which can be used by the court to give its verdict on the matter.

On October 23, 2012, the Delhi government brought out a notification imposing a blanket ban on the use of plastic bags. It said that no person

can manufacture, import, store, sell or transport any kind of plastic bag in the city. The order prohibited bags, even those used to cover magazines, books or invitation cards and garbage bags.

The only exception permitted was use of plastic specified under the Bio-medical Waste (Management and Handling) Rules, 1998 such as plastic used to pack food products, milk, cooking oil, flour bags and plastic cups used by tea vendors.

Challenging the government notification, All India



SEEKS FAST DISPOSAL OF PLEA

Plastic Industries Association sought the court's direction to the government allowing them to manufacture plastic bags for sale in areas outside Delhi where these are not banned.

During the initial hearings the court had questioned the government on why it imposed a total ban on manufacture of plastic bags. "Unless you say the plastic manufacturing industry is hazardous, how can you ban the manufacturing of plastic bags? What is the study you have done before imposing the ban?" the court had demanded.

However since then the case went into cold storage as it was listed before a special bench every Friday but couldn't come up for hearing or the court was short of time.

The Times of India, Delhi dated  
April 02, 2015

## TOO MANY PLANS, BUT TOO LITTLE ACTION

### TIMELINE FOR DELHI'S AIR POLLUTION ACTION PLANS

**Oct-Nov 2009** » Congress government in Delhi okays air pollution plan in run-up to Commonwealth Games

► Plan includes closure of polluting industries, upgrading public transport, tightening PUC norm

**Feb 2012** » Sheila Dikshit holds meetings with civil society groups, orders drafting of new air pollution plan

► Plan includes introduction of Euro V and VI emission norms, a parking policy, hiking parking tariff, pedestrian facilities, expansion of CNG and upgrade of public transport

**Late 2012** » The plan was to go to Cabinet but remains with chief secretary for more than a year

**Dec 2013** » AAP forms minority government

**Feb 2013** » Pollution levels alarmingly high through winter; AAP government doesn't reopen old plan



**June 2014** » Lieutenant governor Najeeb Jung forms inter-departmental committee to draft action plan

**Aug 2014** » LG okays air pollution plan which includes tightening of PUC norms for vehicles, regulating entry and exit of non-destined vehicles in Delhi, a rationalized parking policy, introduction of Euro-V norms for vehicles to be registered, promotion of battery-operated vehicles, Metro and public transport

**Feb 2015** » AAP back in power

**Feb-Mar 2015** » Centre holds meetings with AAP government and directs them to draft new action plan

# Air pollution worsens as govts sit on action plans

Jayashree.Nandi  
@timesgroup.com

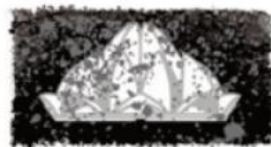
**New Delhi:** The national capital's poor air quality may be killing silently and slowly, but successive governments, irrespective of which political party headed them, have seemed in no hurry to act. This is obvious from the number of draft "action plans" prepared since 2009, just after Delhi started losing the gains made in air quality by implementing CNG in public transport.

At least four to five such drafts were prepared or discussed at various stages under the Congress government and LG Najeeb Jung. Now, in the AAP regime there is an elaborate 14-point direction by the NGT to help address air pollution. However, these plans haven't moved from the "draft" stage. Change in governments led to delays, but even when Congress was in power the draft plan was pending with various departments for more than two years.

Both Sheila Dikshit's government and Jung's action

plans recommended implementation of a parking policy. Jung's plan said there would be "no tolerance zones" for parking, but except for a minor hike in parking fee to Rs 20 per hour no stringent measures were taken. Recently, NGT banned parking on tarred roads.

Though Delhi required 11,000 buses by 2010, only 6,000



LET DELHI BREATHE

run today. Simple interventions like tightening Pollution Under Control (PUC) norms recommended in all action plans exist only on paper. Jung's high-powered committee's plan recommending linking PUC with sale of fuel fell through due to legal ramifications. Even Unified Traffic and Transportation Infrastructure (UTTIPEC)'s street design guidelines were not im-

plemented which could have improved walking and cycling infrastructure in the city. A few cycling and walking tracks were made during Commonwealth Games in 2010, but even they failed to connect parts of the city.

Experts said time to implement action plans is running out. "We need a game changer, not piecemeal actions. Where is the non-motorized transport network? When will public transport mediums like bus and Metro be integrated through a single card? No measures have been taken so far that can actually bring down air pollution levels considerably," said Anumita Roy Chowdhury, head of CSE's clean air campaign.

The Dikshit government did propose a hike in road tax for diesel cars in the 2011 budget, but that too met with resistance. However, a 25 paise cess on diesel imposed under Congress still exists. "No other interventions have been made to discourage use of diesel vehicles in the city," Chowdhury said.



*The Times of India, Delhi dated  
April 02, 2015*

## N India moves to Euro 4, but city must wait for cleaner air

Jayashree.Nandi  
@timesgroup.com

**New Delhi:** North India switched to Euro IV fuels from Wednesday. The move is expected to lead to a steep drop in particulate emissions from diesel vehicles but will not improve Delhi's air quality in the near future because many vehicle makers have expressed their inability to manufacture Euro IV compliant buses and trucks until October.

More than 45,000 trucks from north Indian states enter Delhi every day, plying on Euro III diesel which has 350 ppm sulphur and is greatly more polluting than the 50 ppm sulphur Euro IV fuel. Sulphur is directly linked to emissions of respirable particulate matter, a major pollutant in Delhi.

Experts say having Euro IV compliant heavy duty vehicles could have been the much needed "low hanging fruit" for improving the city's air quality. Euro IV-compliant fuel has been in use in only 13 big cities, including Delhi, since 2010.

► Not ready yet, P 3

## Auto makers say not ready yet

► Continued from P1

**T**OI has a copy of a notification issued by the petroleum ministry on January 19, 2015 with a subject line: Introduction of BS IV auto fuel in the country as per recommendations of expert committee on auto fuel vision and policy 2025. It states that Euro IV fuel will be available in north Indian cities starting April 1, 2015 and across south India from April 1, 2016.

Despite this notification, the Society of Indian Automobile Manufacturers (SIAM) has said it needs more time to supply Euro IV compliant HDVs.

"We desperately need to transition to cleaner fuel because a huge amount of truck traffic comes into Delhi from across the country. Any delay is unacceptable. Even when the earlier transition to cleaner fuel took place, automobile industry blocked it till the courts intervened. Why are they still manufacturing Euro III vehicles?" asked environmentalist Sunita Narain, who heads the Centre for Science and Environment.

According to documents with TOI, in the 49th meeting

### NO END TO BAD AIR

About **46,000** heavy-duty vehicles (HDVs)—mostly trucks—enter Delhi every evening



► Non-destined trucks are not supposed to enter Delhi. But in the absence of western and eastern peripheral expressways, trucks from other states ply through the city

► Air pollution, especially PM2.5 levels during early mornings and nights, are very high. CSE researchers say buses and trucks using Euro III fuel are responsible for this

► According to IITM Pune, PM2.5 levels are the highest in winter from 7pm to 7am

► Euro IV fuel is available across north India from April 1, 2015. But many vehicle manufacturers are asking for at least 6 months to offer Euro IV-compliant heavy-duty vehicles

► Sulphur content in Euro III fuel is 350ppm while it's 50ppm in Euro IV

► Experts say moving HDVs to Euro IV is the first crucial step in addressing pollution

of the standing committee of emissions (SCOPE) held on February 10, 2015, SIAM requested for an extension of six months for regions to be covered by April 1, 2015 for Euro IV. SIAM members told TOI they would need some time to upgrade their supply chain for Euro IV vehicles.

"We are waiting for a notification from the ministry of transport about the implementation of these fuel norms. As an industry body, we cannot commit to resources unless we know for sure that the norms are being

implemented. Only then we will place orders for the new components of Euro IV vehicles and it takes time to manufacture lakhs of such new vehicles. We will be ready for south India by April 2016 but for the north, we need at least 5 to 6 more months," said a SIAM member. Manufacturers also claimed that there was no demand for Euro IV HDVs, possibly because they were more expensive.

The Environment Pollution Control Authority (EPCA), a body notified by the Central government in 1997

**Society of Indian Automobile Manufacturers, despite notification from the petroleum ministry, has said it needs more time to supply Euro IV compliant HDVs**

to deal with environmental issues in the national capital region and ensure compliance of air pollution standards held a meeting last week with automobile companies. EPCA members were quite displeased with the industry's unpreparedness to move to cleaner fuel. They asked companies submit data on the number of Euro III and Euro IV vehicles being manufactured and the difference in prices.

According to a study by The Energy and Resources Institute (TERI), in a business as usual scenario where fuel norms are not improved, PM2.5 levels will almost treble and NOx levels will be six times the current levels by 2030. But if Euro IV is implemented throughout the country by 2015 and Euro V is introduced by 2020 then PM2.5 and NOx can be limited to slightly-higher-than-current levels.

# Delhi can't cut air pollution alone

## City Says Whole NCR Must Be Involved; Action Plan Sent To Centre In Feb

TIMES NEWS NETWORK

**New Delhi:** A day after Union environment minister Prakash Javadekar slammed the Delhi government for not submitting an action plan to counter air pollution, the AAP government sent the Centre a rebuttal on Wednesday.

In a letter to Javadekar, Delhi environment minister Asim Ahmed Khan said a plan, as recommended by a high-powered committee headed by the then chief secretary of Delhi, was submitted in February.

He also requested the Centre to take a more holistic view by involving stakeholders from the entire national capital region (NCR) as air pollution knows no boundary.

"The action plan was limited to the areas in which the Delhi government can check the rise of air pollution. It focused on short-term and long-term measures to control air pollution in the capital," Khan said. He explained that as a follow-up, various government agencies, including DDA, corporations, NDMC and Delhi Police, have been drafting



POINT BY POINT: Asim Khan

time-bound implementation plans.

However, the letter also stated that air pollution does not recognize geographical boundaries. "At any point, air

pollution is contributed by several sources even from long distances. Since NCR is a contiguous area with high population density and multiple pollutant sources, it is difficult to pinpoint and isolate the sources of pollution in Delhi alone."

Khan referred to crop residue burning contributing to high levels of pollution in Delhi. "Scientific studies indicate Delhi is receiving pollution from neighbouring towns and industries present in NCR." Hence, comprehensive, coordinated and integrated efforts are required to improve the air

quality in Delhi, he said.

The Delhi minister also requested Javadekar to convene a meeting of all NCR stakeholders as several towns of Haryana and Uttar Pradesh fall within the region. "May I request you to ask them to set up joint check posts within their territories to ensure that overloaded vehicles can be turned back before entering Delhi." These states, Khan added, should also be asked to draft an action plan on the lines of that of Delhi to sort out problems of air pollution, sewage treatment and solid waste.



The Times of India, Delhi dated  
April 04, 2015

The Times of India,  
Delhi dated April 03,  
2015

## 'Poultry diet instead of beef can help save climate'

**London:** Cutting global beef consumption and eating protein-rich poultry and eggs instead could lead to major climate benefits, says a new research. The study by David Bryngelsson from Chalmers University of Technology in Sweden investigated various future scenarios to determine how the climate would be impacted if humans were to change their diet.

The study shows that adopting a diet in which the protein derives from poultry is a smart and inexpensive way to reduce our impact on the climate. "Cattle ranching is already responsible for 15% of the greenhouse gas emissions that humans cause. The diet we are accustomed to in wealthy countries is not consistent with our climate goals," says Bryngelsson. Even though vegan diet results in less greenhouse gases, Bryngelsson's research shows that we can continue eating animal protein and still make a major contribution to the climate—if we replace beef with poultry and eggs, and cut down on our consumption of milk and cheese. PT

# Dirty Air & The Price of Growing Affluence

Travel in most cities whether it's New Delhi, Mumbai or Bengaluru is an urban nightmare. If it took 30 minutes to reach your destination some years ago, it probably takes 45 minutes or even an hour now. There's another problem: growing levels of pollution and their associated health risks.

India could follow the example set by California, writes Urmi A Goswami

You're not stuck in traffic you are the traffic. That's a slogan that surfaces on social media now and then, makes everyone chuckle and disappears. But it's the truth. Can you remember the last time you weren't jostling for road space with hundreds of cars and scooters?

Or when your throat didn't feel scratchy driving with the windows rolled down? Welcome to life in the city-traffic moving at a snail's pace, not-so-blue skies and increased possibility of a bad throat or persistent cough.

Dirty air seems to be the price to pay for growing affluence. As urban India expands in size and prosperity, cars are getting bigger and the roads are getting choked with many more vehicles, increasing the volume of dirt and harmful gas emissions.

Delhi alone has seen an explosion of car and two-wheeler ownership. The vehicle population in the capital was 8.3 million, of which 7.9 million vehicles were privately owned cars and two-wheelers, according to Delhi government figures as of March 2014.

Fortunately, there may be a solution. It's possible to keep your car and have clean air, too. California is a working example of this: the US state still has the highest level of car ownership and limited public transport. It was notorious in the 1960s for one of the highest levels of air pollution in the world—ozone levels exceeding permissible levels for as much as eight hours in a day.

"Tackling air pollution may seem a complex problem, but California has demonstrated how drastic reductions in air pollution can be achieved," said V Ramanathan, Distinguished Professor of Atmospheric and Climate Sciences at the University of California in San Diego and lead author of the report, 'Options to Reduce Road Transport Pollution in India', which offers a blueprint for India based on the Californian model.

California made nine broad interventions, including improvements in technologies and emission standards, ambient air quality standard and fuel quality, tougher inspection and maintenance requirements, retrofitting vehicles and fleet modernisation.

Between 1968 and 2008, California was able to reduce emissions of carbon monoxide, nitrogen oxide and sulphur dioxide by as much as 90%, even as the state's population doubled, the number of vehicles increased by 175% and diesel consumption and miles travelled rose by 225%.

The success of California's efforts can be a guide for India. Outdoor air pollution in the form of fine particles contributes annually to over 3.2 million premature deaths worldwide, according to the report. It now ranks among the top global health risk burdens.

The World Health Organization's Global Burden of Disease report found that outdoor air pollution contributed to the deaths of 627,000 Indians in 2010. The numbers are set to rise.

Experts say that at the current pace of growth, there will be some 400 million vehicles in the country by 2030 from 140 million in 2011—almost tripling in about two decades—and pollution levels will rise by a factor of three to five.

There is a co-relation between the number of vehicles on the road and pollution levels. A study by the Ministry of Environment & Forests as far back

as in 1997 found that vehicles alone contributed to about 64% of the pollution in Delhi. At that time, the number of vehicles in the city was 2.6 million, including 2.4 million privately owned cars and two-wheelers. In the intervening 15 years, Delhi's buses and auto-rickshaws have moved from diesel to compressed natural gas, a cleaner fuel, but the city's vehicle population almost tripled.

According to the Central Pollution Control Board, the absence of an adequate public transport system is the main reason for the rise in the number of cars plying on the roads.

The pace of public transport expansion has not kept up with the growing population in India's cities, whether it is Delhi's metro or Mumbai's suburban rail system. The Delhi metro carries 2.7 million people daily in the city, which according to the United Nations, has a population of 25 million.

As a result, those who can afford it have moved to private vehicles for their transportation needs. Even where metro services are available, last-mile connectivity is missing. So unless a metro station is at one's doorstep, it remains the last option.

Perhaps the biggest reason for the vehicle boom is the country's economic growth, which has boosted incomes and spurred the aspirations of people. Owning a car remains the single most important symbol of achievement for India's upwardly mobile and new middle class. Public transport buses, autos and trains—cycling and walking are seen as the option of the poor. Besides, there are safety concerns.

"I drive to work, because the alternative is to take the metro, and then I have to change trains. That is inconvenient," said Ajay Sharma, a financial consultant working in Delhi's ITO area.

Air pollution is not unique to Indian cities. Beijing, London and Paris deal with air pollution by imposing restrictions on the use of

cars. Paris even made public transport free to mitigate the inconvenience.

It's evident that any solution to urban India's air pollution problem must factor the motorised vehicle-cars and two-wheelers. People are not going to give them up. While better public transport should be the long-term goal, given the gravity of the problem, actions need to be taken in the short and medium run, geared to a system that relies overwhelmingly on private vehicles.

Improving the quality of fuel, especially diesel, is a major initiative. Introduction of low sulphur fuels is an important step because it facilitates the installation of tailpipe treatment devices for effective control of emissions. A similar measure in California resulted in a 90% reduction in black carbon, or unburnt particles.

Stringent vehicle emission standards need to be adopted uniformly across the country. According to ministry of petroleum data, the bulk of vehicles 78% are sold in areas that need to conform to BS III standards and the rest complies with the more stringent BS IV standards. The figures for two-wheeled vehicles are even more disconcerting—only 12.6% of these vehicles were sold in BS IV areas.

Ramanathan's report, which is a collaborative effort by The Energy & Resources Institute, the University of California at San Diego and the California Air Resources Board, suggests uniform adoption of BS IV and BS VI vehicle emission norms by 2017 and 2020, respectively. It projects that such a measure could

California made nine broad interventions, including improvements in technologies and emission standards, ambient air quality standard and fuel quality, tougher inspection and maintenance requirements, retrofitting vehicles and fleet modernisation

reduce particulate matter pollution by as much as 55% and nitrous oxide emissions by 47%. It also suggests separate emission norms for two-wheeled vehicles, focusing specifically on tougher nitrous oxide and volatile organic compound emission norms.

Stronger inspection and enforcement measures need to be put in place as well. "The existing system of PUC (pollution under control certification for vehicles) is ineffective and needs to be significantly strengthened," Ramanathan and S Sundar of TERI point out in their assessment.

Experts suggest scrapping the current system of onetime registration of private vehicles for 15 years and amending the law to ensure renewals every two or three years to allow for regular evaluation of their roadworthiness and emission performance.

There is a price to pay for curbing pollution. However, the costs are outweighed by public health benefits, creation of jobs and better crop output. Since California began regulating vehicle emissions 50 years ago, the state's economy has grown 20-fold, from \$100 billion to \$2 trillion, according to Ramanathan's report.

Poor air quality is a grave problem, one that cuts short the lives of people and reduces their productivity. Drastic and immediate intervention is needed to improve the air quality in Indian cities. Reducing emissions from private vehicles would be an important first step. However, the efforts can't stop with steps on fuel and efficiency.

As environment minister Prakash Javadekar put it, "Addressing air pollution is a continuous issue. We need to change the Indian mindset that thinks once CNG is introduced the job is done, or once the metro is in place the job is done. Improvements are an everyday job because our vehicular population is doubling and our population is growing."

## Quick Facts

 Cars and two-wheelers registered in Delhi as of March 31, 1997: **2.4 million**

 Estimated number of vehicles in India in 2030: **400 million**

 Delhi Metro serves **2.7 million** people every day

 Delhi's population: **25 million**

 **78%** of vehicles in the country are required to adhere to less stringent BS III norms

 Shifting to more stringent BS IV norms by 2017 and BS VI norms by 2020, countrywide, could reduce particulate matter pollution by **55%**

 VEHICLES REGISTERED IN DELHI AS OF MARCH 31, 2014: **8.3 million**

 CARS AND TWO-WHEELERS REGISTERED IN DELHI AS OF MARCH 31, 2014: **7.9 million**

 VEHICLES REGISTERED IN DELHI AS OF MARCH 31, 1997: **2.6 million**

### Pollutants & Health Impact

#### Nitrogen oxides (NOx)

Created during combustion when motor engines burn a small proportion of the nitrogen present in the air plus nitrogen compounds found in vehicle fuels.

#### Fine Particulate Matter (PM2.5)

Some of these tiny particles are formed during combustion (primary PM); others are formed in the atmosphere through chemical reactions between the various pollutants found in exhaust (secondary PM). PM2.5 may contain substances including metals, acids, carbon, and polycyclic aromatic hydrocarbons.

#### Effects

Created during combustion when motor engines burn a small proportion of the nitrogen present in the air plus nitrogen compounds found in vehicle fuels.

#### Effects

Some of these tiny particles are formed during combustion (primary PM); others are formed in the atmosphere through chemical reactions between the various pollutants found in exhaust (secondary PM). PM2.5 may contain substances including metals, acids, carbon, and polycyclic aromatic hydrocarbons.

#### Volatile organic compounds (VOCs)

VOCs are a large class of carbon-containing compounds. In vehicle exhaust, VOCs come from partially-burned fuel.

Additional VOC emissions come from evaporation of fuel.

EFFECTS: Long term exposure can lead to cancer

#### Carbon Monoxide (CO)

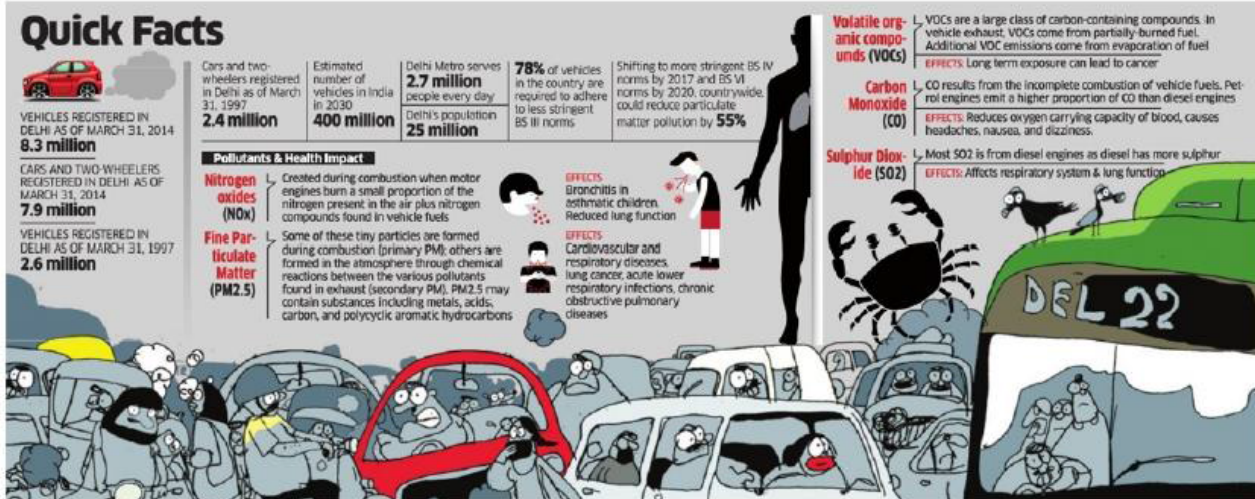
CO results from the incomplete combustion of vehicle fuels. Petrol engines emit a higher proportion of CO than diesel engines.

EFFECTS: Reduces oxygen carrying capacity of blood, causes headaches, nausea, and dizziness.

#### Sulphur Dioxide (SO2)

Most SO2 is from diesel engines as diesel has more sulphur.

EFFECTS: Affects respiratory system & lung function.



ANIRBAN BORA



# Noida air quality worse than Delhi's in winter

TIMES NEWS NETWORK

New Delhi: Air quality in Noida this winter seems to have been even worse than Delhi's. It recorded 33% 'severe' days and 46% 'poor' days, compared to 7% severe and 58% poor days in 2013-14.

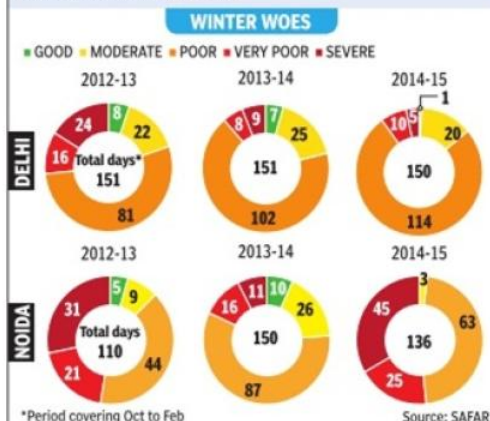
System of Air Quality Weather Forecasting and Research (SAFAR) has categorized each day's PM2.5 (fine, respirable particles) level under five heads: good, moderate, poor, very poor and severe as per the air quality index (AQI). The concentration range of PM2.5 in the 'poor' category is 90-210 micrograms per cubic metre while the safe standard is 60.

This week, Prime Minister Narendra Modi will launch AQI for 10 cities, including Delhi, under Ministry of Environment, Forests and Climate Change (MoEFCC). An hourly AQI will be available on the ministry's website.

So many poor-air-quality days usually call for health precautions such as minimizing physical and outdoor activities of vulnerable people such as the old and those with cardiac or respiratory conditions. But in the absence of a health advisory for air pollution in India, many

## NOT OKAY TO BREATHE

Air quality index shows the daily air quality with colours and numbers. It tells people how clean or polluted the air is and how it will affect health



may not even have known about the bad quality.

"Those with heart disease, COPD, asthma or allergies suffer a lot during poor-air-quality days. Those with heart disease can even collapse. Use of drugs increases, which has its own side effects," said Dr T K Joshi, director, Centre for Environment Occupational and Health (CEOH).

Recently, Joshi has recommended to the Delhi government that a health advisory be issued and a special prevention strategy be prepared for schools.

"The class teacher should monitor PM10 (coarse pollutants) and PM2.5 regularly. Children's physical activity should be restricted if there is severe or very-poor air quality," he suggested.

The Times of India, Delhi dated April 06, 2015

The Times of India, Delhi dated April 07, 2015

# Rules on construction waste in 15 days: Minister

TIMES NEWS NETWORK

New Delhi: The Centre is to come up within 15 days with rules and guidelines for handling construction waste and dust, one of the major causes of air pollution in the cities.

Announcing this at a conference of state ministers, environment minister on Monday said, "Construction waste is a big contributor to air pollution in Delhi. We will bring in rules within next 15 days...Today ministers from all the state governments in NCR region are here. We will discuss it with them and come out with details."

The rules for Delhi would be framed by the environment ministry in consultation with Central Pollution Control Board (CPCB) and experts from construction and infrastructure sectors. Other cities will also use the guidelines for managing construction waste.

Identifying construction dust as one of the key reasons of air pollution in the capital, the environment ministry has studied the best practices



SEEKING A CONCRETE PLAN

followed by the Delhi Metro to deal with the issue and would incorporate it in the guidelines.

In an interview to TOI last month, Javadekar had said since construction work would continue as Indian cities are growing, the government would have to find ways to handle the issue. Citing Delhi Metro's example, he had said "We need to implement similar standards for construction in all sectors."

The guidelines would deal with handling the dust issue, both during construction

as well as post-construction phases. It will also frame rules for recycling so that the debris can be converted into ready-mix concrete, pavement blocks and concrete bricks.

Though three municipal corporations in the city have designated 168 sites for dumping such waste, transporters hired by contractors dump the debris at low-lying areas or on the banks of Yamuna. At present, Delhi generates 4000 tonnes of debris everyday but only 10% of it is processed.

# Gulf dust storm makes Mum India's most polluted

Malathy Iyer & Vinamrata Borwankar

Mumbai: Mumbai has trounced Delhi as India's most polluted city on two consecutive days starting Sunday. The US embassy's air quality index (AQI) readings for the area around its embassy in New Delhi and consulate in Mumbai at 10 am on Sunday showed that particulate matter in Mumbai stood at 183 as against 173 in Delhi. Monday's readings were 201 in Mumbai compared to 197 in Delhi.

But this "dangerous" reading is likely to be temporary as it was caused by the remnants of a dust storm that originated in the Arabian peninsula and crossed the Arabian Sea into Mumbai. Experts say the resulting haze over the city most possibly contained PM2.5—the term for particulate matter, or particles, whose diameter is less than 2.5 micrometres. PM2.5 is considered dangerous because it could worsen the plight of patients suffering from heart diseases, respi-



ARAB CLOUD: A dust storm over Navi Mumbai

ratory problems such as asthma, or lung cancer.

AQI has emerged in recent times as an indicator of a city's overall air quality. Last year, Beijing and New Delhi made headlines for their poor AQI (on Monday, Beijing's AQI stood at a moderate 53).

Mumbai is likely to limp back to normalcy within a day, said experts. But anti-pollution activists like Sumaira Abdulali said Monday's readings should make Mumbaiers realize that the sea cannot always drive away pollutants. "The sea does

help in keeping air pollution low, but it can only help so much. The pollutants, moreover, come back in the form of water vapour or rain and get into our food chain," she said.

Indeed, air pollution is still an issue in Mumbai, but its levels have dropped since leaded petrol was banned almost two decades ago. Levels of carcinogenic sulphur dioxide have come down drastically in suburbs like Bandra, as per Maharashtra Pollution Control Board's charts.

For the full report, log on to [www.timesofindia.com](http://www.timesofindia.com)

The Times of India, Delhi dated April 07, 2015

# Choking India gets air quality index

Vishwa.Mohan@timesgroup.com

New Delhi: With Prime Minister Narendra Modi launching a national air quality index (AQI), India on Monday joined a global club which includes the US, France, China and Mexico that have implemented such an alert system. The system will give details of air quality and information on its likely health implications for city dwellers.

India's AQI will initially be available to people in 10 cities — Delhi, Faridabad, Agra, Kanpur, Lucknow, Varanasi, Ahmedabad, Bangalore, Chennai and Hyderabad. It will help people in these cities take precautions on days when the air quality is particularly poor.

Other cities, including Mumbai, Kolkata and Chandigarh, will come under the national indexing network in a couple of months when their pollution control boards

are ready with the new and updated round-the-clock monitoring stations.

► Pollutant watch, P 12



The Times of India, Delhi dated  
April 07, 2015

# Dwarka air quality worst on Day 1 of index

## City Fails On Debut; 3 Of 5 Monitoring Stations Record Very High Pollution

TIMES NEWS NETWORK

The air quality index launched by Ministry of Environment and Forests on Monday confirmed that piecemeal measures will not curb air pollution. Of the five stations monitored in Delhi, three recorded 'poor' air quality while data from the rest was insufficient to compute a report.

Dwarka recorded the worst air quality on Monday, with a 'poor' AQI of 251 on a scale of 500. Levels of NO<sub>2</sub>, CO, PM<sub>2.5</sub> and SO<sub>2</sub> touched moderate levels at least once a day. PM<sub>2.5</sub>, the deadliest respirable pollutant, peaked between 11pm and 1am and remained on the higher side till 8am. Dwarka had the highest PM<sub>2.5</sub> levels among the five stations.



At Shadipur, the level of NO<sub>2</sub> shot up to 249 around 8am while PM<sub>2.5</sub> reached 'very poor' levels at 10pm and continued there till 8am. IHBAS in Dilshad Garden, the third location with a 'poor' AQI, saw PM<sub>2.5</sub> climb to 'very poor' levels between 10pm and 2am and then again between 7am and 9am.

The AQI confirms that Delhi is dealing with an

extremely unhealthy level of PM<sub>2.5</sub> while ozone is threatening to get out of hand as the summer sets in. The high levels of PM<sub>2.5</sub> are worrying as it can lodge inside lungs and have severe health effects. It is emitted by vehicles, power plants and burning of organic matter, among other processes.

While experts welcomed the launch of the AQI, they said the government needs to draw up a road map to deal with the pollution. "It is good that the government is finally taking ownership of air quality data and informing people of the possible health consequences but it needs to draw up a contingency plan to deal with days when pollution levels remain consistently high," said Anumita Roychowdhury, executive director, Centre for Science and Environment. "The results shown by the AQI on Monday were not surprising since Delhi already has another AQI system in place under Delhi Pollution Control Committee. The government needs to integrate the two systems and will have a very good network at its disposal."

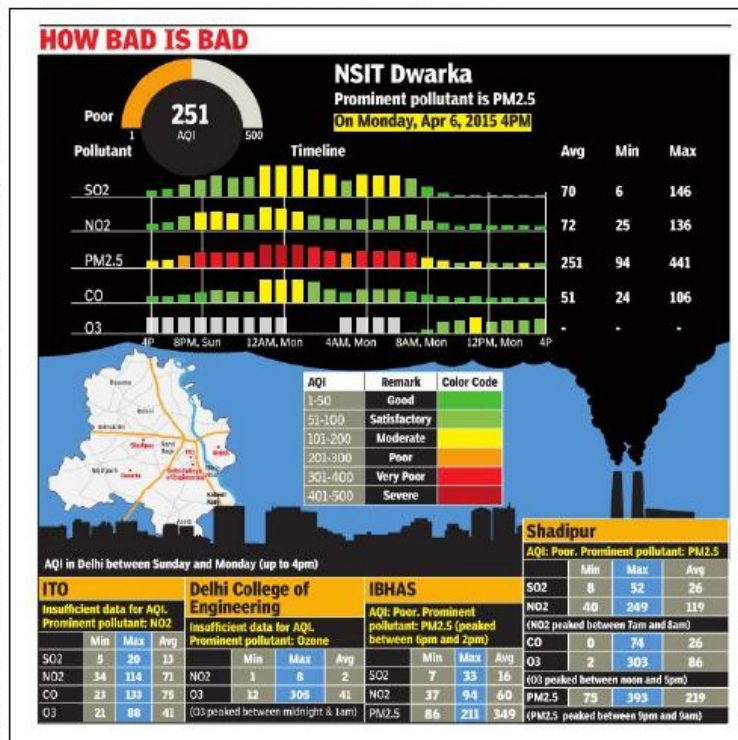
Randeep Guleria, head of the department of pulmonary medicine at AIIMS, said the AQI should help the government decide what measures are needed to deal with pollution levels on "bad" days.

By knowing the likely pollution levels in advance, the government can take steps to inform people and prepare ac-

cordingly, Guleria said. "With this data, the government has to draw up a long-term strategy, specifically to spread awareness among people. Right now, it seems that the public is not particularly aware of how it is contributing to rising pollution levels and its participation is needed if the levels need to be brought down."

Aishwarya Madineni, a Greenpeace campaigner, said, "Our air quality survey conducted inside schools across Delhi revealed that schoolchildren are consistently being exposed to unacceptable levels of pollution. Delhi is facing a public health emergency and an Air Quality Index needs to be matched with

actionable plans to bring down the pollution levels, with a health advisory at the very least." She said Beijing uses its AQI not merely to say how bad the air is but to ensure that immediate action is taken to minimize the health impact on the public.



**SHROUDED IN HAZE:** Dry leaves, plastic and other forms of waste being burnt inside the Hauz Khas heritage complex flouting a ban. It poses a health hazard to visitors



# Change lifestyles, save environment, says Modi

Vishwa.Mohan@timesgroup.com

New Delhi: Emphasizing that the threat of climate change can be countered by making lifestyle changes, PM Narendra Modi on Monday suggested some energy-saving practices like switching off street lights on full-moon nights and using bicycles at least once a week.

The PM suggested that the option of switching off street lights on moonlit nights could be explored after taking "people into confidence". He said steps like using bicycles once a week, like on Sundays, could go a long way in saving energy and the climate. While suggesting the options at a conference of state environment ministers, the PM took a dig at possible critics of his ideas, saying they would accuse him of being an "agent of cycle manufacturers".

He even told the audience that many people in 'English-influenced' urban societies would laugh at such suggestions and would "entertain you for another 48 hours (through TV debate or general discussions) as they are people of a different mindset".

While not discounting the modern technological methods to reduce carbon emissions, Modi stressed on traditional means to save energy including recycling practices. Elaborating on some such practices, the PM referred to the tradition in villages where grandmothers would teach grandchildren how to thread a needle on full-moon nights. He said the present generation remains cut off from such practices. The PM urged urban bodies to revive such traditional practices and use full moon nights to switch off street lights. The thread-needle practice could be celebrated as "festival" on 'Purnima'.

For the full report, log on to [www.timesofindia.com](http://www.timesofindia.com)

## NATIONAL AIR QUALITY INDEX LAUNCHED

**10** cities where people can get information on actual air quality and its health implications: Delhi, Agra, Kanpur, Lucknow, Varanasi, Faridabad, Ahmedabad, Chennai, Bangalore and Hyderabad

➤ Most of the monitoring stations in these 10 cities started displaying the index from Monday (April 6)

➤ Index can be accessed from websites of Union environment ministry or respective state pollution control boards

➤ AQI scheme reflects 'one colour one code' for different types of air quality (good, satisfactory, moderate, poor, very poor and severe)

➤ 46 other million-plus cities and 20 state capitals will have similar air quality index in next one to two years

➤ Each of these cities will have 6-7 monitoring stations with AQI display boards



AQI SCHEME		
AQI	Colour code	Likely health implications
1-50	Good	Minimal impact
51-100	Satisfactory	Minor breathing discomfort to sensitive people
101-200	Moderate	Breathing discomfort to people with lungs, asthma & heart disease
201-300	Poor	Breathing discomfort to most people on prolonged exposure
301-400	Very Poor	Respiratory illness of prolonged exposure
401-500	Severe	Effects healthy people & serious impact to those with existing diseases

## Eight pollutants will be under index's watch

➤ Continued from P 1

All metropolitan cities and state capitals that do not get access to the Air Quality Index will have a similar facility made available to them within a year or two.

The central agencies have taken into account eight pollutants: PM2.5, PM10, nitrogen oxides, sulphur dioxide, ozone, carbon monoxide, ammonia and lead while calculating and releasing the AQI. The index, using continuous 24-hour average data, will be made available daily from various monitoring stations

The index has been developed by the Central Pollution Control Board in consultation with IIT, Kanpur and other expert groups

in those cities.

The move, which will not only enhance public awareness but also create a competitive environment among cities to mitigate air pollution, was welcomed by environmentalists and think-tanks.

For the full report, log on to [www.timesofindia.com](http://www.timesofindia.com)

The Times of India, Delhi dated April 07, 2015

The Times of India, Delhi dated April 08, 2015

# Make diesel clean and check its sale: Activists

Neha.Lalchandani@timesgroup.com

New Delhi: The decision to ban diesel vehicles that are over 10 years old from Delhi has been welcomed by environmentalists though they have voiced their concern about how the order will be implemented and its fallout.

Former Central Pollution Control Board (CPCB) member-secretary Dr B Sengupta pointed out, supply of food items, i.e. vegetables etc, especially from other states, is dependent on trucks that run on diesel. The government should have a concrete plan in place to ensure that supplies are not affected if these trucks are stopped from entering Delhi, he said. "It is a fabulous order for the environment. Around 50,000 or so trucks enter Delhi at night and cause massive pollution. We have been asking for the trucks to be fitted with diesel particulate filters for a long time. However, I can only wonder how they will implement it. How will grain, vegetables etc come into the city now," he said.

Anumita Roychowdhury,

associate director of Centre for Science and Environment, said the order was implementable. What she is concerned about is the rapid dieselization of vehicles. "A diesel vehicle emits three times more NOx and seven times more particulate matter than a petrol vehicle. This means that removing one diesel car is equivalent to removing three to



seven petrol cars. However, to bring totality to this order, the huge sales in diesel cars must be discouraged. The action taken by banning older vehicles will be negated by rapid dieselization. The quality of diesel available in India is as it is 10 years behind the technology being used in Europe. It is imperative to make clean diesel available in India," she said.

The demand for a strong policy and a better regulatory

mechanism was echoed by Greenpeace's Aishwarya Madineni. Welcoming the court order, she said the government simultaneously needs to strengthen its regulatory mechanism, like manufacturing and diesel quality. "Diesel vehicles have been identified as one of the primary sources of vehicular emission, but I cannot say how long the government will be able to sustain the court orders. What will help will be measures like stringent emission standards and improvement in quality of diesel," she said.

Roychowdhury added that the government needs to also look at additional measures like waste management if such an order is to be implemented. "We should not remove one form of pollution, only to shift it elsewhere. When these vehicles are phased out from Delhi, one needs to figure out how they are to be disposed of. We need a very strong scrap management system along with a recycling policy. In fact, manufacturers should be forced to make vehicles that are largely recyclable," she said.

The Economic Times, Delhi dated April 08, 2015

# Harvard Professor Versus Star Pupil in Climate Case



OPPOSING SIDES: Laurence Tribe is not

CORAL DAVENPORT

Washington: Laurence H. Tribe, the highly regarded liberal scholar of constitutional law, still speaks of President Barack Obama as a proud teacher would of a star student. "He was one of the most amazing research assistants I've ever had," Tribe said in a recent interview. Obama worked for him at Harvard Law School, where Tribe has taught for four decades.

Tribe went on to serve in the Justice Department during Obama's first term and has argued in favour of the legal standing of Obama's signature health care law and executive orders on immigration.

Which is why so many in the Obama administration and at Harvard are bewildered and angry that Tribe, who argued on behalf of former Vice President Al Gore in the 2000 Bush v. Gore Supreme Court case, has emerged as the leading legal opponent of Obama's ambitious efforts to fight global warming.

resent Peabody Energy, the nation's largest coal company, in its legal quest to block an Environmental Protection Agency regulation that would cut carbon dioxide emissions from the nation's coal-fired power plants - the heart of Obama's climate change agenda.

Next week Tribe is to deliver oral arguments for Peabody in the first federal court case about Obama's climate change rules. Tribe argues in a brief for the case that in requiring states to cut carbon emissions, and thus to change their energy supply from fossil fuels to renewable sources, the EPA is asserting executive power far beyond its lawful authority under the Clean Air Act. At a House hearing last month, Tribe likened the climate change policies of Obama to "burning the Constitution."

To Republicans who oppose Obama's climate change agenda, Tribe is a celebrated convert. "When I saw the brief, I thought, this is

Washington energy lobbyist. "And the fact that it was written by a guy on the other side made it even better."

Sen. Mitch McConnell, R-Ky, and the Senate majority leader, has frequently cited Tribe's brief in speeches and letters as part of a campaign urging governors not to comply with the climate change rules. "As iconic left-leaning law professor Laurence Tribe put it, the administration's effort goes far beyond its lawful authority," McConnell wrote in an op-ed article in The Lexington Herald-Leader last month.

To many Democrats and professors at Harvard, Tribe is a traitor:

"The administration's climate rule is far from perfect, but sweeping assertions of unconstitutionality are baseless," Jody Freeman, director of the environmental law program at Harvard Law School, and Richard Lazarus, an expert in environmental law who has argued over a dozen cases before the Supreme Court,

on the Harvard Law School website. "Were Professor Tribe's name not attached to them, no one would take them seriously."

Tribe's legal claims, they concluded, are "ridiculous."

Tribe dismissed the criticism and said that his brief and comments reflect his views as a constitutional scholar, not as a paid advocate for the coal company. "I'm not for sale," he said. "I'll say what I believe."

"I feel very comfortable with my relationship with Peabody," he added. "Somebody wanted my help and it happened to coincide with what I believe."

It is widely expected that the fight over the EPA regulations will eventually go before the Supreme Court. If it does, Tribe said that he expects he "may well" play a role in that case - which would be argued before two other former students, Chief Justice John G. Roberts Jr. and Justice Elena Kagan.

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The Times of India, Delhi dated  
April 08, 2015

# Green tribunal bans diesel vehicles over 10 yrs old in city

## Border Checks For Entrants From Outside

Neha Lalchandani &  
Rumu Banerjee | TNN

New Delhi: In an order that could improve Delhi's deteriorating air quality if implemented effectively, the National Green Tribunal on Tuesday prohibited diesel

**FULL COVERAGE: P 4**

vehicles over 10 years old from plying in the capital. A five-member bench, headed by NGT chairperson Swatanter Kumar, said while such vehicles would be phased out in Delhi, those coming from other states would not be allowed to enter the city.

The order follows a similar one passed by NGT last November that had banned

## 'SYSTEMS TO BE IN PLACE WITHIN 20 HOURS'

► All entry & exit points into Delhi to have weigh bridges, pollution under control check and mechanism to determine age of vehicles within 20 hours, directs tribunal

► Vehicles that fail to meet standards will not be permitted entry into Delhi

► Commissioners appointed by court to report on preparations at entry points on date of next hearing, April 10

► Transport department to compile list of diesel vehicles registered in Delhi that are 10 years or older

Private diesel vehicles older than 10 years  
**1.19 lakh**

Commercial diesel vehicles older than 10 years  
**34,659**



Total private diesel vehicles  
**5.38 lakh**

Commercial diesel vehicles  
**8.65 lakh**

All figures of vehicles registered in Delhi

all vehicles over 15 years old from plying in Delhi. For various reasons, the government failed to implement that order.

Sources said higher emissions by diesel vehicles compared to petrol ones and lax quality and emission standards prompted the bench to take a stern view. The order comes into effect immediately

though enforcement may take a while to start.

The bench also directed the government and various agencies concerned to ensure that inter-state vehicles that flouted pollution norms or were diesel vehicles older than 10 years were not allowed into Delhi.

► Border vigil, P 4

# 1.5 lakh vehicles to be affected in Delhi

## Up And Up: 40% Of Four-Wheelers Registered Daily In Capital Run On Diesel

Rumu Banerjee  
@timesgroup.com

New Delhi: According to a 2013 study by the petroleum planning and analysis cell of the Centre, private cars and utility vehicles consume 34.7% of diesel sold in the city. In case of petrol, 56.9% is consumed by cars and 41.8% by two-wheelers. However, diesel as a fuel has been making inroads in the city. In 2000, it accounted for only 4% of the total vehicle sales while today, its share is almost 40%.

Out of the 82 lakh vehicles registered in Delhi, over 6 lakh are diesel vehicles. According to the figures provided by the transport department, there are 5,38,098 private diesel vehicles and 86,546 commercial vehicles registered in Delhi.

The number of vehicles to be affected by the National Green Tribunal (NGT) order is estimated to be 1,18,773 private vehicles and 34,659 commercial vehicles.

Interestingly, the increase in diesel vehicles has happened in the past few years. In Delhi, 1,400 vehicles are registered every day. Of these, 40% of the four-wheelers run on diesel, say transport officials. The government has been finding it

## CIVIC BODIES ASKED TO ACT

Three corporations to submit report on open burning of waste



Ongoing construction projects in NCR to follow December 4, 2014 NGT order on construction with minimal impact on environment



No hawkers or stationary vehicles to be permitted on metalled roads in Lajpat Nagar, Chandni Chowk, Karol Bagh



## HOW THE NGT ORDER WILL IMPACT AIR QUALITY



**Makes diesel cars seriously less attractive** | It's no longer about mileage comparisons between petrol and diesel variants of the same car. A petrol variant costs substantially less and can be kept for 50% longer time (15 years vs 10 years)

**Phases out the most polluting vehicles** | Euro-II norms for diesel vehicles were implemented in Delhi-NCR in 2005. By banning diesel vehicles older than 10 years, the order automatically lays the ground for eliminating pre-Euro-II diesel vehicles

difficult to check this trend. Subsidized diesel prices have meant that cleaner fuels like CNG or even petrol have lost out. And with the government failing to implement the various orders passed by Supreme Court, NGT or even EPCA

(Environment Pollution Control Authority), pollution levels in the city have breached limits.

Earlier, too, banning of vehicles had been proposed. Last year NGT had banned vehicles older than 15 years but the decision has been dif-

ficult to implement because of lack of resources as well as political will.

While Delhi government has stopped the re-registration of private vehicles older than 15 years since December 1, the government is yet to take a stand on banning

Out of the 82 lakh vehicles registered in Delhi, over 6 lakh are diesel vehicles. Subsidized diesel prices have meant that cleaner fuels like CNG or even petrol have lost out

plying of such vehicles in Delhi. "The central motor vehicles rules allow plying of such vehicles as long as they have gone through a fitness test," said a senior government official. The Centre will need to amend rules before the state government can implement the ban, point out officials.

Interestingly, earlier orders on banning of commercial vehicles older than 15 years or even the ban on entry of commercial vehicles inside the city that are not destined for Delhi are yet to be implemented. What makes such non-implementation worrying is that as time goes by, the number of vehicles registered in the city is reaching alarming levels.

While in 2000, only 28 lakh vehicles were registered in Delhi, today that figure is 82 lakh. Of that, a huge 52 lakh are two-wheelers.



## Soon, hydrogen from corn may fuel cars

Steve Connor

Scientists have dramatically increased the efficiency of producing clean hydrogen fuel from plant waste in a breakthrough that could one day lead to petrol stations being replaced by a network of roadside "bioreactors" for refuelling cars.

A study funded by Shell Oil has shown that it is possible to convert 100% of the sugar stored in corn stover — the stalks, cobs and husks leftover in a harvested maize field — into hydrogen gas with no overall increase in carbon dioxide emissions.

The process was perfected by mixing raw biomass with a watery solution containing a cock-



END OF PETROL PUMPS?

tail of ten enzymes that turned plant sugars xylose and glucose into hydrogen and CO<sub>2</sub>, said pro-

fessor Percival Zhang of Virginia Tech. Previously, it has only been possible to convert 30%-60%

of the sugars into hydrogen using either fermenting microbes or industrial catalysts. However, the new technique converts 100% of the sugars into hydrogen.

Producing pure hydrogen gas from crop waste and biomass is seen as one of the most important goals of the green economy because of the need to produce clean alternatives to petrol. However, existing methods are inefficient, costly and are dogged by the problem of how to distribute the hydrogen once it is made.

"...we have demonstrated the most important step toward a hydrogen economy — producing distributed and affordable green hydrogen from local biomass resources," Zhang said. THE INDEPENDENT

*The Economic Times, Delhi dated April 09, 2015*

## Deciphering Modi's Climate Change Gambit

Three times now, Prime Minister Modi has aired his views on climate change. With every passing time, his stance is becoming clearer, writes Hari Pulakkat



Prime Minister Modi raised the matter first at the United Nations last year, then when US President Obama visited India, and a third time on Monday this week at the state environment ministers' meeting. The first time the mention was tangential, the second a bit more specific, and the third time he did not mince words. Partly angered by the denial of nuclear fuel to India, Modi said developed countries have no business to lecture India on climate change. On the other hand, India has the ability to guide the rest of the world on how to tackle climate change.

It is not hard to see Modi's philosophy in tackling climate

change. Modi did not imply that India had the technology to combat climate change. Rather, he looked at it from a lifestyle perspective. No one has a solution to the climate change problem yet, and hence we need to make lifestyle adjustments. The traditional Indian way of life, which maximises the use of resources, is one of the best ways of keeping emissions low. This philosophy will be put to test soon, when India publishes its Intended Nationally Determined Contributions (INDC) to the climate change negotiations.

India is the only major carbon dioxide emitter that has not announced an INDC so far. This plan is supposed to announce what

each country will volunteer to do after 2020, and will be the basis on which negotiations will strike a deal this year. Aim of this climate agreement is to keep the average global warming to below 2 degree centigrade from preindustrial levels, an arbitrary limit that was not based on fully scientific arguments, but which with some luck might be just enough to avoid dangerous climate change.

"The uncertainties will increase when the temperatures increase," says J Srinivasan, chairman of the Divecha Centre for Climate Change at the Indian Institute of Science in Bangalore. This limit of 2 degree centigrade was written into the Cancun Agreement in 2010.

It is very hard to meet this goal unless global carbon dioxide emissions start falling very quickly, a goal that seems impossible now. However, all major polluters realise the need to reduce emissions and are announcing their INDCs. The European Union was the first to declare its INDC, and it hopes to achieve 40% reductions in emissions by 2030 compared to 1990 levels. It also proposed a long-term target of 60% reduction from 2010 levels by 2050, which is a relatively aggressive target and within the range of keeping the global warming to within 2 degree centigrade.

Other major countries, however, fall short significantly.

Switzerland, a part of EU, has gone further: it has announced a 35% reduction from 1990 levels by

2025, 50% reduction by 2030 and 75-80% by 2050.

The US, driven by an activist president, submitted its INDC on March 31, the first informal deadline. It plans to reduce emissions by 26-28% over 2005 levels by 2025. China is yet to submit, but has a bilateral agreement with the US, which envisages a peaking



Climate Change: What Next

In December 2015, all nations are expected to sign a historic agreement on climate change.

By October, all nations are supposed to submit their plans to reduce carbon dioxide emissions.

These national plans will form the basis of the agreement, which will come into effect after 2020.

However, this agreement is not expected to be enough to stop significant warming after a few decades.

A weak national plan to reduce emissions will complicate matters for India and could lead to arms twisting in the future.

by 2030 or earlier, and a commitment to a rapid switch to alternative forms of energy quickly.

It is not clear what India will announce, but environmental experts consider this a great chance to prove that the country is serious. "The transition to renewable energy in India will happen in any case," says Arunabha Ghosh, chief executive officer of the Council on Energy, Environment and Water, a Delhi-based think tank. "But the INDCs will be a great opportunity for us to articulate what we are doing." It will, of course, depend on how thoroughly India does its research, how clearly it draws up a plan for a low-carbon growth path and how ambitious that plan will be.

India's plans for renewable energy are extremely aggressive. The country plans to have 100 gigawatts of solar energy capacity by 2022; it has a capacity of just 3.5 gigawatts of solar power now. This would mean a growth rate no country has achieved in solar energy so far. It would also mean setting up substantial manufacturing facilities quickly or facing a huge import bill. Yet, the INDC will reveal India's real commitment. The first informal deadline has already passed. There is one more deadline in June, and then a final deadline in October. Will India be able to produce a credible and thorough plan by then?

There is little indication about how India is working towards an INDC. Sources say that two meetings have been held and some organisations have been given various tasks. How this will end up in a plan is not clear. It is still not clear who will write it in the end. So India is quite slow to react and several questions remain to be asked about India's objective. How deeply researched will the final plan be? And how ambitious?

Analysts point out the dangers of an inadequate plan. "INDCs are where India must do its homework well," says Rahul Tongia, fellow of Brookings India. "Too aggressive is likely to be a top-down push, which may not materialise, while too easy may not be more than business as usual improvements in efficiency and supply." A serious and well-articulated INDC would provide considerable leeway in the climate change talks. It may also mean avoiding being pushed to embarrassing commitments by other nations.

hari.pulakkat@timesgroup.com



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**MICHAEL KOBORI**  
GLOBAL VICE-PRESIDENT  
(SUSTAINABILITY), LEVI'S

From cotton farming to jeans manufacturing to its use, the co is devising ways to save water, says top executive

# 'Levi's wants Consumers to Wash Their Jeans Less'

Live in denims, but wash it less. American denim brand Levi's isn't just preaching, but practicing sustainability at home. Chip Bergh, president and chief executive of Levi Strauss & Co, doesn't wash his pair of denims before it is worn 10 times, while **Michael Kobori**, the company's global vice-president (sustainability) repeats his for at least six months or about 20 times. Levi's loyalists, meanwhile, are taking the #WashLess pledge to wipe off the stigma from the garment that in its lifecycle uses 3,800 litres of water, Kobori tells ET's **Shramana Ganguly** over a telephonic interview. Edited excerpts:

**Denim traditionally has been known to be one of the most polluting textiles. How does Levi's propose to correct that?**

In order to understand the life cycle of denim, Levi's undertook a lifecycle assessment study in 2007 whereby every aspect of the product cycle was scientifically analysed. So the entire value chain from the cotton, yarn, fabric, garment, shipment, right up to the consumer, the water usage was mapped. The study showed a single pair of Levi's uses 3,800 litres of water in its entire lifecycle. What was however, surprising was the fact that contrary to the perception, manufacturing a pair of Levi's consumed a mere 7% of it. Majority 68% was being used up in farms (to grow cotton) and 23%, consumers.

While Levi's continues to have programmes with its suppliers to ensure minimum water usage during the manufacturing process, the brand has since focused its efforts on cotton growers and consumers. Under the Better Cotton Initiative, Levi's and other brands like M&S, H&M, Nike, Adidas along with cotton traders and NGOs are teaching farmers across India, Pakistan, China, Brazil, the US and Africa how to grow cotton sustainably and improve yields. Since 2013, Indian BCI (Better Cotton Initiative) farmers have used 14% less water than their peers and have been 44% more profitable, too. Worldwide, near 1 million farmers are under the BCI programme, accounting for 11% of world cotton produced. This is quite an achievement for any sustainability programme, considering most of the other programmes are struggling at 2-3%.

**What about the 7% water used up in factories that manufacture Levi's?**

While introducing Water<Less products, we had to change certain recipes. We had to ensure same designer look to the garment with less water. For instance, we brought down wash cycles from three to two, the duration of those cycles from 20 minutes to 10 minutes. We introduced ozone gas instead of water in washing machines to give the bleached look to the jeans. Likewise, we brought in lasers to get distressed look in the garment. The technological interventions did need investment but those of our suppliers who did, saved water and costs. When the campaign made financial sense, others joined in. In

## USE MORE, SAVE WATER

We want them to wash jeans less, in cold water (since hot water uses energy)... We don't want consumers to dump jeans when they are finished with it. We seek it be given to charity so that it gets recycled

the past five years, 90 million pair of jeans were made on Water<Less programme.

**What percentage of your product basket is now Water<Less?**

In the last four years, we have achieved to make 20% of Levi's on Water<Less techniques. By 2020, the Levi's brand aims to make 80% of its products using Water<Less techniques.

And then began the #WashLess campaign. We started the outreach and education campaign for our consumers. We want them to wash jeans less, in cold water (since hot water uses energy) and advocate line drying. Also, we do not want consumers to dump a (pair of) jeans when they are finished with the garment. We seek it be given to charity so that it gets recycled. The Care Tag sewn into Levi's jeans has been promoting Wash<Less concept. Our CEO's statement that he never washes his jeans went viral and eventually, consumers spread it through word of mouth.

**How many consumers have taken the Levi's online #WashLess pledge?**

An average consumer in the US and elsewhere washes his jeans after two wears. Although it is hard to track behaviour, consumers seemed to have liked the message. Levi's is now trying to work out a system to track the behaviour. More than 17,300 people have taken the online "Are You Ready to Come Clean?" quiz to understand their behaviour and have pledged to wash less and are urging others to do so through the social media.

**Finally, how many times do you wear your denim before giving it a rinse?**

The one I am wearing right now, has not gone for a wash in the last six months. I have already worn it more than 20 times.





The Economic Times, Delhi dated  
April 10, 2015

# 7,000 trees in this green haven

## NDMC & Green Circle Jointly Conduct Census Of Lodhi Garden Trees To Create Awareness

Risha.Chittangia@timesgroup.com

New Delhi: A total of 7,055 trees of 189 species dot Lodhi Garden, Delhi's green lung. NDMC, which carried out a tree census at the 90-acre garden, released the data on Thursday. The exercise assumes significance in the wake of Delhi being dubbed one of the highly polluted cities of the world.

In the first-of-its-kind survey that was conducted with the help of Green Circle of Delhi, an environmental group, the civic agency has identified some rare species and determined the exact number of each variety, sick trees and shrubs.

P K Tripathi, former chief secretary and commissioner of Public Grievance Commission released the figures on the occasion of 79th anniversary of Lodhi Garden. The aim of the exercise was to protect the green cover and sensitize the people about its importance.

Over the years, NDMC has introduced several new species of

**Over the years, NDMC has introduced several new species in Lodhi Garden. From African olive tree, which was planted in 2008 to mark Mandela's 90th birthday, to rudraksha and medicinal plants like neem, the range is very wide**

trees from across the country and abroad. From African olive tree (*Olea africana*), which was planted in 2008 to mark Nelson Mandela's 90th birthday, to rudraksha to medicinal plants like neem, one can find a wide range of species. But most people, especially those who visit the garden regularly, are unaware of this treasure trove.

Besides palms and bamboos, there are trees with interesting names like chudail papdi (*Holoptelea integrifolia*). "It is called chudail papdi in Hindi because of the texture of its bark," said an official with NDMC's horticulture department. One can find clothes hanging on the branches of Roheda (*Tecomella undulata*), a medicinal tree. There is a belief that if one leaves a piece of his/her cloth on this tree, they will never fall ill.

"We have started the process of numbering these trees. This exercise has helped us identify new trees and determine the exact number of each species," said J P Sharma, director, Horticulture, NDMC.

Members of Green Circle of Delhi stress the need to develop more parks on the lines of Lodhi Garden. "The air quality is rapidly falling. There is an urgent need to expand the green cover and also to

### WALKING THROUGH

New Delhi Municipal Council (NDMC) and Green Circle of Delhi, an environmental group, have conducted a tree census at Lodhi Garden. The idea behind the exercise was to identify various species of trees and sensitize visitors

Number of trees	Number of species	Area of Lodhi Garden	NDMC employees deployed for maintenance
<b>7055</b>	<b>189</b>	<b>90 acres</b>	<b>80</b>

#### WHAT STUDY SEEKS TO ACHIEVE

- To measure, maintain and protect trees
- Sensitize people about this green lung
- Identify sick trees
- Encourage people to plant more trees

#### NOTABLE ONES

- Tallest tree** | Buddha Coconut (*Pterygota alata*)
- Height** | More than 70 feet
- Oldest tree** | Peepal (*Ficus religiosa*)
- It is more than a century old with a girth of 5.3 metres



#### TREES NOT USUALLY SEEN IN DELHI

**RUDRAKSHA** (*Elaeocarpus ganitrus*) | It usually grows in areas stretching from the Gangetic plain in the foothills of the Himalayas to South-East Asia and other countries.

**CAMPBOR** (*Cinnamomum camphora*) | Found in hilly areas

**REETHA** (*Sapindus mukorossi*) | MP, Rajasthan and other states

**SEETA ASHOK** (*Saraca indica*) | Seen mostly in southern part of the country



#### OTHER PLANTS

Herbal	Shrubs	Palm
<b>57 species</b>	<b>17</b>	<b>15</b>
Rose	Bamboo	Climbers
<b>22</b>	<b>8</b>	<b>13</b>

**Tree with a negative impact:** Kabuli Keekar (*Prosopis juliflora*) There are 116 keekar trees.

#### THE EXOTIC GROUP

**Olive** (*Olea africana*) | Africa

**Olive** (*Olea europaea*) | Europe

**Silver Oak** (*Grevillea robusta*) | Australia

**Earpod Wattle** (*Acacia auriculiformis*) | Australia

#### FLOWERING TREES

**Kusum** (*Schleichera oleosa*)

**Blue Gulmohar** (*Jacaranda mimosifolia*)

**Peeli Gulmohar** (*Peltophorum africanum*)

**Dhak or Flame of Forest** (*Butea frondosa*)

#### MEDICINAL TREES

**Neem** (*Azadirachta indica*) | antibacterial properties

**Bael Pather** (*Aegle marmelos*) | It is considered good for digestion and stomach ailments

**Amla** (*Phyllanthus emblica*) | Rich source of Vitamin C

**Arjun** (*Terminalia arjuna*) | for constipation & stomach problems

**Harra** (*Terminalia chebula*) | for constipation and stomach problems

**Roheda** (*Tecomella undulata*) | used in Ayurvedic medicines. Traditionally used for liver and spleen disorder, obesity, cough, stomach pain etc



#### KNOW WHEN YOU SEE:

(Clockwise from left) The tall Buddha Coconut; palm trees form a canopy; the intriguing Chudail Papri; and Seeta Ashok; (top, from left) Jor-tor; Flame of Forest; and the Kusum tree whose red leaves turn green



protect it. Through this, we aim at sensitizing people, especially those who visit Lodhi Garden, and develop a sense of ownership. People's participation will help us make Delhi a green city," Suhas Borker, founder of GCD.

At present, the government doesn't have a count on the number of trees in gardens and parks of Delhi. "It is commonly believed that trees in gardens and parks are protected. But this is not the case. There might be a lot of rare species, which people are unaware of.

We can protect them if a census is done," said Borker, one of the key people instrumental in launching tree census in the city.

The civic agency has been working hard to increase the green cover.

"In the past few years, we have introduced several new variety of trees. We have planted rudraksha, jungle badam, camphor etc, which usually grow in hilly regions," said Babu Khan, additional director of horticulture, NDMC.

Photos: Sanjay Sekhri



*The Economic Times, Delhi dated  
April 10, 2015*

# Per Capita Energy Consumption Fell 0.6% in FY14

An Indian on average consumed about 5,423 units of electricity in this period; PEC has been consistently rising since 2005-06

Sanjeev Choudhary  
@timesgroup.com

**New Delhi:** India's per capita conventional energy consumption fell in 2013-14 after consistently rising since at least 2005-06, recently released government data shows, indicating the country's rising reliance on non-conventional sources of energy such as wind, solar and biomass.

The per capita energy consumption (PEC), a ratio of the estimated total energy consumption during the year to the estimated mid-year population, fell 0.6% to 19,522 mega joules in 2013-14 from last year. In other words, an Indian on average consumed about 5,423 units—a unit of electricity is equal to one kilowatt-hour—in 2013-14 for lighting up homes and streets, running factories, irrigating farms and driving cars and trucks. Since the data used by the government to calculate PEC does not include figures for non-conventional sources, the PEC effectively becomes per capita conventional energy consumption.

## Green Trend Visible

### SIGNS OF CHANGE

■ **Data on energy** released by govt shows country's rising reliance on renewable energy such as wind, solar & biomass

■ **Renewable sources** comprise about 12% of our electricity generation capacity

■ **In next two years**, India plans to add about 20,000 MW of green energy capacity

■ India's energy intensity declined at a faster rate of 3.85% in 2013-14

■ Energy intensity declined at an annual rate of 1.30% between 2005-06 & 2013-14



**"This means the non-conventional energy has probably started playing a major role in the economy. This also signifies that the conventional energy isn't growing at the same pace as the population"**

**NS Varadani**  
Principal Research Scientist  
at Gujarat Energy Research & Management Institute

tional energy consumption. Between 2005-06 and 2013-14, PEC rose 4.53% annually, showing a rising energy demand in a country that grew at a rapid pace in most of these years.

Another trend, the government data show, is the fall in energy intensity, which is the amount of energy consumed for producing one unit of gross domestic product (GDP). India's energy

intensity declined at an annual rate of 1.30% between 2005-06 and 2013-14. The decline, however, accelerated to 3.85% in 2013-14. The data again factors in only the conventional energy.

The decline in both PEC and energy intensity in 2013-14 signifies a shift in the trend. "This means the non-conventional energy has probably started playing a major role in the economy,"

said NS Varadani, principal research scientist at Gujarat Energy Research & Management Institute. "This also signifies that the conventional energy isn't growing at the same pace as the population." Declining energy intensity, however, cannot be taken to conclude that the country is becoming more energy-efficient as it has not done much on this front yet, Varadani said.

The availability and consumption of conventional sources of energy such as coal, gas and oil has been constrained because of unimpressive growth in local production and price imports.

The past few years have seen most of India's coal and gas-fired plants working below capacity due to lower availability of cheaper local fuel and inability of cash-strapped distribution companies to buy power generated by expensive imported fuels. About 24,000 MW of gas-fired capacity is idle or underutilised in the country. Wind, solar, biomass and other sources of non-conventional energy have risen in their contribution to India's overall energy consumption in the past decade. Renewable sources comprise about 12% of the country's electricity generation capacity.

*The Times of India, Delhi dated  
April 13, 2015*

# Govt cracks whip on open waste burning

## Finalizing Checks; NGT To Issue Orders Soon

TIMES NEWS NETWORK

**New Delhi:** The Delhi government has issued directions to all 11 deputy commissioners to carry out surprise checks and regular inspections in their respective areas to crack down on open burning of waste, including leaves and plastic.

Environment minister Asim Ahmed Khan said similar directions had earlier been given to the three municipal corporations of Delhi, New Delhi Municipal Council, PWD, CPWD, DDA, Delhi Pollution Control Committee (DPCC), and Delhi Parks and Garden Society.

DPCC constituted teams a few days ago which have already carried out inspections at 207 locations. The department has forwarded a list of sensitive locations to the three corporations and Delhi Police.

National Green Tribunal has identified open burning of waste as one of the three main reasons for rising air pollution in Delhi and is expected to issue orders to curb it later this week. While it is already un-

**Your search to find someone to blame for Delhi's pollution stops at YOU**



## POLLUTION TERROR

AIR QUALITY INDEX		PM2.5
Delhi	177	Moderate
Tomorrow	142	Moderate
Pune	75	Good
Tomorrow	81	Good
Kolkata	63	Good
Mumbai	57	Good

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

lawful to burn waste in Delhi, authorities were never able to enforce the ban.

Sources said the environment department is finalizing a series of measures to discourage open burning, including penalty for defaulters. DPCC has issued a WhatsApp helpline number—9717593574—on which complaints can be made. The department has also started a Facebook page. The complaints received here will be sent to the local bodies and Delhi Police for action.

The minister also announced that an extensive campaign will be started across Delhi to make residents aware of the harmful effects of burning of garbage, leaves and plastic in the open. As part of this campaign, the environment department has directed the corporations, NDMC, DDA and other agencies to put up hoardings near parks displaying helpline numbers and highlighting the harmful effects of open burning of garbage. It will be carrying out similar campaigns on radio and social media.



The Times of India, Delhi dated April 13, 2015

# Improve air to better kids' lung function

Durgesh Nandan Jha  
@timesgroup.com

**New Delhi:** When we read about Delhi being the most polluted city in the world, many of us are horrified. We worry about the damage being done by pollutants to our children's health—if it can ever be undone. Well, the United States has managed to do just that.

A study published in the New England Journal of Medicine shows how government action to curb pollution in Southern California from 1994 to 2011 has helped improve children's lung function.

The researchers tracked lung function of children from public schools in five most polluted locations in Southern California—Long Beach, Mira Loma, Riverside, San Dimas and Upland. They took repeated measurements of the children's ability to breathe as they grew from the age of 11 to 15 years.

The results show that, as air quality improved, the number of children with abnormally low lung function fell by over 4%—from 7.9% (1994-1998) to 6.3% (1997-2001) and 3.6% (2007-2011). The lung growth of the subjects got better by over 10% during the study period.

## AMERICA SHOWS THE WAY



Southern California

A study conducted in Southern California establishes the link between air quality and lung function of children

**STUDY PERIOD** | 1994-1998, 1997-2001, 2007-2011

**NO. OF PARTICIPANTS** | 2,120 (children who were 11-year-old at the beginning of the study and 15 years at the end)

**TESTS DONE** | Lung function tests to assess improvement or deterioration

### Findings

Significant decline in levels of PM2.5 and nitrogen dioxide in air. Changes in PM10 and ozone levels modest

In Mira Loma, one of the areas covered, the highest levels of particulate matter declined from 31.5 microgram per cubic metre to 17.8 microgram per cubic metre—a 43% reduction

As pollution declined, percentage of children with poor lung function (less than 80% of lung capacity) dropped from 7.9% in mid-1990s to 3.6% in 2011



### YOUR LUNGS FILTER

**10,000** litres of air every day! Oxygen—420 litres, carbon dioxide—350 litres  
**10,000** litres of blood every day

### Steps taken by administration

Extensive use of clean fuels  
Rapid introduction of clean vehicles

Cutting down on emission from all sources  
Reduction in vehicle miles and trips taken



New trading system imposes an annual limit on amount of sulphur dioxide & oxides of nitrogen that industrial units could emit



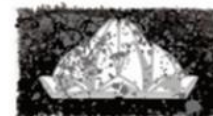
### COMMON ILLNESSES

**Children** | Poor lung growth, respiratory tract infections, asthma  
**Adults, elderly** | Asthma, respiratory tract infection, lung cancer



ardous, but average presence of such pollutants in Delhi is 150-200 micrograms," said Dr Sundeep Salvi, director of the Pune-based Chest Research Foundation.

The number of motor vehicles in India, a major contributor to air pollution, has gone up from 37.2 million in 1997 to over 100 million. "National Green Tribunal's order banning all diesel-run vehicles older than 10 years in Delhi is a welcome step. The government should ensure



**LET DELHI BREATHE**

100% enforcement of the order and immediate steps should be taken to improve public transport," said a senior doctor at All India Institute of Medical Sciences.

He added that cases of chronic bronchitis, allergies, persistent cough and inflammation of airways have gone up in the last few years. "People who smoke are at a double risk. Many smokers—aged 25-30 years—who come to us have the lung function of a 70-year-old," the doctor said.

"Till date, we only conjectured that pollution impacts lung function of healthy people. This study provides clinching evidence. But, on the brighter side, it gives us hope that the crisis can be overcome by adopting stringent measures," said Dr

Arup Basu, chest specialist at Sir Ganga Ram Hospital. Southern California faced acute crisis on account of air pollution in the 1980s, thanks to a large motor vehicles fleet and industries.

"The local government came up with strong laws—

still the world's most stringent. It adopted the first coordinated air pollution control programme. Their vehicles are well-maintained and best quality fuel is used... In California, even 40 micrograms of particulate matter per cubic metre is considered haz-

The Economic Times, Delhi dated  
April 14, 2015

## Big Wind Energy Cos in India Foraying into Solar Space

Gamesa, Suzlon & Mytrah to infuse huge funds in sector buoyed by govt's focus on solar energy

Anindya Upadhyay  
@timesgroup.com

### Diversification Strategy

#### MYTRAH ENERGY

- Plans to invest a total of \$400 m
- Of which, it will invest \$100 m in solar biz over next one year
- Intends to install nearly 100 MW of solar energy projects

**GAMESA** Plans to install up to 500 MW in next two years

#### SUZLON

- Plans a hybrid model of wind & solar energy
- Solar plants & wind turbines will be set up on same lands
- Company will install 500 MW over next few years



**New Delhi:** Big wind energy companies in India such as Gamesa, Mytrah and Suzlon are all diversifying into solar space this year with plans to invest several hundred million dollars in the next five years in installing thousands of solar megawatts, given the government's impetus to the sector.

While London's Alternative Investment Market (AIM)-listed Mytrah Energy (India) Ltd, which is an independent power producer, plans to invest a total of \$400 million, of which \$100 million would be in equity over the next one year solely in setting up its solar business, Gamesa India will invest euros 200 million over the next two years for its overall operations, as it diversifies into solar space this year.

"We don't want to depend on

only one kind of fuel. Last year, the prices in solar were high and we didn't want to do subsidy-driven business as it is not sustainable. We're waiting for tenders related to National Solar Mission now and hope to be in the 1,500-2,000 MW range over the next 5-7 years," Vikram Kailas, MD at Mytrah Energy, told ET.

The company intends to install nearly 100 MW of solar energy projects over the next one year, he added. Similarly, the Indian subsidiary of Spanish wind turbine maker Gamesa, which has the largest wind energy market-share in the country, is also diversifying into solar power this year with plans to install 100 MW going up to 500 MW in the next two years.

"I have a target of 100 MW of solar EPC, rooftop installation

and village electrification this year but we might exceed this as we're talking to both domestic and foreign developers who are talking to us for large solar power plants and we're giving them turnkey solutions. We'll also venture into off grid with net metering," said Gamesa India CMD Ramesh Kymal.

Solar energy, said Kymal, is the way forward for India in the long term as the country has more sunshine than wind. Wind turbine maker Suzlon, meanwhile, plans a hybrid model of wind and solar energy; whereby solar plants will be set up on the same land as wind turbines. This is intended to save the company from land issues and overcome power evacuation hurdles as grid is available near wind farms. Its target is to install 500 mw over the next years.



# 'Global warming behind freak rains'

Amit.Bhattacharya  
@timesgroup.com

**New Delhi:** Global warming coupled with changes arising out of an evolving El Nino may have combined to cause the heavy spells of unseasonal rain which have devastated crops in many parts of India since late February, a leading meteorologist has said.

India received nearly double its average rainfall this March, making it the wettest March in 48 years, and the second wettest since record-keeping began in the country. Rains and hailstorms have continued into April, compounding crop losses in many states across north and central India.

M Rajeevan, director of Pune's Indian Institute of Tropical Meteorology, said western disturbances (WDs),

## Chances of El Nino grow to 70%

Prospects of an irregular monsoon this year have increased, with the Australian weather agency on Tuesday raising the chances of an El Nino occurring this summer to 70%, up from 50% in its previous update. El Nino is the periodic warming of waters in central and east Pacific Ocean which leads to changes in wind patterns that impact weather across large parts of the globe. An El Nino generally depresses the summer monsoon in India, although that's not always the case. The Australian update comes five days after the national weather agency of the US put out a similar forecast, raising its odds of an El Nino continuing through summer to 70%. India Meteorological Department too has predicted a 50% chance of El Nino this year. **TNN**

that cause rains in India in winter and spring, were deeper and extended more southward than usual in March this year.

"This southward extension caused excess rains over central India (in addition to north India). In this way, the winter precipitation was anomalous," the meteorologist said. The frequency of WDs also increased.

While March usually sees five-six WDs, this year there were eight. The average for April is five WDs. This year, however, there have been three already and another would arrive by April 15.

The unusual WD pattern, said Rajeevan, was due to "large scale anomalies in the mid-latitude circulation patterns". There could be two

possible reasons for this, he said. "One could be the large scale circulation anomalies associated with warming over the Pacific region. An El Nino event is growing over the Pacific region. In most El Nino years, we find this kind of more frequent mid-latitude systems and deep troughs moving across the Indian region".

The second reason could be melting of Arctic Sea ice. "The Arctic Sea ice is melting due to global warming. This causes abnormal warming of the Arctic region, but forces the mid-latitude region towards south causing the mid-latitude jet stream shifting southwards. This can cause abnormal wetter winter season with extreme precipitation over Europe. Recent research shows this is happening during the recent years," Rajeevan said.

ConnectKaro 2015 | INDIA HABITAT CENTRE, APRIL 15 & 16, 2015

# EASY TRANSIT, GREEN GOALS & A SAFE CITY

TIMES NEWS NETWORK

Imagine a city where you could find out the timing of the next bus or train arriving at the nearest bus stop or Metro station using a mobile application. A city where there is more street space for pedestrians and cyclists, more green spaces, a well-connected public transport system and, above all, a safe environment, especially for women. It's what the capital is far from being.

But this is what several Indian cities may look like if the Centre's smart cities project is executed properly, say urban planners. For the ambitious project to build a hundred smart cities, the urban development ministry has sought one lakh crore rupees. Since there is no clear definition of a smart city, experts say, there is a need to identify its key components keeping in mind the existing infrastructure.

For this, EMBARQ-WRI India (an expert group on sustainable cities) has organized CON-NECTKaro 2015, a two-day seminar starting today that is supported by The Times of India. Urban planners and transport experts from across the world will deliberate on various aspects of smart cities.

Over the years, rapid urbanization had led to unplanned growth in most cities. With limited land available for development, the biggest challenge before government agencies is optimal utilization. For developing green spaces, housing projects and civic infrastructure, there is a need to introduce schemes like land pooling, cluster redevelopment, etc.

For example, regularization of unauthorized colonies is the biggest challenge before the Delhi government. In absence of a proper development plan, these colonies have mushroomed on private and government land over the years. In most colonies, there is no space left for development of parks and civic facilities like schools and dispensaries. Experts say the government will have to come up with a scheme to provide basic services in these colonies.

**Rapid urbanization has led to unplanned growth in cities. With limited land available for development, the biggest challenge before government agencies is optimal utilization**

Public transport is the next big concern. The present transport infrastructure is inadequate and as a result there is high dependency on private vehicles. Experts say there is an urgent need to not only strengthen the existing transport infrastructure but also make it smart. "People will switch to public transport if they are confident that they can reach their destination on time and move around the city comfortably. For this, we not only have to strengthen the existing infrastructure but also use technology as a multiplier," says Amit Bhatt, director, transport, EMBARQ India.

This can be possible if government agencies ensure that transport facilities run on time and open up their data to citizens. Using technology details of train and bus timings can be made available to people on their smartphones. The need for an effective and smart public transport system becomes even more important as private developers are racing to construct gated communities in the metropolises. For instance, there are close to 1,500 such communities planned in and around Bengaluru. Experts say these communities should be integrated within the main city and a proper transport system should be developed to discourage the use of private vehicles by residents.

Urban planners recommend more Transit Oriented Development (TOD) projects where residential and commercial complexes are developed around main public transport stations. TOD has been incorporated in the master plan of Delhi, Hyderabad, Mumbai, Ahmedabad and Cochin and the state governments have started work on it.

Most metropolitan cities are fast becoming concrete jungles with patches of greens. Since less than 10% of road-users are car owners, experts say there is need to plan parks and other civic projects at existing parking sites. There is a need to provide more space to pedestrians and cyclists and ensure their safety. And street programmes like Raahgiri and Equal Streets will help enjoy public spaces.

## LAND MANAGEMENT

Optimal utilization of land for housing more people, building accessible and green public spaces, better disaster management, creating sustainable links with rural areas etc. Land pooling, better town planning, private participation, redevelopment of clusters

Graphic: Asheeran Punjabi & Bhakti Nali

## SMART MOBILITY

Safe, comfortable and well-managed options to move around, bringing down dependence on private vehicles. Maximum benefit for pedestrians, cyclists and users of mass transport

## STREETS FOR ALL

To give pedestrians and cyclists equal right on roads and streets. There is need to plan and make urban infrastructure accessible to all. Programmes like 'Raahgiri' and 'Equal Streets' important where motorized transport barred and people free to enjoy in pollution-free environment -Disrupting cities for good

## TRANSIT-ORIENTED DEVELOPMENT (TOD)

Developing mixed-use residential commercial areas to maximize access to public transport. The idea is to develop housing, shops & commercial centres near a bus stop, metro station or any other mode of transportation

## ROAD SAFETY

Close to 1.4 lakh people died in road accidents in India in 2013. Toll rising, so is sale of private vehicles. Experts say correlation between increase in vehicles and increase in road fatalities. Need for strict enforcement of law and promoting use of public transport, making cities safe for women

## GLOBAL PROTOCOL FOR CITIES FOR BETTER CLIMATE

Helping cities bring down carbon footprint. A special greenhouse Gas Protocol for Cities available to help create greenhouse gas emission inventory, set reduction target and track performance. This will help cities tackle climate change

## WOMEN'S SAFETY

According to Census 2011, only half as many urban women work as their rural counterparts. According to ILO data 2013, women's workforce participation rate in India has gone down from 37% to 29% between 2004-05 and 2009-10. There is urgent need to upgrade infrastructure for making cities safe for women

## FIGURING IT OUT

As Centre gears up to develop 100 smart cities in country, there is need to identify its key components, say experts. From land management to transport, there is a long list of infrastructure facilities which need to be either upgraded or introduced

## WHAT IS A SMART CITY?

No clear definition. The idea is to create a city which enhances economic & social well-being of residents and reduce cost and resource consumption

## BUS KARO

Encouraging people to use buses. There is a need to provide an efficient bus service system by strengthening the existing infrastructure

## DISRUPTING CITIES FOR GOOD

Improving commuter experience by giving information about train and bus timings, frequency, distance between stations etc on mobile phones. Streamlining public services, delivering at people's doorsteps with tech

## PARKING

Less than 10% of road users car owners. Experts say priority shouldn't be given to parking projects. Freeing up parking spaces will help in creating space for public transport system, housing and other development projects





The Times of India, Delhi dated  
April 16, 2015

“Urban sprawl can be contained by building compact cities. We focused on this aspect of urban planning which led to an increase in housing projects within urban perimeters by 35% in 2012 and 51% in 2014.”  
— **Gerardo de la Peña Hernandez**, DEPUTY GENERAL DIRECTOR, INFONAVIT, MEXICO

“It's not just the people who create change. Political will is also necessary to bring about paradigm changes.”  
— **Diego Monraz Hernandez**, SECRETARY, TRANSPORT, GUNZALAMPA, MEXICO

“Delhi needs at least 700-800km of MRTS. This can't just be provided by Metro, a BRTS is also needed.”  
— **Prof Shivanand Swamy**, CITT, UNIVERSITY

“For several years we have neglected the cities but that is now changing. Planned urbanization is now based on transit-oriented development.”  
— **Sudhir Krishna**, CHAIRMAN, RDS COMMITTEE

“For urban growth, focus was on issues like water, power, solid waste management, roads and sewerage, but urban transport was not given that priority. It is now being planned to make way for Urban Mass Transit Authority in Delhi.”  
— **KK Sharma**, DELHI CHIEF SECRETARY

“It is estimated that 30% of our population lives in cities and this is expected to go up to 40% by 2030. This means that in this short time, 200 million more people will move to cities from the countryside. This makes it even more important that we prepare and plan to deal with the situation.”  
— **Jamshyd Godrej**, CHAIRMAN, WORLD RESOURCES INSTITUTE

# Seamless, sustainable and safe

People Are At The Centre Of A Smart City, Whether They Are Giving Up Land Or Deciding How To Use It



**BUILDING NAYA RAIPUR:** Smart land management involving negotiations and a multi-pronged strategy for rehabilitation led to consensus, helping acquire 5000 hectares

Ambika.Pandit@timesgroup.com

A greenfield project can showcase an ideal smart city and its objectives in a way that an existing thriving city can never do. The case study can, however, be instructive for such a city, like Delhi, when it sets out to become smart. Chhattisgarh's Naya Raipur project fulfils that need. Here a new capital is being created on the foundations of smart land management. Over 5000 hectares of land was acquired by making the affected villages partners in the process. To be developed in three phases, the Naya Raipur Development Plan 2031 has a population base of 5.60 lakh.

At a time when the rights of the land owner fearing displacement versus infrastructure development and land acquisition are a matter of national debate, the 'Connect Karo - Smart Cities for Sustainable Development' conference that began in the capital on Wednesday showcased stories like that of Naya Raipur that puts the importance of the rights of the land owner and affected residents at the centre

of any new smart infrastructure development.

In the session titled, 'Land Management for Smart Cities', experiences of Gujarat's land-pooling exercise and Andhra Pradesh's compensation plan clubbed with regular pensions for affected families and Greater Mumbai's experiments with redevelopment were also shared.

The new city is about 20km from the current capital and is surrounded by a network of highways. The airport is close by. S S Bajaj, vice-chairman of Naya Raipur Development Authority (also director, town and country planning), pointed out that mobility is critical. In the new city, an extensive network of roads, expressways, BRT corridors and BRTS transfer stations have been planned. Environmental concerns will be a priority. So, citizens will have access to a robust, non-motorised transport network as well.

Naya Raipur offers a range of facilities - from an IT and gems and jewellery SEZ and trade fair grounds to an international cricket



stadium, golf course, botanical garden and jungle safari. In the midst of all this will stand the majestic Capitol Complex, the seat of government.

Bajaj said all planning is based on the principle of conservation of environment and hence solar energy and best practices for water harvesting and waste water management are being adopted. The process also takes into account sensitivities linked to security, particularly for women, children and the physically challenged, he said.

Naya Raipur is now also a model case because of the extensive land acquisition done to build the smart city through negotiations and a multi-pronged rehabilitation strategy. "The land was acquired through consensus building by holding a dialogue with village heads and residents. They were told that they would be the first residents of Naya Raipur and compensation packages where three to five times higher than the prevalent rates," said Bajaj.



The Times of India, Delhi dated  
April 16, 2015

# Pollution turns Lotus Temple marble yellow

## NGT Finds Alarming Congestion, Emissions

TIMES NEWS NETWORK

New Delhi: Two court commissioners appointed by the National Green Tribunal found alarming congestion and traffic chaos in front of the Lotus Temple. They visited the temple on Wednesday as per NGT's orders to a petition that claimed that vehicular emissions are causing the white marble monument turn grey.

One of the commissioners confirmed that some stones on the temple wall did appear yellow, which may be due to exposure to pollution.

The petitioner also raised concerns that noise pollution was disturbing meditators at the Bahai House of Worship. The matter has been impleaded in another case against severe pollution in Delhi being heard by NGT. The Bahai Faith is an independent world religion and the Lotus Temple is among only seven such Bahai temples in the world.

"There is a major problem

Air is free. **STOP** making Delhi's people pay a price for it!



### POLLUTION BLIGHT

AIR QUALITY INDEX PM2.5

Delhi	196	Moderate
Tomorrow	209	Poor
Pune	72	Good
Tomorrow	77	Good
Chennai	9	Good
Kolkata	92	Good
Mumbai	61	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

of illegal parking and severe traffic congestion which is obviously causing a lot of emissions. We are not sure about the graying or yellowing of marble though. We will make a detailed report of our observations and submit to the bench within a few days," said one of the commissioners.

Another commissioner however said there is indeed yellowing of stones which may or may not be due to pollution. "We have asked traffic police to challan violators and the metro construction project to take care of construction dust."

Shaheen Javid, general manager, Bahai House of Worship said, "Over the years we are seeing the stones of the temple facade are yellowing. We haven't got any scientific study on this done to conclude that its happening from pollution. We haven't filed the petition in NGT but we definitely agree that there is a lot of traffic congestion and vehicular emissions near the temple."

The Times of India, Delhi dated  
April 17, 2015

# Compact and connected cities cost less and best for reducing carbon footprint

TIMES NEWS NETWORK

New Delhi: Where would you like to live, in Atlanta or Barcelona? While they have similar levels of wealth and population, Atlanta is about 26 times larger and has many more traffic deaths and higher air pollution. Madhav Pai, director of WRI Ross Centre for Sustainable Cities, summed up the essence of smart, low carbon emission cities through the Atlanta example on Thursday.

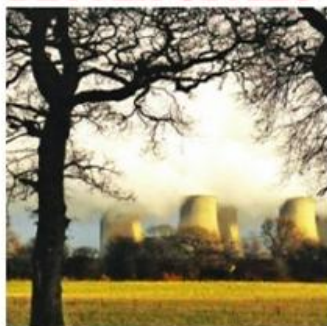
"I am sure most people would want to live in Barcelona. The difference is this—one city was built before the arrival of the car and the other was built around the needs of the motor car," he said.

On Thursday, experts at the ConnectKaro conference on smart cities discussed ways to reduce CO2 emissions for "better growth, better climate". The aim is to grow the economy and create jobs while countering climate change through smart cities. They cited findings and recommendations of the New Climate Economy report, a project of Global Commission on Economy and Climate that has many business and government leaders on board and is chaired by former President of Mexico, Felipe Calcedon, and co-chaired by the economist, Nicholas Stern.

The report recommends three Cs for cities: compact (high density), connected (ease of mobility) and coordinated



## STRIVING FOR BETTER CITIES



(integrated land use).

The panelists also stressed on keeping the urban model affordable. Pai compared Rio's BRT with Delhi's Metro in terms of cost. "It was done at 15% of the cost of Delhi's Metro and can carry one million passengers a day. Delhi Metro costs Rs 230 crore per kilometre but Brazil's BRT costs between Rs 5 crore and Rs 35 crore per kilometre. We can reduce 20% to 40% of our transportation infrastructure costs if the 3-Cs model is adopted."

Anil Bajjal, former urban de-

## BY 2030, CITIES WILL

Have 60% of population across the world

Consume 70% of energy

Generate 80% of GDP

## RECOMMENDATIONS

- Better planned urban development
- Greater fiscal autonomy to cities
- Elimination of fuel subsidies, utilization of congestion charges, land & development taxes, and density bonuses
- Re-allocation of existing infrastructure funding towards compact, connected and coordinated development
- Forming integrated land-use and transport authorities

## 3Cs OF URBAN GOVERNANCE

- Compact urban growth
- Connected Infrastructure
- Co-ordinated governance

Source: New Climate Economy report — Global Commission on Economy & Climate

velopment secretary, also raised concerns about booming cities. "In 2011, 43% of the urban population was in the million-plus or metro cities; by 2030, 70% of the urban population will be in 70 metro towns." He said city-centric growth would lead to the doubling of daily trips by the year 2030, from 22.8 crore at present, and the percentage of trips done in private vehicles would also increase.

Suresh Prabhu, Union minister, said the environmental consequences of increased travelling will need to be consid-

ered. "Every traveller generates about 15 jobs onsite and offsite but it also has environmental repercussions," he said. On a lighter note, he said, earlier women would ask their husbands to bring the moon, but now people are travelling so much that they can go to the moon together. Prabhu said the Centre has asked states to come up with integrated transport plans. Under another plan, state governments have been asked to set up companies that will implement transport plans so that there is resource efficiency and better implementation.



*The Times of India, Delhi dated  
April 18, 2015*

## NGT takes pollution fight to all states

TIMES NEWS NETWORK

New Delhi: Widening the ambit of the case against rising air pollution in Delhi, the National Green Tribunal (NGT) on Friday issued notice to chief secretaries of all states and UTs, asking them what steps were being taken to combat the menace.

► **Need aggressive plan, writes Sunita Narain, P 4**

The NGT bench, headed by chairperson Justice Swatanter Kumar, also directed states to submit information on the density of vehicles and air quality readings by May 1 and come up with suggestions to improve air quality. Citing examples of cities like Bangalore, Hyderabad, Pune and Mumbai, the bench sought details of what they were doing to deal with the issue.

The bench was hearing a petition by lawyer Vardhaman Kaushik on high air pollution levels in Delhi.

► **Power plants, P 4**

## NGT puts power plants under lens

► **Continued from P 1**

Kaushik's plea was merged with a case filed by Agra-based pediatric surgeon Dr Sanjay Kulshrestha who said severe air pollution levels across the country were not just affecting newborns but also fetuses. Since the cases have been combined, the bench decided to involve the rest of country in responding with possible solutions.

With regard to the capital, NGT directed the Delhi Pollution Control Committee and Central Pollution Control Board to monitor emissions at the Badarpur and Rajghat thermal power plants.

The bench also enquired about the enforcement of parking rules in Karol Bagh and Lajpat Nagar and directed municipal corporations to come up with parking space solutions as soon as possible. It demanded a clarification from the Rajasthan and Haryana governments as well on why trucks plying through NCR were not checked for emissions and fitness.

Earlier this week, NGT had stayed for two weeks its earlier order of impounding diesel vehicles more than 10 years old plying in Delhi. It has sought suggestions from various agencies in Delhi government on better implementation of its order by May 1.

The case has seen a number of landmark orders in the past few months as NGT took up the issue of air pollution



POLLUTION HORROR		
AIR QUALITY INDEX PM2.5		
Delhi	112	Moderate
Tomorrow	120	Moderate
Pune	73	Good
Tomorrow	76	Good
Source: SAFAR@MOES-ITM-IND (13 stations)		
Hyderabad	59	Good
Chennai	18	Good
Kolkata	55	Good
Mumbai	54	Good
AQI: Ambience data calculated as per Indian standards by SAFAR@MOES-ITM-IND		
Based on 1 Station Data Per City at 4pm		

year, while hearing the matter, the bench had issued a 14-point directive which included a ban on petrol and diesel vehicles older than 15 years—a move that's likely to take an estimated 10 lakh vehicles off the road. It also barred burning of waste in the open besides placing restrictions on parking and ordering stricter vigil on overloaded trucks entering the city.

## FM asks world to help make coal greener

*The Times of India, Delhi dated  
April 19, 2015*

### PUSH FOR CLEAN ENERGY TECH

India has asked rich nations to contribute in the following ways to generate greener technologies for cleaner coal:

- Price carbon quickly and ambitiously to provide long-run incentives and certainty for private sector in rich countries to invest in creating and disseminating such technologies
- Contributing finance to generation of global public good of cleaner fuels and technologies
- Collectively investing large sums of money in search of these greener alternatives
- Contributing finance to help poorest countries to mitigate and adapt to climate change
- Financing should not be tied—as some creditors are doing—to the use of renewable sources alone

Vishwa Mohan  
@timesgroup.com

New Delhi: Underlining that "coal will remain the most important source of energy for India and many other energy-deficient countries", Union finance minister Arun Jaitley has appealed to the international community to generate on a war footing "greener technologies", especially of the kind that can help deliver "clean coal".

"Unless coal can be greened and cleaned, it may not be possible to reconcile development and climate change goals", said Jaitley, while making his intervention on 'climate change' issues on sidelines of annual spring meeting of the IMF and the World Bank in Washington, on Friday.

His remark assumes significance as it clearly indicates the country's stand ahead of the crucial round of negotiations for a global deal in Paris in December. It shows that though India has been keen on playing its part in dealing with threat of climate change, it wants the world to give it "adequate carbon space" to achieve its objective of economic growth to deal with poverty and energy deficiency. "India is committed to making a significant contribution to tack-

ling climate change to the extent it can. We urge our richer partners to make theirs by way of pricing carbon quickly, especially when world prices have declined sharply, and to devote their resources to developing clean technologies. Their responsibility in this effort is undeniably greater", he said. Noting that his country's

**“Unless coal can be greened and cleaned, it may not be possible to reconcile development and climate change goals**

ARUN JAITLEY  
Finance minister

per capita electricity consumption is a fraction (1/37th) of that in the average European country, he said, "The challenge of climate change can be posed simply as reconciling the energy needs of poorer countries with the common global objective of restricting emissions of greenhouse gases".

The finance minister also enlisted what India has voluntarily been doing to play its part toward solving the common problem, despite the country's "basic development challenge of serious energy deficiency".

*Deccan Chronicle, Hyderabad  
dated April 20, 2015*

## Paper microphones can recharge cellphones

Washington, April 19: Researchers at the Georgia Institute of Technology have developed a stamp-sized microphone out of paper that boost's a cellphone's battery using sound.

They used a laser to zap a grid of microscopic holes in the paper, then coated one side in copper and laid it on top of a thin sheet of Teflon, joining the two sheets at one edge.

Sound waves vibrate the two sheets in different ways, causing them to come in and out of contact. This generates an electric charge, similar to the one made when a person rubs a balloon with hair, which can charge a phone slowly. The microphone recycles sound energy from the environment, getting free electricity from the "waste" sounds all around us. — PTI



## India to Gun for Climate Fund, Tech Aid at Major Economies' Meet

Urmi.Goswami@timesgroup.com

**New Delhi:** Ministers from the 17 major emitters, including Indian environment minister Prakash Javadekar, are meeting in Washington DC on Sunday and Monday to address some contentious issues and find a way to ensure a successful outcome at the UN-sponsored climate meet in Paris later this year.

Major Economies Forum on Energy and Climate, hosted by the US state department, is expected to discuss climate action plans, or intended nationally determined contributions (INDCs) as these are known in UN climate parlance, and the provision of finance and technology by rich industrialised countries to developing countries — a point that India will stress on. "Developed world would now have to walk the talk and will have to provide green climate fund to the developing world," Javadekar said ahead of the meeting.

With barely eight months to the crucial Paris summit, the two-day meeting provides an informal forum for countries to discuss and consider different approaches and to hammer out a compromise. This is the first of four meetings that the Major Economies Forum has slated in the run up to the Paris summit in December.

French foreign minister Laurent Fabius, who will chair the UN-sponsored climate negotia-



### TIME TO ACT

Developed world would now have to walk the talk and will have to provide green climate fund to the developing world

**PRAKASH JAVADEKAR**  
Environment Minister

tions in Paris, is attending the meeting along with Peru's environment minister Manuel Puga Vidal, who chaired the negotiations in Lima.

An official statement from the French Foreign Office said Fabius sees this meeting as an opportunity to bring the positions of countries closer together on the key issues that are at stake in the current negotiations.

One of the main issues expected to be raised at the meeting is the nature of the climate action plans submitted so far, particularly by the industrialised countries. "The focus of these INDCs is totally on mitigation or reduction of carbon emissions. There is no reference to contributions in terms of finance and technology, both of which are crucial for a successful and balanced agreement to address climate change," a senior official said. Developing country members like India, China, Brazil, South Africa, have consistently maintained that climate action plans must include all aspects of the issue — adapting to the impacts of climate change, emission reduction, finance and technology. Among the industrialised member countries, only the European Union, US, and Russia have submitted their climate action plans, and developing countries like India say that besides "not being ambitious", the information provided "doesn't explain much".

*The Economic Times, Delhi dated  
April 20, 2015*

*The Times of India, Lucknow dated April 21, 2015*

## 'Invisible' pollutants make air more harmful than ever

NehaShukla@timesgroup.com

**T**echnological advancements in the automotive industry and the switchover from two-stroke engines to four-stroke ones may have been touted as vehicles 'going green', but new challenges have now emerged in the battle against ever-increasing air pollution. It has been found that fuel-efficient vehicles, which may be performing better on dated parameters of pollution control, are also releasing 'invisible' pollutants in the air that are much more harmful than their earlier counterparts.

**The local temperature and humidity also leave residents more exposed to 'invisible' pollution in the night and early morning. So if you think morning walks help you breathe in some fresh air, you may be wrong**

The current breed of vehicles in fact emit respirable suspended particulate matter (RSPM) so small, the gravitational pull has no effect on them and they are able to penetrate cell walls, entering lungs and arteries. This may eventually lead to life-threatening pulmonary ailments.

Research conducted by scientists at Indian Institute of Toxicology Research (IITR), a CSIR lab in Lucknow, corroborates the decreasing size of pollutants in the city's air. For the first time recently, presence of 'nano-particles' as small as 1 micrometer has been established in Lucknow.



**PACKED HOUSE:** Kaiserbagh Crossing of today (above), which witnesses traffic jams on a daily basis, contrasts sharply with this picture (right) of the same spot taken in 1995

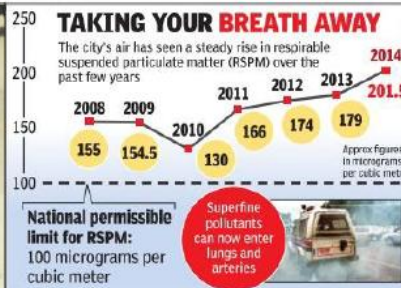
This is five times smaller than the head of a human sperm, and seven times smaller than a red blood cell.

In fact, the nano-particle PM2.5 is now the main pollutant along with carbon monoxide (CO) in the city's air, as found by the Air Quality Index project launched on April 6. Tailpipe emissions from cars and bikes are the main source of CO and PM2.5. In comparison, till 2006, black carbon soot emitted from vehicles was the main air pollutant in the city.

Making things worse is the fact that the city witnesses a 9% increase in the number of vehicles annually. Over the past decade, vehicular pollution has doubled. With newer additions to the fleet comes increased air pollution.

The local temperature and humidity also leave residents more exposed to 'invisible' pollution in the night and early morning. So if you think morning walks help you breathe in some fresh air, you may be wrong.

Burning of fossil fuels, friction between road and tyres, and re-suspension of street dust also release RSPM in the air. "Vehicles not being driven at the optimum speed pollute more. Similarly, diesel vehicles cause seven times more pollution than petrol vehicles," said clean air campaign manager, Centre for Science and Environment (CSE), New Delhi, Vivek Chattopadhyaya.



**Clearing the air**

- Strengthen public mass transport to reduce personal vehicles on the road
- Enforce pollution control norms for vehicles strictly
- Remove encroachment to curb traffic congestion
- Improve fuel quality and check fuel adulteration
- Awareness among public on automobile pollution and its effects on health



**DOUBLING IN A DECADE**

Year	Number of vehicles	% increase
2005	7,49,830	NA
2006	8,24,003	9.80%
2007	9,04,831	9.80%
2008	9,68,915	7%
2009	10,50,834	8.30%
2010	11,07,455	8%
2011	12,09,745	9.20%
2012	13,14,705	8.60%
2013	14,24,478	8.30%
2014	15,52,695	9%

Develop green belts and cover kuchcha pavements with grass to control dust

Improve road engineering for smooth flow of traffic

Adequate management of solid waste



The Times of India, Delhi dated  
April 21, 2015

# Air pollution may cause stroke

Durgesh Nandan Jha  
@timesgroup.com

New Delhi: Air pollution which is known to cause poor lung and heart health may also cause a stroke, new research suggests.

The findings of the research, which has been published in the British Medical Journal, are based on an analysis of 103 studies, involving 6.2 million hospitalizations and deaths because of stroke in 28 countries.

TOI spoke to India's top neurologists who said it was possible. "At AIIMS too, we have initiated a study to analyze the link between air pollution and strokes," said Dr Kameshwar Prasad, professor and head of the neurology department. He added there has been a significant increase in stroke cases that can't be explained by unhealthy lifestyle and other known risk factors.

Dr Shakir Hussain, chairman of Stroke & Neurointer-

## LOOKING FOR THE LINK

British Medical Journal study suggests a strong link between air pollution and stroke

Link is strongest in underdeveloped and developing countries, suggesting need for policy changes to reduce exposure to pollutants, especially in highly polluted regions



### WHERE INDIA STANDS

Stroke is one of the leading causes of death and disability in India. Estimated rate is 84-262 per 1,00,000 people in rural and 334-424 people in urban areas

AIIMS, which admits nearly 400 stroke patients every year, is looking into the role of pollutants in triggering stroke

vention Foundation, said more than 50% of the stroke patients that he sees are below 45 years of age. "Of them, some are non-smokers, who have normal blood pressure and do not have diabetes. The role of environmental factors in triggering neural disorders cannot be ruled out in such cases. It requires detailed investigation," he said.

Doctors say vehicular

emissions include ultrafine particles and gases like carbon monoxide and sulphur dioxide which get into the bloodstream. "These thicken the blood and also initiate formation of cytokines which trigger strokes," said Prasad.

The AIIMS study, he added, will involve assessing the date and time of stroke and the level of air pollution in their area. "Several studies held across

the world, including the one in British Medical Journal, show a strong association between strokes and air pollution. In India, pollution levels in cities are very high and if our study reveals a similar association, we will urge the government to take action," said Prasad.

He said the role of pollutants is more prominent in ischaemic stroke cases in which the blood vessels supplying oxygenated blood to the brain get blocked. It constitutes nearly 85% of all cases. The rest are haemorrhagic stroke cases, in which bleeding from a damaged blood vessel in or around the brain damages or puts pressure on the brain tissue.

"In western countries, even 40 microgram per cubic metre of particulate matter is considered hazardous but the average presence of such pollutants in Delhi ranges from 150-200 microgram per cubic metre," said Dr Sundeeep Salvi, director of Chest Research Foundation.

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



## POLLUTION PLIGHT

AIR QUALITY INDEX PM2.5

Delhi	260	Poor
Tomorrow	271	Poor
Pune	82	Good
Tomorrow	103	Moderate

Source: SAFAR@MoES-IITM-IMD (10 stations)

Hyderabad	102	Moderate
Chennai	5	Good
Kolkata	68	Good
Mumbai	82	Good

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

The Times of India, Delhi dated  
April 21, 2015

# Solar rooftops becoming a threat in Hawaii

Popularity Of Homemade Electricity Puts Pressure On Old Infrastructure Like Circuits & Power Lines

Diane Cardwell

Honolulu: Allan Akamine has looked all around the winding, palm tree-lined cul-de-sacs of his suburban neighborhood in Mililani here on Oahu and, with an equal mix of frustration and bemusement, seen roof after roof bearing solar panels. Akamine, 61, a manager for a cable company, has wanted nothing more than to lower his \$600 to \$700 monthly electric bill with a solar system of his own. But for 18 months or so, the state's biggest utility barred him and thousands of other customers from getting one, citing concerns that power generated by rooftop systems was overwhelming its ability to handle it. Only under strict orders from state energy officials did the utility, the

Hawaiian Electric Company, recently rush to approve the lengthy backlog of solar applications, including Akamine's.

It is the latest chapter in a closely watched battle that has put this state at the forefront of a global upheaval in the power business. Rooftop systems now sit atop roughly 12% of Hawaii's homes, according to the federal Energy Information Administration, by far the highest proportion in the nation. "Hawaii is a postcard from the future," said Adam Browning, executive director of Vote Solar, a policy and advocacy group based in California.

Other states and countries, including California, Arizona, Japan and Germany, are struggling to adapt to the growing popularity of making electricity at home,



Solar rooftop systems now sit atop roughly 12% of Hawaii's homes

which puts new pressures on old infrastructure like circuits and power lines and cuts into electric company revenue.

As a result, many utilities are trying desperately to stem the rise

of solar, either by reducing incentives, adding steep fees or effectively pushing home solar companies out of the market. In response, those solar companies are fighting back through regulators, lawmakers and the courts.

The shift in the electric business is no less profound than those that upended the telecommunications and cable industries in recent decades. It is already remaking the relationship between power companies and the public while raising questions about how to pay for maintaining and operating the nation's grid.

The issue is not merely academic, electrical engineers say.

In solar-rich areas of California and Arizona, as well as in Hawaii, all that solar-generated electricity flowing out of houses and

into a power grid designed to carry it in the other direction has caused unanticipated voltage fluctuations that can overload circuits, burn lines and lead to brownouts or blackouts.

"Hawaii's case is not isolated," said Massoud Amin, a professor of electrical and computer engineering at the University of Minnesota and chairman of the smart grid program at the Institute of Electrical and Electronics Engineers, a technical association.

"When we push year-on-year 30 to 40% growth in this market, with the number of installations doubling, quickly — every two years or so — there's going to be problems."

The economic threat also has electric companies on edge. Over all, demand for electricity is soft-

ening while home solar is rapidly spreading across the country. There are now about 600,000 installed systems, and the number is expected to reach 3.3 million by 2020, according to the Solar Energy Industries Association.

The Edison Electric Institute, the main utility trade group, has been warning its members of the economic perils of high levels of rooftop solar since at least 2012, and the companies are responding. In February, the Salt River Project, a large utility in Arizona, approved charges that could add about \$50 to a typical monthly bill for new solar customers, while last year in Wisconsin, where rooftop solar is still relatively rare, regulators approved fees that would add \$182 a year for the average solar customer. NYT NEWS SERVICE



The Times of India, Delhi dated April 21, 2015

# City's air toxic in summer too

Jayashree.Nandi  
@timesgroup.com

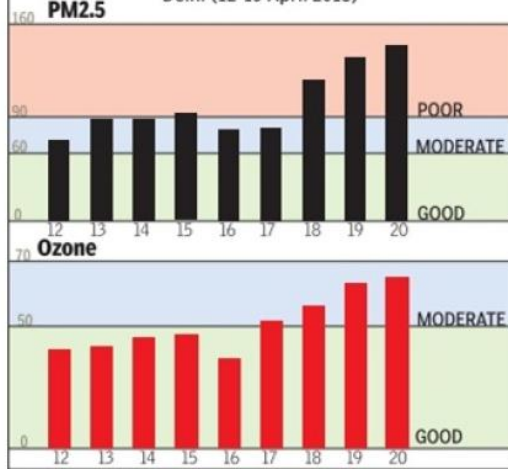
New Delhi: High air pollution levels in Delhi are generally associated with winters, when atmospheric inversion traps pollutants and causes smog. It's time to revise that view. Of late, the air quality continues to be poor even when temperatures are high, indicating that bad air in the capital is not longer just a seasonal phenomenon accentuated by weather conditions.

In fact, in summer it's a double whammy, say experts. Not only do levels of fine, respirable particles (PM2.5) remain fairly high, there's a rise in toxic ozone (O3), making Delhi's summer air dangerous for health.

According to an analysis by the System of Air Quality Weather Forecasting and Research (Safar), between April 17 and April 20, the daily average PM2.5 levels went up from a 'good' 80 micrograms per cubic metre to 163, which falls in the poor category.

## THE AIR STILL CHOKES

Delhi (12-19 April 2015)



Source: SAFAR@MoES-IIM-IMD

260, which is categorized as 'poor' and the forecast for Tuesday was 271.

Delhi Pollution Control Committee's real time air quality at 6.30pm also showed

PM2.5 levels were 105 and PM10 556.

During winter, cold air with high concentration of pollutants is trapped close to the earth's surface because a

dust is coated with toxins due to polluted emissions from various sources.

Anumita Roychowdhury of Centre for Science and Environment's clean air programme said in summer it's a multi-pollutant crisis. "Ozone has severe health effects and can trigger respiratory distress. The dust acts as a carrier for other toxic substances."

Ozone tends to trigger immediate health impacts in those with respiratory conditions. Ozone forms from chemical reactions between oxides of nitrogen (NOx) and volatile organic compounds (VOC) in the presence of sunlight. Emissions from industries, vehicles, petrol vapours and chemical solvents are some of the major sources of NOx and VOCs.

"High ozone levels cause acute problems such as irritation in the throat, restlessness, complications among asthmatics," said Dr SK Chhabra, head of cardiorespiratory physiology at Vallabhbhai Patel Chest Institute.

The Economic Times, Delhi dated April 21, 2015

# Havells Enters Solar Lighting Business with Promptec Buy

Acquisition to help Havells grow aggressively in the LED segment

Our Bureau

New Delhi: Electrical goods maker Havells India has acquired 51% stake in Bengaluru-based LED and solar lighting products maker Promptec Renewable Energy Solutions for an enterprise value of ₹65 crore, the Bombay Stock Exchange-listed company said on Monday.

Promptec had clocked revenue of ₹35 crore in the year to March 2015.

The promoters of Promptec will continue to hold the remaining stake in the company. "Promptec is an ideal fit for Havells and the acquisition is expected to provide substantial impetus to Havells' growth plans in the high potential segments of LED and Solar Solutions," said Anil Rai Gupta, chairman and managing director at Havells. "We expect

Promptec to grow multi-fold with its innovative lighting solutions and be a ₹250-crore business in next 3-4 years."

Havells gained 1.84% on BSE to close at ₹291.15 on Monday. The company announced the buyout after the close of trade.

"This partnership is a huge boost for Promptec as we get substantial reach through Havells brand and distribution platform," said Kiran Moras, director at Promptec. "We continue to remain dedicated to this venture as in the past."

Rai said the acquisition of Promptec marks Havells' entry into the promising field of solar energy that could be further expanded, considering the number of renewable energy initiatives of the government. Promptec's acquisition will allow Havells to grow aggressively in the LED segment. The company is planning to take the share of LED lighting to 40-50% of its total lighting sales.

Promptec had clocked revenue of ₹35 crore in the year to March 2015

The Times of India, Delhi dated April 21, 2015

# Want to work with India on climate change: US envoy

## Ambassador Sees Huge Potential In PM Modi's Pet Projects

TIMES NEWS NETWORK

New Delhi: Amid ongoing debate over the role of developed and developing countries in tackling threats of climate change, the US on Monday said that Washington and New Delhi were not in two different camps and America would like to work and share with India its best practices to deal with the most complicated challenge of our times.

"We are interested in being India's best partner. And we think this partnership does not just mean growing trade or defence ties, but it also means engaging to discuss and tackle the toughest issues on the planet (like threat of climate change)", said US ambassador to India, Richard R Verma.

Addressing members of the Confederation of Indian Industry here on the issue of climate change, he said since the US recognized its role as being historically the world's worst polluter, it had been working hard to address cli-



US ambassador Richard R Verma said the US was mobilizing part of India's \$200 billion renewable energy target

mate change issues both domestically and with the international community.

His remark assumes significance in the context of PM Narendra Modi's recent statement when he had said that the present situation was created by rich industrialized nations and India, which has very low per capita carbon

emission, cannot be forced to "follow" parameters laid down by the developed world on climate change and instead should lead the world in the fight against it.

Appealing to Indian business leaders to lead the way in handling climate change, Verma said, "As PM Modi seeks to implement smart ci-

ties, Make in India, the Clean India/Swachh Bharat campaign, and works to deploy his goal of 175 GW of clean, renewable energy by 2022, there will be countless opportunities to utilize cleaner technologies that are more energy and cost efficient."

He said the US was mobilizing part of India's \$200 billion renewable energy target and referred to a number of bilateral cooperation pacts in the field of clean energy and combating air pollution. Verma said he recently met Delhi CM Arvind Kejriwal and discussed issues of waste management and air pollution.

Referring to the potential of growth in clean energy sector, the US ambassador said, "Over the next 20 years global investment in the energy sector is expected to reach nearly \$17 trillion. That's more than the entire GDP of China and India combined".

He also welcomed India's recent proposal to phase down climate-damaging refrigerant hydrofluorocarbons under the Montreal Protocol.



The Times of India, Delhi dated April 22, 2015

Deccan Chronicle, Hyderabad  
dated April 22, 2015

## Year on, China air cleaner: Study

TIMES NEWS NETWORK

New Delhi: A Greenpeace East Asia analysis of air pollution levels in 360 Chinese cities has revealed that air quality in the coastal cities and Beijing has considerably improved in the last one year. The analysis is based on government data for the first quarter of 2015.

However, China's central and western regions have the worst PM 2.5 levels.

In the first quarter of 2014 the average PM 2.5 concentration was 102.9 micrograms per cubic metre as compared to 92.4 micrograms per cubic metre this quarter.

"Our analysis shows that the government's strict pollution control measures are working, at least enough to record a modest improvement over last year in certain cities such as Beijing. However, this is the only silver lining in a situation in which 90% of cities still record levels of pollution

## HOW THE DRAGON IS FARING

MOST POLLUTED		
City	Province	Quarterly average PM2.5 (in microgram per cubic metre)
Baoding	Hebei	57
Kashi	Xinjiang	138.4
Xingtai	Hebei	137.4
Zhengzhou	Henan	134.7
Yichang	Hubei	130.7
LEAST POLLUTED		
Diqing	Yunnan	18.1
Abazhou	Sichuan	17.1
Alatai	Xinjiang	16.5
Lijiang	Yunnan	14.6
Linzhi	Tibet	13.1



that far exceed China's own air quality standards," said Zhang Kai, Climate and Energy Campaigner at Greenpeace East Asia.

Greenpeace campaigners linked the improvement in Beijing's air quality to a five-year action plan in place in the city and to an emergency response plan. "We need an action plan similar to that of

Beijing; it should include an emergency alert system that issues health advisories to public on heavy pollution days along with instructions for industries to cut down emissions and limit the number of cars on the road. We have no emission standards for coal-fired power plants in India, a sector responsible for emitting 7,500 tonnes of

PM2.5 into the city according to a recent study," said Aishwarya Madineni, Greenpeace India campaigner.

For instance, as part of Beijing's emergency alert system, if the PM 2.5 levels are over 250 microgram per cubic metres on three consecutive days car use is regulated based on licence plate number (odd/even number system).

On Thursday, Beijing's Municipal Environmental Protection Bureau had announced that it would phase out pre-Euro-III vehicles by the year-end and restrict Euro-I or China-I vehicles from entering the sixth ring road.

While Beijing still ranks in the top five worst polluted provinces in China, based on annual comparison of average levels the capital's PM2.5 concentration improved over 10% compared to first quarter of 2014, and industry-heavy Hebei province, just outside of Beijing, also improved 31%," said a Greenpeace statement.

## Volunteers seek to converge for impact

V. NILESH | DC  
HYDERABAD, APRIL 21

The Earth Day will be celebrated across the world on Wednesday with the theme "It's our turn to lead", stressing on the role of individuals in working towards environmental protection and preservation.

Both Telugu-speaking states — Andhra Pradesh and Telangana — have several individual activists and volunteer organisations working for a variety of causes including protection of migratory species like Olive Ridley turtles, preserving geological formations like ancient rocks, cleaning rivers, conducting environment education camps, conservation of medicinal plants, rescue and rehabilitation of injured domestic and wild animals, construction of rainwater harvesting pits, solid

**M. VINAY SASHIDHAR, MEMBER OF CITY BASED ROCK BAND, ROOTZ, USES MUSIC TO GET THE PEOPLE INTERESTED IN ENVIRONMENTAL ACTIVITIES AND AN ACTIVE VOLUNTEER WITH WWF.**

waste management, and documenting biodiversity.

Ms Karuna Singh, country director of Earth Day India, said, "The theme tries to send out a message that every single person on earth, regardless of differences, has performed his duty in protecting the planet. Every person can make a difference by his or her small contributions. Ensuring that a tap is not leaking at home is as important as installing a pollution mon-

itoring unit in an industry. The theme of this year's Earth Day is to let people know that they cannot hold the government responsible for protecting environment and they also have a role to play."

While there are many volunteer organisations working towards various causes, there is also a need for them to integrate for making a larger impact, stressed Ms Farida Tampal, director of WWF-Hyderabad.

She said, "There are many good campaigns being run by people but as they are dispersed, they remain effective only on a small scale. If they come together they can effect policy change at the governmental level."

Ms Anuradha Vinod, an officer with the Wild Life Education and Extension wing of the Telangana forest department, has been conducting environmental awareness and education camps for 10 years at the various national parks in the city. "I have conducted 2,000 education camps for both students and professionals. I use a variety of tools for the purpose like riddles, games and quizzes and have also penned a few poems and songs on environment," she explained.

The Times of India, Lucknow dated April 22, 2015

## Sunny side up: Direct current floods rural homes in UP

Swati Mathur@timesgroup.com

Lucknow: An innocuous attempt by the Samajwadi Party government to ensure last mile power connectivity across the state has made Uttar Pradesh the champion of a unique cause: of perpetrating the use of direct current (DC) for powering homes and electronic gadgets.

It began with UP's efforts towards rural electrification and ensuring villages were given solar power connectivity where thermal grids had still not reached. Under the government's Lohia Samagra Awas Yojna, the state government began constructing and providing houses to BPL families in villages that were identified as Lohia villages. These homes were fitted with a 120 Watt-peak (Wp) Solar PowerPack. Each solar power pack, in turn, contained two 3-watt LED and 5-watt LED light bulbs, and a 25-watt direct current Ceiling fan with

## AC VERSUS DC

► Alternate Current (AC) more suited for transferring power over long distances

► Direct Current (DC) transmission is viable even for a smaller cluster of villages

► At the tail ends of AC grids, power supply tends to be prone to voltage fluctuations. Since solar, DC power is supplied to shorter distances, it ensures



better quality and quantity

► Solar, DC power replaces power blackouts with brown outs where it leads to a reduction or restriction on the availability of power in a particular area

a mobile charging facility.

This not only made UP's 10.5 MW solar initiative the first-of-its-kind, off-grid solar system of this scale in India, but it also made it possible for UP to better rural lives with a "Brown Out" — a reduction in or restriction on the availability of electrical power in a particular area — instead of black outs that would have been caused if they had been connected to grid networks.

Speaking to TOI, associate

► In smaller clusters, P 4

professor in department of Energy Science and Engineering at IIT-Bombay, Chetan Singh Solanki said when grid systems first came into effect, alternate current was more commonly used because long-distance transfer of power was easier through AC grids networks. Equipment was also developed to make it amenable to running on AC power.

## 'Solar power can be generated, consumed in smaller clusters'

► Continued from P 1

With the advent of electronic gadgets like mobile phones, tablets and personal computers, which run on DC, there was a shift towards DC power again, because it also, among other things, saves cost of conversion from alternate current (AC) to DC. Since solar energy naturally runs on direct current, this shift is in favour of solar power," Solanki said.

Primarily, DC finds favour with experts because it reduced dependence on grid supply, and encourages a widely distributed network of solar power production units. Solanki added, "One of the biggest problems with existing grids is that they have still not



reached every last individual in the country. Apart from their dependence on coal or other thermal sources, grid supplies are subject to transmission and distribution losses, apart from concerns over quantity and quality of the power they provide. Solar power, on the other hand, can be generated and consumed at lesser costs for much smaller clusters."

Solar initiatives of the

kind the UP government started, therefore, have turned it into a trend setter. While chief minister Akhilesh Yadav told TOI he didn't set out on his solar mission with the aim of propagating direct current, the scale of UP's inadvertent achievements have made many governments and the power ministry in New Delhi sit up and take note.

The Union ministry for power, coal and new and renewable energy for instance, has commissioned a pilot project that will see two batches of 5,000 and 1,000 homes at two locations being supplied with direct current (DC) lines, instead of the present alternating current (AC) lines, to ensure at least a minimum supply of electricity at

all times. Even as UP toes the line of "inclusive development" through its rural electrification initiative, the SP government has additional plans to perpetuate solar power.

Secretary to CM and the department of new and renewable energy renewable energy development agency, Partha Sarthi Sen Sharma, said the state government has already distributed close to 1.09 lakh solar street lights in UP's villages. Among other measures, the UP government has also installed, on a pilot basis, one kilowatt capacity solar power plants along with reverse osmosis (RO) systems in 50 primary schools, to make clean and potable water available in schools.

## Meet Earth Hero Jadav Mulai Payeng

Narayani.Ganesh@timesgroup.com

What Jadav Mulai Payeng has accomplished single-handedly is extraordinary, even unbelievable. He has created, from scratch, a 550-acre forest — that is now home to wild elephants, tigers, rhinos, deer, butterflies and many other species — on a sand bank by the Brahmaputra at Aruna Chapori. The lush forest was discovered by happenstance by a local journalist, Jitu Kalita, in 2006 — nearly 30 years after Payeng began planting trees.

Payeng's spouse Binita is also from the Mising tribe and the couple and their three children continue the good work. Payeng says he married late as he was already in love with Nature but when he met Binita, "Phir se, love ho gaya!" Following media coverage of Mulai Kathoni — the forest he created is named after him — two documentary films on Mulai Kathoni went on to win several awards. And now the Indian government has honoured him with a

Padmashri. Payeng was conferred with an honorary doctorate from Guwahati University recently.

"Awards are not important; greening of the country is what is important," says the humble 'forest man' whose parents raised livestock and sold milk at Aruna Sapori. Payeng continues the family tradition in Jerhat district, Assam. Once the milk is sold and the day's business is done, he sets off to another sandbank across the river to continue recreating lost habitats for species rendered homeless by human exploitation. And he returns to his modest home on stilts at dusk as he has been doing for over three decades.

It all began when he witnessed mass deaths of animals, birds and reptiles. Their bodies were washed ashore by the Brahmaputra during the 1970s floods. The traumatised 16-year-old learnt it was due to habitat destruction. The only way to

save these species was to restore lost forest cover. It was shock-inspiration that propelled him to a mission to grow a forest so animals could have a safe home.

"I learnt a lot about trees from Gadunath Bezbaruah, scientist in the agriculture department, and more from the Deoris, an ethnic tribal community, who advised me to plant bamboo and other

tall grass and gave me seeds and saplings, teaching me how to plant and nurture them. They assured me that soon snakes, animals and birds would come and they would not die."

Raj Phukan of Green Guard, an Assam-based NGO, nominated Payeng for the Maharana Mewar Foundation's environment award that was given to Payeng recently by Shriji Arvind Singh Mewar in Udaipur. "The 550-acre forest that Payeng created is now history; what he is not even talking about is that he has been quietly creating another forest on



Mekahi Island — perhaps the world's largest manmade forest — that now measures nearly 2,000 acres," reveals Phukan. Payeng smiles shyly and nods his head almost reluctantly, perhaps in the forest's best interest. He is doing what he does simply because he is full of compassion for all species and earnestly wishes to give habitats back to them.

Does faith in God keep him going? "The only Bhagwan I have seen is in the trees and my parents," he says. "They left me with Prakriti (Nature) so Prakriti is my God and I hope to die in the lap of Nature... How did we learn to clothe ourselves for protection? The trees taught us," he says, referring to their protective bark. "The birds taught us to fly. Everywhere, we learn from Nature."

Payeng's message: "Please teach primary school children environment science. Let them plant two trees each and nurture them throughout their school days. That will take care of India's afforestation!"

Post your comments at [speakingtree.in](http://speakingtree.in)

The Economic  
Times, Delhi dated  
April 22, 2015



# Windmills wipe out Seema's green cover

HOSKOTE NAGABHUSHANAM | DC  
ANANTAPUR, APRIL 21

The green cover of the Rayala-seema region is being ruthlessly destroyed as windmills are being set up in forest and government lands and the state government has not asked the companies to develop alternative greenery.

Thanks to suitable climatic conditions and also availability of adequate land to set up windmills, companies from various parts of the country have leased government lands in Kurnool, Kadapa and Anantapur districts. About 100 km long stretches of land, from Vajraakarur mandal in the northwest part of

the district towards Roddam mandal, connecting Uravakonda, Kalyanadurg, Ramagiri and Penukonda areas, had been identified as suitable locations for tapping wind energy and most of the government lands, including semi hillock regions of the forest department, were given on lease to private companies to establish windmills. Unfortunately, with no proper guidelines to protect the existing greenery, these companies have reportedly denuded the hillocks of green cover for setting up the windmills, for building roads to transport equipment and to lay the electricity lines along with transformers at each windmill to connect with the grid. The afforestation wing of the forest department had been reportedly developing greenery here for the past one



Windmills destroy greenery in a region.

decade but all their work went down the drain while setting up the windmills. According to sources, the green cover has disappeared from more than 1,000 acre. While areas like Roddam, Penukonda and Kalyanadurg have windmills, there is no scope of the greenery returning here in the near future, say sources.

Deccan Chronicle,  
Hyderabad dated April  
22, 2015

## Pollution check in real time

DC CORRESPONDENT  
HYDERABAD, APRIL  
21

If everything goes as planned by the Telangana State Pollution Control Board then people from the state might soon get to know pollution status in real time not just from the city but from 46 industries across the state on a single website. The TSPCB recently visited Karnataka where the state pollution control board is using a software, which gives a common platform for all pollution monitoring units regardless of their make.

N. Raveendhar, Senior Social Scientist, TSPCB, said, "The software will enable quick real time monitoring. TSPCB officials will be sent SMS whenever the pollution levels recorded are above normal for a long time in a given unit. The software also has instant messaging feature which will link TSPCB with industries having pollution monitoring units with the software."

The Economic Times, Delhi  
dated  
April 22, 2015

# Indian Cos May Go all Green to Meet Power Needs by 2020

Talks are on to bring Indian cos under RE100 initiative which focuses on green energy sources

Anindya.Upadhyay  
@timesgroup.com

**New Delhi:** Indian companies could soon figure among the likes of global firms such as Nestle, Mars, Philips and Ikea that plan to switch to green energy sources as part of the RE100 initiative, under which 100 large firms will rely exclusively on solar, wind, biomass or small hydro plants for their power requirements by 2020.

RE100, convened by international non-profit agency The Climate Group and sustainability firm CDP, has 15 members at present, including Elion Resources Group, one of China's top private enterprises, which has committed to rely entirely on renewable energy by 2030.

"We are talking to a number of Indian companies and will announce a name in two weeks' time," Mark Kenber, CEO of The Climate Group told ET. According to Kenber, there are a number of reasons for focusing the campaign on India, the primary one being that companies suffer disruption of business activities due to power cuts and end up paying a lot more for expensive back-ups. "By investing in third-party power purchase agreements or installing their own power sources, companies get to lock up not only long-term electricity prices, which helps them save, but also earn returns from their clean installations, as is happening in China," Kenber added.

## Stage Set for Clean Energy

**UNDER RE100 initiative,** 100 large cos have pledged to rely only on renewable energy for their power needs by 2020

RE100 IS convened by global non-profit agency The Climate Group & sustainability firm CDP

**IT HAS 15 MEMBERS AT PRESENT**

**THE CLIMATE GROUP CEO MARK KENBER SAYS INITIATIVE IS NOW FOCUSING ON INDIAN COS**

### WHY

Frequent power cuts here disrupt biz activities of cos

They pay huge amount for expensive back-ups

Kenber wants India to take cue from China which supports cos for in-house power generation

Says Indian govt should give subsidies to cos for their production



A new report, 'China Analysis 2015', by The Climate Group points out that the (Chinese) central government increasingly sees the opportunity for stimulating businesses — the biggest end-users of energy — and has introduced a number of incentive schemes for renewable energy investment that are already attracting interest.

RE100's founding partner, Ikea, has committed to producing renewable energy equivalent to at least 70% of its consumption by 2015 and to producing as much renewable energy as it consumes by 2020.

This includes the energy used by the company's own manufacturing operations. By 2013, half of IKEA's stores in China had gone solar, with yearly electric energy production now topping 1.6 million kWh.

Several companies in China, including L'Oréal and P&G, have taken the initiative to secure renewable electricity through agreements with their local electricity providers.

"China has provided support for

the demand side of the energy equation by giving subsidies to corporates for in-house power generation. The returns are between 5% and 20%. Companies do it purely for economic reasons," he said, adding that when policy and incentives are put in place, businesses respond. Certain cities and regions are also pioneering new forms of purchasing contracts that provide companies with opportunities to source green electricity directly from the grid, says the report.

China, the world's leading investor in renewable energy, increased its investment to \$89.5 billion in 2014, up 32% from that in the previous year. This was nearly 73% more than the United States, the next largest investor.

Just like China, Kenber said, India too should put more emphasis on the demand side, by providing companies with more subsidies for their own production, as opposed to only supply side or large utility-scale projects.



The Times of India, Delhi dated  
April 23, 2015

# Let fitness, not age, be basis of diesel car ban: Transport dept

TIMES NEWS NETWORK

**New Delhi:** If a ban on polluting diesel vehicles is to be implemented, the transport department wants it to be based on fitness and not age. While this could be a sensible proposition, most experts who attended the department's meeting on Tuesday are worried that lax pollution-under-control certification standards and manipulation of fitness certificates will ensure Delhi's air quality doesn't improve.

The transport department sought suggestions from IIT Delhi, Centre for Science and Environment, The Indian Foundation for Transport Research and Training, municipal corporations, NDMC and several other stakeholders on some big reforms.

According to sources, industry bodies and car manufacturers who attended the meeting were extremely reluctant about the proposal for a ban on old diesel vehicles. "They kept denying that diesel vehicles pollute. They were also on back foot when a parking fee hike was suggested. All companies said a ban on 10-year-old diesel vehicles was not necessary," said a participant at the meeting.

The transport department has asked for comments on increasing cess on diesel vehicles and on purchase of a second vehicle. The Delhi government in 2004 proposed a pollution cess of 2% on diesel vehicles, be-

## PLANNING A CRACKDOWN

### AIR POLLUTION INTERVENTIONS UNDER CONSIDERATION

- Fitness-based phasing out of vehicles, not age-based
- Cap on number of registration of diesel vehicles
- Monthly parking fee of ₹5,000 to be paid for each car
- Higher taxes on purchase of second vehicle
- Cess on diesel vehicles

### IMMEDIATE AGENDA FOR TRANSPORT DEPARTMENT

- Make ban fitness-based
- Monitoring of emission levels of trucks older than 10 years as well as younger ones



sides the 0.25 paisa cess on the fuel at stations. The government even contemplated hiking the 0.25 paisa cess to Re 1. However, it has stayed the same ever since. The pollution cess never took off. This time, however, the department may be more amenable to imposing the cess. "We are hamstrung by lack of personnel for enforcement. In such a scenario, a cess is easier to implement," said a senior department official.

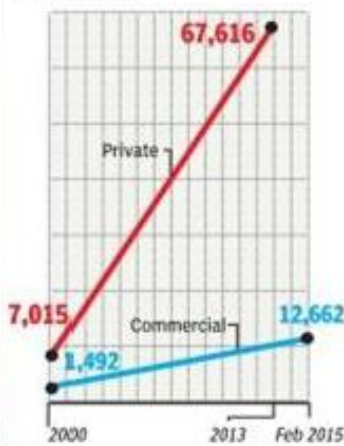
The proposal to cap the number of registrations has

### VITAL STATS

Number of private diesel vehicles registered in Delhi  
**4,68,520**

Commercial vehicles  
**86,546**

### Diesel vehicles increased



been opposed by the government. "Implementation will be difficult. Owners will simply get the vehicle registered in neighbouring states. The government will lose a substantial amount of revenue," added the source.

Meanwhile, experts think the department should immediately detail how pollution-under-control certification standards can be tightened. "They currently do a smoke density test for all diesel vehicles irrespective of age and

Maybe you **QUIT** smoking but never really got rid of it!



## POLLUTION HORROR

AIR QUALITY INDEX PM2.5

Delhi	230	Poor
Tomorrow	246	Poor
Pune	105	Moderate
Tomorrow	77	Good
Hydrabad	67	Good
Chennai	8	Good
Kolkata	38	Good
Mumbai	49	Good

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

norms. Pre-Euro, Euro I, II and III are all subjected to the same test and they all clear it as it's extremely lax," said Anumita Roychowdhury of CSE's Clean Air programme. CSE has recommended surprise checks and rigorous audit of PUC centres in Delhi.



The Economic Times, Delhi dated  
April 24, 2015

**SPACE FOR MORE** Singapore utility co Sembcorp is keen on investing \$250 m yearly in clean energy. On the other hand, its India ops head says the coal auction is creating confusion for foreign players

# Sembcorp Expects 1400 MW Renewable Capacity by 2022

Arijit.Barman@timesgroup.com

Mumbai: Sembcorp Industries, Singapore's leading utilities and ship-building group, is looking to invest over \$1 billion over the next five to seven years to double its clean energy generation portfolio in the country. It will gradually move away from large, greenfield thermal coal projects that are still facing land acquisition and fuel linkage logjams. The recent confusion over capping of fixed tariffs after the recent coal auctions has also made the company wary.

This February, Sembcorp Utilities, a wholly-owned subsidiary, acquired 60% in Green Infra – a leading renewable energy platform – from its private equity owners IDFC Alternatives for ₹1,051 crore. This was their first investment in the space in India, after having backed two coastal thermal coal projects in Andhra Pradesh in 2011. This is also the first and only FDI in the power sector since the Narendra Modi government came to power.

"Compared to China, we were late in entering the Indian market because it took it took us a few years to understand amendments in the Indian Electricity Act of 2003. But in the past five years, we have increased our overall power generation capacity to 2,640 MW in two projects. With Green Infra, we now have 3,340 MW in our portfolio here," said Tan Cheng Guan, executive vice-president & head (group business development & commercial) at Sembcorp Industries – the man in charge of the Indian operations.

Chen Guan shared the India blueprint with ET during a recent interaction – his first since completing the Green Infra takeover.

Focus for the moment is clearly renewable energy, coinciding perfectly with the government's push for clean tech. The market dynamics appear favourable, said Chen Guan. "Wind power is almost close to grid parity. It is almost comparable to imported coal in terms of cost. Prices of turbines, solar panels and other equipment have also

## Singapore Sling

Sembcorp entered India in 2011

### EXISTING GENERATION PORTFOLIO

2x1320=2640

MW of thermal

700 MW of renewable

Total: 3340 MW

### THERMAL POWERTECH CORP SHAREHOLDING

**GROWTH PLANS**  
1400-1500 MW by 2022  
(1100 MW wind+ 400 MW solar)

#### INVESTMENTS

250 million/yr

#### INVESTMENTS

in thermal (till date) \$3.1 bn

#### BOTH

THERMAL

plants

expected to achieve COD by 2016

### NCC POWER PROJECTS SHAREHOLDING

Sembcorp 49%  
(have applied to hike stake to 70%)

NCC-Gayatri 51% (currently)

Semb Corp

65%

Gayatri Energy Ventures own

35%

## GREENFIELD RISK

Our strategy of going into projects which already have land cuts time by half

### TAN CHENG GUAN

Executive V-P at Sembcorp Industries

come down over a few years. So its potential is much higher. But growth in solar will probably be higher than that of wind," he felt.

"Even then, we will continue to grow wind strongly. We will have 700MW of wind parks commissioned by the third quarter of 2015. We expect our total renewable energy capacity for Green Infra to be at least 1400MW by 2022. Of that, we expect to add 300-400MW of solar and about 1,100MW of wind," said Chen Guan. "We plan 200-250MW capacity addition every year. Based on investment needed per MW, that is about \$200-250 million per year," he added.

Sembcorp has \$816 billion of assets across the utilities value chain. On the face of it, the focus on wind – at a time when the government's solar mission is dominating the policy conversation – seems contrarian. But the company would still tread cautiously.

"We hope solar will allow us to grow faster. We will keep adding to our current portfolio and are happy to see the government's ambitious 1,00,000MW solar target by 2022. But we will look into the details about where potential is coming from and expect the government to look into power evacuation," said Chen Guan.

Connecting wind and solar farms to the grid is still a challenge and needs significant government investment, say power analysts.

Sembcorp's top brass believes solar will be more expensive than wind so discoms may choose not to buy it. "If there is improved enforceability of renewable purchase obligation, distribution companies may be pushed to buy more. But that is not the case. So why should these companies with already poor financial health oblige?" wonders Chen Guan.

### INVESTMENTS IN COAL

Having already pumped \$3.1 billion, along with its local partners Gayatri Projects and NCC, into its Indian thermal portfolio of two units (2x1320 MW), Sembcorp is hopeful all four units of these plants will fire soon.

The first unit of NCC Power Projects (NCCPP) is expected to be complete by end of the first quarter next year and then be fully operational by the third quarter

of 2016. Adjoining Thermal Powertech Corporation (TPCIL), the joint venture with Gayatri Projects, has been partially functional since February and is due for completion in Q3, this fiscal.

Sembcorp owns 65% in TPCIL while Gayatri Energy Ventures owns the residual stake. Similarly in NCCPP, it owns 49% but has applied to hike its shareholding to 70%. A consortium of NCC-Gayatri is the majority shareholder in NCCPP.

Like its global peers, Sembcorp too wants to avoid India greenfield risks. "It takes three to four years in getting land and relevant licences and another three to four years of construction. That is 8-9 years or may be 10. The time span will be too long. So our strategy of going into projects which have land acquired cuts time by half," said Cheng Guan.

"The coal auction has caused a lot of confusion for people outside India. Bidders have bid aggressively but the government is now asking discoms to cap the fixed tariff so no one can get around with transferring subsidies. However, the current bickering reflects that the policy is not well thought through. While the government has logic in its policy, it should have put in place a clear mechanism and procedure," said Cheng Guan.



The Times of India, Delhi dated  
April 25, 2015

## Let's not lose this chance to clean up the city's air

Jayashree.Nandi  
@timesgroup.com

**New Delhi:** It has been established beyond doubt Delhi is breathing poison. We have created a heavily polluted city which will leave our children very unhealthy. And yet we are doing little to change things. Ever since the National Green Tribunal ordered a ban on older vehicles — 10-year-old diesel and 15-year-old petrol vehicles — every government department and lobby group has been trotting out arguments to show why the order is difficult, if not impossible, to implement.

**TOI** believes that phasing out old vehicles — most of which are more polluting than newer vehicles — is desirable. While there are arguments — and they are not without merit — that vehicle fitness is the best way of curbing

### PLAN OF ACTION

- Phase out diesel vehicles more than 10 years old
- Tighten PUC norms for pre-2010 vehicles
- Hike parking charges, demarcate parking zones, penalize illegal parking
- Increase cess on diesel

### FULL TOI AGENDA P 3

polluting vehicles, the city's pollution checking process has been shambolic. And enforcement even worse. There's no reason why this will change overnight. Detecting old vehicles and phasing them out is at least doable. While a few fit vehicles might be shown the door, the overwhelming majority of old vehicles are likely to be grossly polluting.

hicles might be shown the door, the overwhelming majority of old vehicles are likely to be grossly polluting.

➤ Stringent checks, P 3



LET DELHI BREATHE  
FULL COVERAGE  
PAGE 3

## Pollution checking must be stringent, fuel quality better

➤ Continued from P1

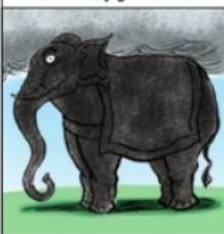
**TOI** believes that along with phasing out old vehicles, there must be stringent checks on polluting vehicles, a quantum improvement in the quality of fuel and a host of other measures that will clear Delhi's air and make the city liveable.

Next week the deadline for the Delhi government and Centre to submit their views will expire. Already there are murmurs of protest and excuses are being trotted out. It will be tragic for the city if this opportunity to clean up our air goes waste. **TOI** feels banning diesel vehicles which are more than 10 years old will definitely remove a chunk of polluting vehicles from the city and make way for cleaner ones, and hence is a good beginning.

But this is not a huge number; and hence, it will have to be implemented with a host of other measures. Experts have been saying that now there is no single silver bullet like implementation of compressed natural gas (CNG) in public transport in 2001 that can improve air quality substantially. This time it has to be a combination of reforms addressing various aspects of mainly the transport sector and other polluting sources like construction dust and waste burning.

An analysis by System of Air Quality Weather Forecasting and Research (SAFAR) under Ministry of Earth Sciences (MoES) shows that air quality, especially level of PM2.5 (fine, respirable particles) has been mostly in the poor category in the first four months of 2015, even after the onset of summer. In January, the monthly average was about 128.2 microgram per cubic metres (poor), in February 121.13 (poor), in March 85.7 (moderate) and in April so far it has been 97 (poor). Only one day in April had good air quality and it was poor for 15 days.

Maybe you **QUIT** smoking but never really got rid of it!



### POLLUTION HORROR

AIR QUALITY INDEX		PM2.5
Delhi	252	Poor
Tomorrow	278	Poor
Pune	78	Good
Tomorrow	84	Good
Source: SAFAR@MoES-IITM-IMD (10 stations)		
Hyderabad	69	Good
Chennai	36	Good
Kolkata	47	Good
Mumbai	65	Good

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

No wonder, the apex court has upheld NGT's orders for banning old and polluting vehicles in the capital. The Supreme Court had recently rejected a plea against the order banning petrol vehicles that are more than 15 years old.

"Let us assist them (NGT) and not discourage them," a bench of Chief Justice H.L. Dattu and Justice Arun Mishra had said.

When officials of the Delhi government and the Centre submit their views before NGT next week, among other things they will have to consider the proposed cap on registration of vehicles, rationalizing parking charges, imposing a congestion fee and many other crucial interventions by NGT.

There will be short-term pain if we fall in line but the

gains are immense. Truckers may go on strike and those who intended to keep the highly polluting diesel vehicles for a longer duration may feel cheated. The transport department is already trying to put a spoke in the wheel by pushing for a phasing out of vehicles based on fitness instead of age. The court commissioners appointed by NGT found infrastructure at border checkpoints meant to carry out checks and let the trucks turn around abysmally poor.

There may be many excuses not to implement the National Green Tribunal order but if certain categories of vehicles, like the ones that cater to essential services, bring food supplies into the city, ferry patients to hospitals and handle disasters etc are exempted for a period, this could be a very good beginning.

There are, in fact, only 34,659 diesel commercial vehicles that are more than 10 years old out of a total of 8.6 lakh commercial diesel vehicles, going by the transport

department's data. The others coming into the city can easily be diverted, in the short term by strict checking and in the long term by completing the work of the peripheral expressways at the earliest.

Transport and air quality experts say these measures should be supplemented with advancing of Euro V and VI norms, revising pollution under control (PUC) norms for pre-2000 vehicles, carrying out stringent fitness and age checks at border checkpoints, increasing the existing cess on diesel and imposing an annual cess on diesel vehicles. "Having an age-based phasing out only will send a wrong message to manufacturers as they will not invest in improving technology," says Geetam

Tiwari, chair of Transport Research and Injury Prevention Programme (TRIIPP) at IIT Delhi. "We recommended that a substantial pollution tax be imposed based on engine size, age and fuel type — diesel or petrol. The pollution tax should be annual to be able to effectively discourage people from driving polluting vehicles."

Sarath Guttikunda of urbanemissions.info suggests aiming at an overall reduction in emissions from the transport sector by leapfrogging fuel standards to Euro VI nationally; promoting public transport; encouraging safe walking and creating cycling infrastructure (10% reduction in PM 2.5); managing congestion; ensuring a complete end to waste burning (20% reduction); and minimizing use of diesel generator sets (16% reduction), notwithstanding emissions from thermal power plants which will have to make up for the loss.

Sunita Narain, director general of Centre for Science and Environment (CSE), says implementation of these strategies will be the key. "Along with a ban on old diesel vehicles, several actions need to be taken. The major ones are increasing the cost of diesel to bring it at par with neighbouring states and tightening in-use emission standards since the new polluting vehicles will get away. We need crackdown by police on illegal parking and public transport needs to be massively upgraded. No plan will work in isolation," she says.

The Centre's recent three-month plan to be implemented with NCR states lacks teeth because it doesn't address important interventions like improving public transport for NCR states, hiking parking fee, upgrading PUC norms and many others, say experts.



LET DELHI BREATHE

Edited by: Prof. Sushil Kumar  
Centre for Business Sustainability,  
IIM Lucknow