

New Biofuel Leans On Slothy Algae With Promiscuous Enzyme

By Tina Casey

At first glance, the common green microalgae *Botryococcus braunii* looks like a horrible biofuel candidate. It grows so slowly that it takes a week to accomplish what other species can do in a matter of hours. However, *B. braunii* has intrigued biofuel researchers for decades, and now a team at Texas A&M has unlocked the genetic mystery behind one of its secrets, a “promiscuous” enzyme that could enable it to spit out gasoline, kerosene, diesel and other fuels.



Biofuel: Not Dead Yet!

Food, land, and water resource issues have been bedeviling the global biofuel industry, but fuel from plants does offer the prospect of carbon neutral fuel production for gasoline, diesel, and jet fuel. After the corn biofuel debacle during the Bush Administration, researchers have been focusing on the oil production capabilities of algae and microalgae, as a non-food crop

that could be grown in areas where water scarcity is not an issue.

Biofuel production also offers the potential for some intriguing piggyback operations, such as water desalination and food production, which have the potential to math out as carbon negative.

Here in the US, the Energy Department chopped funding for algae biofuel research in 1995, but it did fold its microbiology efforts into a new national collaboration called the Joint Genome Institute, and by 2010, volatility in the oil market provided the agency with a rationale to pump more dollars directly back into the field.

With an assist from other federal agencies (namely, the US Navy and National Science Foundation), the Energy Department continues to be all over algae biofuel, despite the fossil oil market crash. In February the National Renewable Energy Laboratory modeled a new “whole body” process that could help keep algae biofuel costs competitive against the floundering petroleum market.

In the most recent development, last February, the agency issued the third in a three-year series of multi-million dollar funding rounds for algae biofuel.

Why Botryococcus braunii?

The Joint Genome Institute has been focusing like a laser on *Botryococcus braunii*. Here’s the official line on the micro-algae’s attractiveness to researchers:

...*Botryococcus braunii* is found worldwide, but most notably in oil and coal shale deposits. Approximately 40 percent of the *B. braunii* cells is made up of hydrocarbons, and the oil produced can be easily converted and used for vehicle and jet fuels with more than 90 percent efficiency. *B. braunii* has been studied for several decades, not just for its potential as a source of biofuel, but for its ability to sequester carbon...

Did you catch that part about oil and coal shale? Oh, the irony!

The Texas A&M AgriLife Biofuel Research

That brings us to the new biofuel study, conducted by researchers at the Texas A&M AgriLife program. While mapping the biochemical pathway that enables *B. braunii* to produce an oil called lycopadiene, the team nailed down the enzyme that

initiates the oil production process, encoded in a “very interesting” gene called lycopaoctene synthase (LOS), as described by lead researcher Dr. Tim Devarenne:

A closer look at the LOS enzyme revealed that the enzyme is “promiscuous” in that it is capable of mixing several different substances, or substrates, to make different products.

As explained by the research team, promiscuity is a common trait among enzymes, but it is unusual to find this particular combination of hydrocarbon and enzyme. By mixing different substrates, LOS produces longer, more desirable carbon molecules of 35 and 40 carbons long:

...that’s not only different from other enzymes that are similar to LOS, but it’s important because most enzymes like LOS only use a 15-carbon substrate. In terms of fuel, it’s better to start with a higher carbon number molecule.

Don’t expect to fill ‘er up with *B. braunii* any time soon, though. This is just the “very first” step in the algae fuel production pathway, so there is a lot of gene mapping to be done.

Other challenges involve finding an efficient host organism to express the genes in order to maximize fuel production.

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Food Waste at New England Stop & Shops Becomes Renewable Energy

SustainableBusiness.com News

We love biogas and apparently Stop & Shop does too, since its 212 New England supermarkets will be powering an anaerobic digester.

Any excess food that can’t be donated - about 34,000 tons a year - will be turned into biogas - *renewable* natural gas that will power 40% of a 1.1 million square-foot distribution center. When fully operational, the anaerobic digester will produce 1.25 megawatts of electricity.

Divert, Inc., which serves the local retail industry, owns and operates the biogas plant, made possible through a \$400,000 grant from the Massachusetts Clean Energy Center.

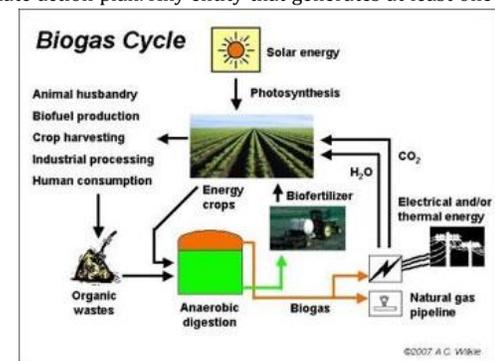
Policy helps too. Massachusetts banned major producers of food waste from sending it to landfills as part of its climate action plan. Any entity that generates at least one ton of organic material per week has to either donate or re-purpose useable food and send the rest to a biogas facility. Besides cutting methane emissions from food degrading in landfills, the ban supports more renewable energy in the state. New York City has a similar law, but it applies only to restaurants.

This organic form of natural gas is being generated at landfills, wastewater

treatment plants and dairy farms, reducing waste, eliminating methane emissions, and creating revenue streams. There are even biogas fueling stations.

Kroger, the biggest supermarket chain in the US, has a biogas plant in California.

[<Source>](#)



Antarctica alone may lift seas a meter by 2100: scientists

Such an abrupt change would spell disaster for major cities, coastal areas across the globe, forcing hundreds of millions of people to seek higher ground



Photo: AFP

forcing hundreds of millions of people to seek higher ground.

Over a longer time scale, the study concluded, the picture is even grimmer: within 500 years, Earth's once-frozen continent will have lifted water lines by more than 15 meters (50 feet), reconfiguring the planet's coastlines.

"Frankly, I hope we're wrong about this," Robert DeConto, lead author of the study and a climate scientist at the University of Massachusetts, told *AFP*.

But independent experts contacted by *AFP* said the study was probably on target.

While sharing DeConto's sense of alarm, they praised the new research, published in the peer-reviewed journal *Nature*, as "really good science."

Up to now, estimates of how many centimetres or inches Antarctic melt-off would add to the world's oceans over the next 85 years have been conservative.

The latest report from the UN Intergovernmental Panel on Climate Change (IPCC), a federation of several thousand scientists that report to governments on global warming and its impacts, put that number at about a dozen centimetres (five inches), all of it from a relatively small section called the West Antarctic Ice Sheet.

The IPCC predicted that total sea level rise from all sources — including the expansion of water as it warms, melting glaciers, and the Greenland ice sheet — would probably not top a meter by century's end.

But the low figure for Antarctica had more to do with gaps in knowledge than differences of opinion.

Scientists have long struggled, for example, to understand the role Earth's southern extremity played during earlier periods of global warming — 125,000 and three million years ago — when temperatures barely warmer than our own raised oceans to levels six-to-10 metres higher than today.

"In both cases, the Antarctic ice sheet has been implicated as the primary contributor, hinting at its future vulnerability," the study said.

But how, exactly, the planet's ice continent — far colder than the Arctic, and thus less subject to melting — disintegrated remained a mystery.

Building on earlier work, DeConto and David Pollard, a climate scientist at Pennsylvania State University, created computer models integrating for the first time two mechanisms that appeared to solve the puzzle.

One is a process called hydrofracturing.

As any teenage can tell you, if you put a sealed bottle of water or beer in a freezer, the liquid will expand and crack the container.

"That's what happened here," said Anders Levermann, an expert on the dynamics of ice sheets at the Potsdam Institute in Germany and a lead author of the chapter on sea levels in the most recent IPCC report.

"You have melt water going deep into crevices in the ice sheet, and then it expands and cracks the ice open," pushing it toward the sea, he told *AFP*, commenting on the study.

Up to now, scientists have focused mostly on the impact warming oceans have on the overhang from ice sheets, which sit on land.

But it turns out that air temperatures have risen enough to cause some melting on top as well.

The other natural mechanism is the breakup of buttressing ice shelves, and the failure of ice cliffs, that both act as dams for the ice sheets behind them.

Paris: Melting ice from Antarctica could raise oceans by a metre before 2100 at current rates of greenhouse gas emissions, doubling previous forecasts for sea level rise, according to a study released Wednesday.

Such an abrupt change would spell disaster for major cities and coastal areas across the globe,

"These are not 'new' processes' per se," DeConto said. "But they haven't been considered at the continental scale in Antarctica before."

When the researchers applied their models to the previous periods of warming, the pieces of the puzzle fell into place, he said.

It also gave rise to alarming conclusions about the what lies ahead.

"The fact that a model — tested and calibrated against past examples of sea level rise — simulates such a strong future response to warming if very concerning," he said.

"This should be a wake up call."

The study adds to new evidence that ocean water marks may go up more and faster than previously thought, other scientists said.

"The recent modelling now favour the view that continuing rapid warming will cause sea level rise to be larger, and perhaps much larger, especially if we look beyond the end of this century," said Richard Alley, also a scientist at Pennsylvania State University.

DeConto did note, however, that if humanity succeeds in drastically reducing greenhouse gas emissions in the coming decades, there is relatively little contribution to sea level rise from Antarctica.

"That's the good news here," he added.

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US Researchers Develop Bacteria-Powered Solar Panel

World | Indo-Asian News Service

NEW YORK: In a first, a team of US researchers has created a bio-solar panel that can generate 5.59 microwatts of energy - a big step in the evolution of bacteria-powered energy to run small devices in remote areas where regular battery replacement is not possible.



A typical "traditional" solar panel on the roof of a residential house, made up of 60 cells in a 6x10 configuration, generates roughly 200 watts of electrical power at a given moment. (Representational Image)

"Once a functional bio-solar panel becomes available, it could become a permanent power source for supplying long-term power for small, wireless telemetry systems as well as wireless sensors used at remote sites where frequent battery replacement is impractical," said study co-author Seokheun "Sean" Choi from Binghamton

University.

The researchers connected nine biological-solar (bio-solar) cells in a 3x3 pattern to make a scalable and stackable bio-solar panel.

The panel continuously generated electricity from photosynthesis and respiratory activities of the bacteria in 12-hour day-night cycles over 60 hours.

"This research could also enable crucial understanding of the photosynthetic extracellular electron transfer processes in a smaller group of microorganisms with excellent control over the microenvironment, thereby enabling a versatile platform for fundamental bio-solar cell studies," Mr Choi noted.

A typical "traditional" solar panel on the roof of a residential house, made up of 60 cells in a 6x10 configuration, generates roughly 200 watts of electrical power at a given moment.

The cells from this study, in a similar configuration, would generate about 0.00003726 watts. So it isn't efficient just yet but the findings open the door to future research of the bacteria itself.

"The metabolic pathways of cyanobacteria or algae are only partially understood, and their significantly low power density and low energy efficiency make them unsuitable for practical applications," noted Mr Choi in a paper published in the journal *Sensors and Actuators B: Chemical*.

"There is a need for additional basic research to clarify bacterial metabolism and energy production potential for bio-solar applications," he added.

[<Source>](#)

It's time to embrace the value of waste

By Rob Kaplan



Food waste is one of the next frontiers. A mutant-looking carrot is among the many vegetables and fruits wasted by the billions of tons each year.

Recycling started more than 20 years ago when cities across the country decided they didn't want to use your tax dollars to pay for landfill waste anymore.

Waste companies started adding recycling as part of their service offerings to win bids from their biggest customers — municipalities. They did this because they had to as part of the bid process, not because they became evangelists for recycling and the environment. It was necessary to compete.

Today, cities have evolved to the next logical step along this trendline: zero waste goals. It's happening all over the place. And, it has the landfill industry freaking out a bit (but that's a topic for another day).

Pretend you're a municipal waste director

You operate in a city of one million people and you currently pay about \$50 per ton to send waste to landfill (the national average). Without any recycling, your landfill bill would probably be about \$40 million per year.

The mayor's office just called and said the city is spending way too much on landfill fees. Your mission: Reduce our landfill bills.

What would you do to tackle this challenge?

Step 1: Figure out what materials you are currently paying to landfill.

Here's what it looks like on average across the US: Standard recycling of packaging such as paper, metals, glass, and plastics will take care of over half of your waste stream (53 percent).

Step 2: Work to divert as much of that stuff out of your landfill and into the existing recycling stream. We've got a lot of work to do optimize that system, but at least you've got a pathway.

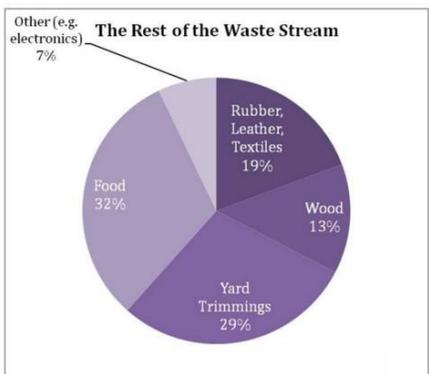
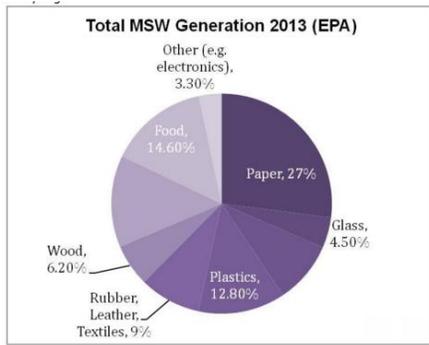
Step 3: The rest of the waste stream is either compostable (74 percent), textile waste (19 percent) or "other," including used electronics (7 percent). Now, you know where to set your sights on driving innovation and new solutions.

In 2016, we at the Closed Loop Fund and Closed Loop Foundation are looking closely at these trends and exploring what we should do next to tackle the rest of the waste stream — beyond packaging. Municipalities across the country are exploring the full suite of options — from regulatory to voluntary. We believe turning waste into value is not only a viable business opportunity but an absolute necessity.

Here's a preview of some of our work:

ReFED: Rethink Food Waste through Economics and Data

Closed Loop Foundation is a lead supporter of ReThink Food Waste (ReFED) report examining food waste solutions based on their ability to merge strong economic returns with optimal social and environmental benefit. The result is a clear roadmap that bridges the gap between awareness and action



to reduce food waste.

Electronics Recycling Landscape Report

In partnership with the Walmart Foundation, The Sustainability Consortium, Arizona State University, and the National Center for Electronics Recycling, is working on a report for later this year that aims to:

Quantify the landscape of the used electronics waste stream over the next 5 years.

Define the types of programs currently in place and their effectiveness.

Explore how changes in consumer, technology, regulatory space and recycling industries will impact electronics recycling.

Collection is a key bottleneck for recycling clothes and electronics

When you step back and take a system view of the challenges with recycling clothes and electronics, it's easy to get stuck with a chicken-or-egg problem. For example, if I'm an electronics recycler, I invest in a next-gen processing facility without confidence that I have access to feedstock, such as used electronics.

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Tips:

Impacts of climate change are boldly visible all around in the form of air pollution, extreme weather and acute shortage of drinking water. We listen to news or read newspapers, always we find news like 2% water remaining in Marathwada dams, all 4 reservoirs in Hyderabad dried up for the first time, dams and reservoirs go dry in Gujarat etc. The water crisis is almost visible everywhere and it's very important that we do every possible effort to save water. Nature is not in our control but we may contribute towards sustainability by conserving this most important resource. We have to alter our habits and use water more sensibly. Here are some tips to conserve water though a couple of months back also these tips were provided.

- Every morning we brush our teeth, while brushing teeth we should close tap after wetting brush and open tap only when we require water for rinsing the brush and mouth. In this way we can save gallons of water.
- For shaving take water in a small mug or cup wet brush and apply shaving cream and make lather. After shaving rinse your razor in the same mug and also the shaving brush if required take more water to rinse the razor and brush. This will save lot of water as compared to using water directly from tap.
- Shorten the shower length. If you require cold water for bathing never flow water in drain for getting water at normal temperature rather fill the bucket and leave it for some time to normalize temperature.
- If your flush tank of the toilet is big then fill a bottle with water and place it in the flush tank this will save water equivalent to the volume of bottle every time you flush.
- When going to replace flush tank or buy a new one opt for dual-flush toilet this will help save water. This has two knobs one is for full water flow and other for smaller amount of water.
- Install faucet aerators, which break the flowing water into fine droplets and entrain air while maintaining wetting effectiveness. These inexpensive devices can be installed in sinks in kitchen and bathroom to reduce water use. Aerators are easy to install and can reduce the water use at a faucet by as much as 60 percent while still maintaining a strong flow.
- RO water purifier has become very common, as we know it rejects lot of water and if not taken care to use flows down the drain. Either collect this water and use it for other purposes or channelize it to lawns or kitchen garden.
- Though front loading washing machines use lesser water but ensure that you run the washing machine on full loads.
- Ensure that there is no leakage in the pipeline and no taps or faucets are dripping.
- Rain water harvesting: While constructing house make a system so that rain water is collected and stored in a tank rather than letting it of go down the drain. The collected water may be used for watering the garden and other purposes which does not need purified water.
- Collect rain water from roof top in a tank and use it for watering plants, lawn and other suitable purposes.

Climate change: website reveals which homes will be swamped by rising sea levels

Coastal Risk Australia combines Google Maps with detailed tide and elevation data, as well as future sea level rise projections

By Michael Slezak



A visualisation of Melbourne in 2100 under a five-metre sea level rise scenario. Photograph: Coastal Risk Australia

For the first time, Australians can see on a map how rising sea levels will affect their house just by typing their address into a website. And they'll soon be able to get an estimate of how much climate change will affect their property prices and insurance premiums, too.

Launched on Friday, the website Coastal Risk Australia takes Google Maps and combines it with detailed tide and elevation data, as well as future sea level rise projections, allowing users to see whether their house or suburb will be inundated.

Coinciding with that is the launch of a beta version of Climate Valuation, a website that gives users an estimate of how much climate change will impact their property value and insurance premiums over the life of their mortgage.

On the high emissions scenario – which is the path the world is currently on – the IPCC says sea levels will likely rise by a median of 0.74m by 2100. But a rise of almost 1m is within the “likely” range of levels that could be reached by 2100.

In every state and territory except the ACT, the website shows that houses and famous landmarks will be underwater by 2100. Beaches like Manly, Byron and Coogee in New South Wales would lose significant amounts of sand, as will Bell’s Beach in Victoria and Noosa in Queensland.

Many coastal suburbs and cities are shown to be subject to severe inundation, including Cairns, Ballina and Hindmarsh Island.

James Hansen, a former Nasa scientist who is considered the father of modern climate change awareness, recently produced research suggesting that sea levels could rise “several metres over a timescale of 50 to 150 years”.

The website also lets users see how any sea-level rise will affect an area. If sea levels rose 5m, then large parts of most coastal cities would be inundated, according to the website’s calculations.



A visualisation of Sydney’s eastern suburbs in 2100, under the five-metre sea level rise scenario. Photograph: Coastal Risk Australia

“We don’t want to create hysteria but we don’t want people burying their heads in the sand ether,” said Nathan Eaton, one of the creators of the website from the company NGIS Australia.

The tool was adapted from work NGIS did when it created a similar tool for the Pacific Island nations of Tonga, Samoa, Vanuatu and Papua New Guinea, in collaboration with the Australian Department of Environment and the Collaborative Research Centre for Spatial Information.

Climate Valuation, also launched on Friday, will, for a fee, tell users the probability of a property being flooded by rising sea levels; the projected increases in insurance premium from coastal inundation risk; and the projected percentage reduction in value of the property at the end of a mortgage.

It is being launched for use by researchers initially and will soon be available as part of a Kickstarter campaign, which the developers say will raise money to include more climate change-associated risks like bushfires and river flooding. People who pledge to contribute will get early access to it.

The developers say the site uses risk engines that are already used to assess billions of dollars of critical infrastructure in Australia and the new site will give the general public access to that data for the first time.

“We’re hoping this helps people make informed decisions about their safety and on what is often the most significant investment they will ever make – their home,” said Karl Mallon, head of the Climate Valuation Project.

[<Source>](#)

Africa Leap Frogs to Solar

SustainableBusiness.com News

For years, small solar companies have been bringing tiny solar systems to Africa, India and other areas where people still have no electricity, and some see 2016 as the year when this really takes off.

“The big story in 2016 is a solar leapfrog. What you have seen for the past 2-3 years is a lot of innovative companies proving that there is a big market. They have received funding and product offerings are getting better. In 2016 you’ll see solar taking off on a mass-market scale,” Xavier Helgesen, CEO of Off Grid Electric, told Bloomberg New Energy Finance (BNEF).

Everyone in Africa has an energy problem, he says. Even where there is a grid, it doesn’t work well or electricity is very expensive.



Small solar could be as much of a game-changer as mobile phones, Patrick Pouyanne, CEO of oil company Total, told BNEF. Total is one of Off Grid’s investors.

Last year, around 7.5 million tiny solar systems were sold in Africa, an incredible increase from the 40,000 sold in 2009. With fresh investment pledges from the US and other countries, 14 African countries joined Energy Africa to bring solar to the 620 million people who still lack access to electricity.

Besides Off-Grid Electric, many small solar companies are active such as SolarAid, BBOXX, and GravityLight.

Africa’s Development Bank aims to mobilize \$55 billion to eliminate Africa’s energy deficit by 2025.

Turning Off-Grid Solar Into an Asset Class

The funding mechanism that’s worked so well in the US to mainstream solar is being used to accelerate growth in Africa.

In the US, SolarCity was the first to raise funds by securitizing its portfolio of solar leases. In just a few years, it raised \$450 million by selling bonds backed by monthly payments customers make for rooftop solar systems.

“We think it’s an interesting model that can be replicated in Africa,” David ten Kroode at Oikocredit, told Bloomberg. Working with merchant bank Persistent Energy and BBOXX, they are offering bonds in Kenya and Rwanda, with plans to expand to Pakistan and Nigeria next.

The first bond raised \$500,000 from institutional investors by bundling 2500 solar contracts in rural Kenya. It pays 21% interest and matures in 2.5 years.

They plan to issue bonds every three months, raising \$16 million this year, and up to \$2 billion within five years.

Last year, Africa launched a “Solar Academy,” where people across the continent can develop professional skills to enter the industry

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The Roads to Decoupling: 21 Countries Are Reducing Carbon Emissions While Growing GDP

By Nate Aden



Economic growth and carbon dioxide emissions have increasingly diverged in the UK. Photo by James Allan/Flickr

emissions stayed flat in 2014 and 2015 while GDP continued to grow. **This emerging trend is supported by 21 countries that have managed to reduce GHG emissions while growing GDP.**

As countries embark on the transition to a new climate economy, there's a debate about whether growth can drive, or even coexist with, climate stabilization. On the other side of the coin, it's also a discussion of whether climate stabilization can drive growth. The debates on growth and resources are complex, fractious and centuries old, and while they won't be resolved in the immediate future, recent developments show that global greenhouse gas (GHG) emissions stayed flat in 2014 and 2015 while GDP continued to grow. **This emerging trend is supported by 21 countries that have managed to reduce GHG emissions while growing GDP.**

Since 2000, More Than 20 Countries Have Reduced Annual GHG Emissions While Growing Their Economies

COUNTRY	CHANGE IN CO ₂ (2000-2014)	CHANGE IN GDP (2000-2014)
Austria	-3%	21%
Belgium	-12%	21%
Bulgaria	-5%	62%
Czech Republic	-14%	40%
Denmark	-30%	8%
Finland	-18%	18%
France	-19%	16%
Germany	-12%	16%
Hungary	-24%	29%
Ireland	-16%	47%
Netherlands	-8%	15%
Portugal	-23%	1%
Romania	-22%	65%
Slovakia	-22%	75%
Spain	-14%	20%
Sweden	-8%	31%
Switzerland	-10%	28%
Ukraine	-29%	49%
United Kingdom	-20%	27%
United States	-6%	28%
Uzbekistan	-2%	28%

Sources: BP Statistical Review of World Energy 2015; World Bank World Development Indicators

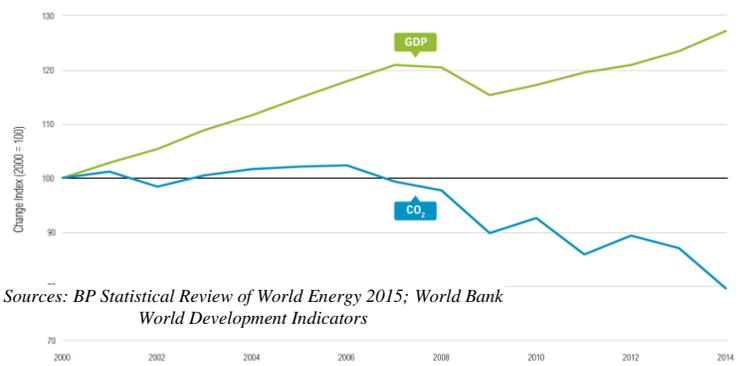
The United States is the largest country to experience multiple consecutive years in which economic growth has been "decoupled" from growth in carbon dioxide emissions. From 2010 to 2012, energy-related carbon dioxide emissions declined by 6 percent (from 5.58 to 5.23 billion metric tons), while GDP grew by 4 percent (from \$14.8 to \$15.4 trillion). In its analysis of the Clean Power Plan, the U.S. Energy Administration forecasts that moving to a cleaner electricity system after 2020 would bring about a sustained period of GDP-GHG decoupling. As illustrated in the figure below, CPP implementation is expected to reduce total U.S. energy-related carbon dioxide emissions by a further 6 percent between 2020 and 2025, while GDP increases by 13 percent in real terms over the same period.

If the United States implements the Clean Power Plan and achieves sustained decoupling, it will be in good company. Twenty other countries achieved decoupling of GDP and energy-related carbon dioxide emissions over the period from 2000 to 2014.

The UK is an example of a country where economic growth and CO2 emissions have increasingly diverged. Between 2000 and 2014, the UK achieved six years of absolute decoupling where

How Have Countries Decoupled?

Decoupling UK GDP and CO₂ Emissions, 2000-2014



Sources: BP Statistical Review of World Energy 2015; World Bank World Development Indicators

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There is not a single formula, policy or demographic trend that's driven GDP-GHG decoupling across all countries. Sweden, for example, implemented ambitious policies including carbon taxes that supported its decoupling. Denmark's rapid increase in renewable energy reduced emissions while stimulating local production. As illustrated in the table below, another key factor in many countries is a structural shift of the economy away from emissions-intensive industry.

Metrics of Absolute Decoupling

	Change in CO ₂ (2000-2014) %	Change in CO ₂ (2000-2014) Mt	Change in Real GDP (2000-2014)	Change in Industry Share of GDP (2000-2013)
Austria	-3%	-2	21%	-3%
Belgium	-12%	-20	21%	-6%
Bulgaria	-5%	-2	62%	2%
Czech Republic	-14%	-18	40%	-0.30%
Denmark	-30%	-17	8%	-5%
Finland	-18%	-11	18%	-9%
France	-19%	-83	16%	-4%
Germany	-12%	-106	16%	-1%
Hungary	-24%	-14	29%	-2%
Ireland	-16%	-7	47%	-9%
Netherlands	-8%	-19	15%	-3%
Portugal	-23%	-16	1%	-6%
Romania	-22%	-21	65%	-1%
Slovakia	-22%	-9	75%	-3%
Spain	-14%	-48	20%	-8%
Sweden	-8%	-5	31%	-4%
Switzerland	-10%	-4	28%	-0.30%
Ukraine	-29%	-99	49%	-10%
United Kingdom	-20%	-120	27%	-6%
United States	-6%	-382	28%	-3%
Uzbekistan	-2%	-2	28%	10%

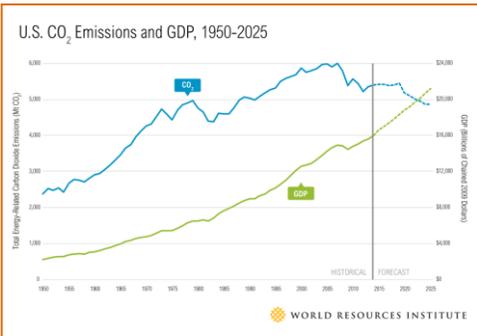
More than 90 percent of the countries that decoupled GDP and GHG emissions between 2000 and 2014 reduced the industrial sector share of their economies. However, the exceptional cases of Bulgaria and Uzbekistan demonstrate that GDP-GHG decoupling is also feasible in countries with expanding industrial activity (not to mention Switzerland and the Czech Republic, where the industrial portion of GDP remained essentially steady). Across the 21-country group, the average change in the industry share of GDP was a 3 percent reduction over the period, with an average CO2 reduction of 15 percent.

Shifting to a Low-Carbon Path

Decoupling of GDP and GHG emissions in numerous countries demonstrates the feasibility, and increasing prevalence, of the transition to cleaner modes of economic activity. These country-level decouplings are driving the global trend toward decoupling in 2014 and 2015. Beyond the aggregate trends described here, more information is needed on the potential leakage of carbon emissions to other countries as nations move their industries overseas, factors that enable sustained and absolute decoupling, and what's needed to support larger-scale emissions mitigation.

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real GDP grew at the same time that carbon dioxide emissions declined. Over the 14-year period, emissions dropped from 591 to 470 million metric tons of energy-related CO₂, while GDP grew from \$2.1 to \$2.7 trillion (constant 2005 U.S. dollars).



Sources: U.S. Energy Information Administration; U.S. Bureau of Economic Analysis

Study reveals greater climate impacts of 2C temperature rise

Analysis of difference between 1.5C and 2C of warming finds extra 0.5C would mean longer heatwaves, greater droughts and threats to crops and coral reefs

By Damian Carrington



Local villagers on the dried river bed in Satkhira, Bangladesh, one of the most vulnerable continental countries to climate change. Photograph: Zakir Hossain Chowdhury / Barcroft

A difference of half a degree centigrade may be barely noticeable day to day, but the difference between 1.5C and 2C of global warming is a shift into a new, more dangerous climate regime, according to the first comprehensive analysis of the issue.

The scientists found the additional 0.5C would lead to longer heatwaves, greater droughts and, in the tropics, reduced crop

yield and all coral reefs being put in grave danger.

The global climate change deal agreed in Paris in December pledged to “hold the increase in the global average temperature to well below 2C above pre-industrial levels and pursue efforts to limit the temperature increase to 1.5C.” Vulnerable countries, such as low-lying islands, have warned that 2C of climate change would wipe their nations from the map.

Understanding the different impacts from 1.5C or 2C of warming has been made more urgent by the recent run of record temperatures, with 2014 and 2015 breaking long-term records and recent months smashing previous highs. In February, the global temperature was 1.34C above the average from 1951-1980, according to Nasa data.

The new research was published in the journal *Earth System Dynamics*, and lead author Carl Schleussner, a scientific adviser at Climate Analytics in Germany, said: “We analysed the climate models used by the Intergovernmental Panel on Climate Change [and] considered 11 different indicators including extreme weather events, water availability, crop yields, coral reef degradation and sea-level rise. We found significant differences [between 1.5C and 2C] for all the impacts we considered.”

The researchers found: “For heat-related extremes, the additional 0.5C marks the difference between events at the upper limit of present-day natural variability and a new climate regime, particularly in tropical regions.”

The analysis found that regional dry spells increased by 7% with 1.5C of warming but by 11% with 2C, while sea level rises by 10cm more in the hotter scenario. Some regions would be more affected than others with, for example, water availability in the Mediterranean falling by 9% under 1.5C of warming but 17% under 2C.

The research found crop yields might rise in some high-latitude regions, but “tropical regions like west Africa, south-east Asia, as well as central and northern South America are projected to face substantial local yield reductions, particularly for wheat and maize.”

Coral reefs, which provide vital nurseries for many fish on which people rely on for food, would be particularly affected by an additional 0.5C of warming. “In a [2C] scenario, virtually all tropical coral reefs are projected to be at risk of severe degradation due to temperature-induced bleaching from 2050 onwards.” This is reduced to 70% by 2100 for the 1.5C scenario, the scientists found.

Jacob Schewe, one of the research team and at the Potsdam Institute for Climate Impact Research in Germany, said: “Some researchers have argued that there is little difference in climate change impacts between 1.5C and 2C. Indeed, it is necessary to account for natural variability, model uncertainties, and other factors that can obscure the picture. We did that in our study, and by focusing on key indicators at the regional level, we clearly show that there are significant differences in impacts.”

Prof Nigel Arnell, at the University of Reading, UK, who was not involved in the research, welcomed the new study: “This study demonstrates that the impacts in 2100 are lower under a 1.5C world than under a 2C world and that the difference is greater for some sectors than for others. Impacts on heat extremes are most affected.

“The study also shows that the rate of change over time is really important for future impacts, so in order to really understand the differences between a 1.5C and a 2C world we need to run more comprehensive global climate models with lower rates of [warming] than used so far to see how the climate system responds.”

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Climate change will wipe \$2.5tn off global financial assets: study

Losses could soar to \$24tn and wreck the global economy in worst case scenario, first economic modelling estimate suggests



The economic impact of climate change could play havoc with the world economy, according to an LSE study. Photograph: Carlo Allegri/Reuters

Climate change could cut the value of the world’s financial assets by \$2.5tn (£1.7tn), according to the first estimate from economic modelling.

In the worst case scenarios, often used by regulators to check the financial health of companies and economies, the losses could soar to \$24tn, or 17% of the world’s assets, and wreck the global economy.

The research also showed the financial sense in taking action to keep climate change under the 2C danger limit agreed by the world’s nations. In this scenario, the value of financial assets would fall by \$315bn less, even when the costs of cutting emissions are included.

“Our work suggests to long-term investors that we would be better off in a low-carbon world,” said Prof Simon Dietz of the London School of Economics, the lead author of the study. “Pension funds should be getting on top of this issue, and many of them are.” He said, however, that awareness in the financial sector was low.

Mark Campanale of the thinktank Carbon Tracker Initiative said the actual financial losses from unchecked global warming could be higher than estimated by the financial model behind the new study. “It could be a lot worse. The loss of financial capital can be a lot higher and faster than the GDP losses [used to model the costs of climate change in the study]. Just look at value of coal giant Peabody Energy. It was worth billions just a few years ago and now it is worth nothing.”

The Bank of England and World Bank have warned of the risks to the global economy of climate change and the G20 has asked the international Financial Stability Board to investigate the issue. In January, the World Economic Forum said a catastrophe caused by climate change was the biggest potential threat to the global economy in 2016.

“Physical climate change impacts are a systemic risk on a massive scale,” said Ben Caldecott, the director of the sustainable finance programme at the University of Oxford. “Investors can do much more to differentiate between companies more or less exposed and they can help reduce the risk to the global economy by supporting ambitious action on climate change.”

The new study, published in the peer-reviewed journal *Nature Climate Change*, used economic modelling to estimate the impact of unchecked climate change. It found that in that scenario, the assets were effectively overvalued today by \$2.5tn, but that there was a 1% chance that the overvaluation could be as high as \$24tn.



A street in York, UK. Weather events triggered by climate change have a wide ranging impact on the wider economy. Photograph: Jeff J Mitchell/Getty Images

The losses would be caused by the direct destruction of assets by increasingly extreme weather events and also by a reduction in earnings for those affected by high temperatures, drought and other climate change impacts.

If action is taken to tackle climate change, the study found the financial losses would be reduced overall, but that other assets such as fossil fuel companies would lose value. Scientists have shown that most of the coal, oil and gas reserves such companies own will have stay in the ground if the global

rise in temperature is to be kept under 2C. The total stock market capitalisation of fossil fuel companies today is about \$5tn.

“There is no scenario in which the risk to financial assets are unaffected by climate change. That is just a fiction,” said Dietz. “There will be winners and losers.” Major investors such as Norway’s sovereign wealth fund – the world’s biggest – have already begun selling off high-carbon stocks such as coal companies.

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World Bank to spend 28% of investments on climate change projects

The world's biggest provider of public finance to developing countries will refocus its financing efforts towards tackling climate change, group said

By Fiona Harvey, Environment correspondent



Pedestrians pass by a banner announcing the 2016 spring meetings of the IMF and World Bank on Wednesday in Washington DC. Photograph: Mandel Ngan/AFP/Getty Images

The World Bank has made a "fundamental shift" in its role of alleviating global poverty, by refocusing its financing efforts towards tackling climate change, the group said on Thursday.

The world's biggest provider of public finance to developing countries said it would spend 28% of its investments directly on climate change projects, and that all of its future spending would take account of global warming.

At last year's landmark conference on climate change in Paris, the World Bank and its fellow development banks were made the linchpins of providing financial assistance to the poor world, to enable countries to cut greenhouse gas emissions and adapt to the effects of global warming.

"Following the Paris climate agreement, we must now take bold action to protect our planet for future generations," said Jim Yong Kim, president of the World Bank Group. "We are moving urgently to help countries make major transitions to increase sources of renewable energy, decrease high-carbon energy sources, develop green transport systems and build sustainable, livable cities for growing urban populations. Developing countries want our help to implement their national climate plans, and we'll do all we can to help them."

John Roome, senior director for climate change at the World Bank, told journalists: "This is a fundamental shift for the World Bank. We are putting climate change into our DNA. Climate change will drive 100 million more people into poverty in the next 15 years [unless action is taken]."

At least \$16bn a year, from across the World Bank group, which includes other development and finance institutions, will be directed to climate change projects, including renewable energy and energy efficiency. The group will aim to mobilise \$13bn in extra funding from the private sector within four years, for instance through joint funding programmes. By 2020, these efforts should amount to about \$29bn a year, nearly a third of the \$100bn a year in climate finance promised by rich countries to the poor as part of global climate change agreements.

As part of the institution's new strategy, it will help to fund the construction of enough renewable energy to power 150m homes in developing countries, and build early warning systems of climate-related disasters – such as storms and floods – for 100 million people.

The bank will also target "smart" agriculture systems, which use less water and energy and retain soil fertility, and will help countries develop their transport and urban infrastructure to produce much less carbon. All projects considered for funding – including health, education and other development priorities – will be screened for their vulnerability to the impacts of climate change.

The World Bank has attracted strong criticism in the past for backing the construction of high-emissions infrastructure, chiefly coal-fired power stations, and had already made moves away from such investments. Roome refused to rule out fossil fuel investments in the future, but said they would be subject to strict criteria, to do with their necessity, ensuring the most efficient technology was used, and investigation of alternatives. For instance, he said, gas could provide a "transition" away from high-carbon fuels for countries struggling to build new renewable energy capacity.

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Tesla's Success Marks New Age for Electric Cars

SustainableBusiness.com News

I'm sure you've heard that Elon Musk unveiled Tesla's new electric car to much fanfare last week. People across the US, Canada and other countries stood in lines for hours to register their \$1000 deposit for the Model 3 - which won't be ready for two years!

Yes, Tesla has made it into the hearts of people around the world, as no car has for a long time. Orders were placed for an astounding 276,000 cars - more than halfway toward the goal of producing 500,000 cars a year.

Imagine a car manufacturer introducing a new model the way Elon Musk did:

"It's very important to accelerate the transition to sustainable transport. This is really important for the future of the world." The crowd cheers!

Then he presents a slide show - not about the car, but about climate change - with graphs displaying rising carbon emissions and global temperatures.



Priced at \$35,000 (before incentives), the Model S is Tesla's first car that's affordable for mainstream purchasers. Its features can't be beat: a gorgeous car with an all-glass top; a 215-mile range; the ability to accelerate to 60 mph in under 6 seconds; and a 5-star safety rating.

In January, General Motors unveiled its Chevy Bolt, which also has a 200+ mile range, a \$30,000 price tag and similar acceleration.

All the big automakers are investing heavily in the space. Audi, for example, has a goal of increasing EVs to 25% of US sales by about 2026 - underpinning "a lasting and sustainable strategic shift."

2020's: The Decade of the EV

With gas prices so low, it may be hard to believe that EVs are about to make life even harder for petroleum producers. In the US, even sales of hybrids are way down.

But by the mid-2020s, EVs are expected to hit their stride, becoming cheaper than conventional cars in most countries (without subsidies).

With an average price under \$22,000, they will reach 35% of global new car sales by 2040, says Bloomberg New Energy Finance.

They predict 41 million EVs will be sold in 2040, up from 462,000 in 2015. And this is true even if gas prices remain low.

It's all about battery prices, which account for about a third of an EV's cost. They are already 65% cheaper since 2010.

At the Paris Climate Summit, 13 US states and four countries signed onto the International Zero Emission Alliance, pledging that all new passenger vehicles sold will be zero emissions by 2050.

Enter The Koch Brothers

The Koch Brothers see the writing on the wall. Along with their current efforts to destroy renewable energy, they plan to take on the electric car.

This year, they will launch a new "nonprofit" to spread a pro-petroleum message to the public. It will do "independent research," and use paid and earned media to get their points across, spending about \$10 million a year, reports *Huffington Post*.

"The Kochs have invested heavily in a pugnacious defense of fossil fuel consumption. They've done this in the electricity sector, and as the debate shifts to transportation they're behaving true to form," an energy analyst told *Huffington Post*.

"Electric vehicle adoption started slowly, but it certainly is going to follow an exponential growth trajectory," says Varun Sivaram, at the Council on Foreign Relations. "Once electric vehicle adoption hits a critical mass, I think it will take refiners, petroleum producers and automakers by surprise."

US gas consumption is already down because of more efficient cars, even as Americans are driving more, according to the US Energy Information Administration.

Vehicles account for 27% of US greenhouse gas emissions - the second largest single source after power plants.

While petroleum producers have a lot to lose, electrification of transportation is an enormous opportunity for utilities. 52% of power companies are already pursuing EV charging as a revenue stream, according to research.

[<Source>](#)

GE Power: These 4 policies could solve the world's water crisis

By Jon Freedman



Water conservation and reuse is key — meaning that we need better policies to encourage those actions.

Less than a decade ago, mainstream discussion started to include predictions of a future where global demand for water exceeds supply. Today, water scarcity is an unfortunate reality in all too many places.

Despite a wet winter, California just entered the fifth year of its worst drought of the past 500 years. Taps recently have run dry in Sao Paulo, Brazil. Northern China is parched. Ten of India's 29 states have declared droughts this year.

In developing countries, millions of people lack of access to clean, safe water. In other corners of the world, cities are dealing with failing infrastructure and are often unable to deliver water to residents in need.

Then there's rapid population growth and economic development in regions such as the Middle East, where water resources are being pushed well beyond natural limits.

On this Earth Day, we must ask ourselves, "How do we preserve and sustain the water we do have for the long-term? How do we ensure our use, and reuse, of this invaluable resource as effectively and efficiently as possible?"

The good news is there is a lot we can do.

Conservation is one approach. California, for example, enacted historic new water conservation rules in 2015, mandating urban residents to reduce water use by 25 percent.

Desalination is another strategy, which is especially effective in coastal areas. But the process is expensive and energy-intensive.

Wastewater recovery and reuse, on the other hand, on average uses about half the energy of desalination, and costs about half as much. Yet, while the technology exists to recover a large percent of wastewater, the world today only reuses about 4 percent of its wastewater.

Seeking solutions

Yes, the world's water challenge is great. But it's also solvable. We must focus on fueling water reuse. There are countries around the world leading the way forward.

Israel, despite its desert terrain, meager rainfall and population growth, currently boasts a water surplus; it is reusing 85-90 percent of its wastewater. Saudi Arabia recently announced a plan to reuse 65 percent of its wastewater.

Then there's Singapore. The island city-state is reusing 30 percent of its water — punching well above its weight in terms of water reuse policies and technologies.

Globally, water reuse is taking root. But [much more can be done \(PDF\)](#) to drive more rapid and widespread adoption of reuse technologies, and we can learn from the experiences of countries such as Israel, Saudi Arabia and Singapore.

Governments around the world can implement policies that will change today's approach to water management, and they can do that in four main ways:

1. Education and outreach

This is critical to advancing water recycling, not only to encourage its use, but also to overcome any public concerns about the safety and quality of recycled water. Local communities raise awareness through various common techniques used by governments worldwide, such as recognition awards and certificate programs.

Additionally, information dissemination and reporting of water consumption, discharge and recycling data through such channels as brochures, websites and advertising are also effective approaches to encouraging education and elevating awareness.

2. Removing barriers to adoption of reuse technologies

Barriers to water recycling and water recycling systems come in many forms: technological; financial; and regulatory. One of the biggest barriers is a municipal, state or regional water code that does not recognize use of recycled water.

In this case, the first steps are to set specific quality standards for recycled water and to provide guidance on the use of the reclaimed water. Additionally, revising plumbing codes and alleviating stringent permitting and inspection requirements for recycled water allows companies and communities to meet obligations that were otherwise difficult to attain.

3. Incentives

Incentives, such as direct subsidies, reduce government payments for the reintroduction of recovered water and provide regulatory relief for recycled water users through structured pricing mechanisms.

Additional incentives for water recycling and reuse include government procurement of water recycling and reuse equipment, requirements that government buildings and operations maximize their recycling and reuse of water, and structuring of water rights to reduce use of potable water.

4. Mandates and regulations

The requirement of water recovery systems and recycled water for certain large volume activities (irrigation) — continue to reinforce these initiatives along with the strong need for government participation.

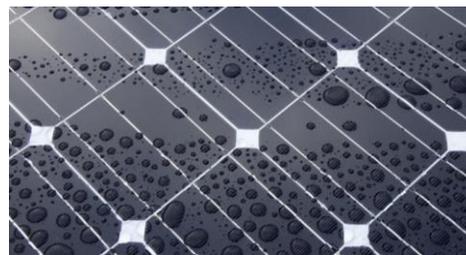
Through more creative, private-public partnerships among industries, communities, municipalities and government, we can protect and enhance performance and competitiveness, as well as protect one of our most important natural resources. Future success depends on our ability to work together.

New levels of efficiency must continually be encouraged through education, conservation, governance and incentives. Understanding the risks — and the opportunities — will place businesses and governments in a more competitive position to lead and succeed in a carbon and water-constrained economy, and ultimately secure a future of water sustainability.

[<Source>](#)

Graphene layer could allow solar cells to generate power when it rains

Solar energy is on the rise. Many technical advances have made solar cells quite efficient and affordable in recent years. A big disadvantage remains in the fact that



solar cells produce no power when it's raining. This may change, however: In the journal *Angewandte Chemie*, Chinese researchers have now introduced a new approach for making an all-weather solar cell that is triggered by both sunlight and raindrops.

For the conversion of solar energy to electricity, the team from the Ocean University of China (Qingdao) and Yunnan Normal University (Kunming, China) developed a highly efficient dye-sensitized solar cell. In order to allow rain to produce electricity as well, they coated this cell with a whisper-thin film of graphene.

Graphene is a two-dimensional form of carbon in which the atoms are bonded into a honeycomb arrangement. It can readily be prepared by the oxidation, exfoliation, and subsequent reduction of graphite. Graphene is characterized by its unusual electronic properties: It conducts electricity and is rich in electrons that can move freely across the entire layer (delocalized). In aqueous solution, graphene can bind positively charged ions with its electrons (Lewis acid-base interaction). This property is used in graphene-based processes to remove lead ions and organic dyes from solutions.

This phenomenon inspired researchers working with Qunwei Tang to use graphene electrodes to obtain power from the impact of raindrops. Raindrops are not pure water. They contain salts that dissociate into positive and negative ions. The positively charged ions, including sodium, calcium, and ammonium ions, can bind to the graphene surface. At the point of contact between the raindrop and the graphene, the water becomes enriched in positive ions and the graphene becomes enriched in delocalized electrons. This results in a double-layer made of electrons and positively charged ions, a feature known as a pseudocapacitor. The difference in potential associated with this phenomenon is sufficient to produce a voltage and current.

[<Source>](#)

From Commitment to Action: Signs of Progress Since the Paris Climate Talks

By Ranping Song and Cynthia Elliott



Last December, 196 countries adopted the historic Paris Agreement on climate change, creating the first universal pact to put the world on a path towards a zero-carbon, resilient future.

Since then, some concrete steps have been made while examples of substantial progress that took place in 2015 is just now coming to light. Countries, regions, cities and businesses are taking action to move the world in the right direction toward a low-carbon, climate resilient future. With global leaders gathering in New York on April 22 to sign the Paris Agreement, now is a good time to reflect on the changing landscape of the global response to climate change.

Encouraging Worldwide Signs

Global investment in renewable energy hit a record high of \$286 billion last year, more than double the amount committed to fossil fuel power plants. Significantly, more than half the investment in renewables took place in developing countries, which are projected to account for the majority of energy consumption growth for decades to come. Analysis from the International Energy Agency indicates that, for a second year in a row, global energy-related carbon emissions stalled while the economy continued to expand, confirming the decoupling of global emissions from economic growth. In the last 15 years, 21 countries have reduced annual GHG emissions while growing their economies.



Photo credit: Alexandre Maros via Compfight cc

percent reduction by that year. The blueprint is being turned into action, as China issued new directives to curb coal power plants construction and boost renewable energy generation. China's vision of a more sustainable economy based on services, innovation, and more advanced, efficient manufacturing is starting to come true: the service sector now accounts for more than half of GDP and continues to grow at a faster pace than manufacturing.

India, which shares the ambition for sustainable development, was among the top 10 countries in renewable energy investing for 2015, with investment of \$10.2 billion,

22 percent more than the year before. This year, India's Ministry of New and Renewable Energy approved six new solar park projects. There are 33 solar parks across 21 Indian states under development. Together, they will create an aggregate capacity of 19.9 gigawatts (GW), edging the country towards its goal of 100 GW solar photovoltaic power generation by 2022.

The United States is making important progress as well. Solar and wind accounted for two-thirds of all new electric power plants built in the United States in 2015, and no new coal power plants are expected to be built this year. In February, 17 governors from both Republican and Democratic parties pledged to accelerate state effort to boost renewables, build better electricity grids and cut emissions from transport – suggesting a shift in U.S. public opinion. A recent poll indicated that a record number of Americans see global warming as a threat. Efforts to support adaptation are also moving ahead as the U.S. Department of the Interior recently announced nearly \$5 million to help the U.S. Virgin Islands build resilience to climate change.

International Dividends

U.S. leadership also paid dividends internationally. In a joint statement, the United States and Canada committed to significantly cut methane emissions from existing oil and gas systems by 40-45 percent below 2012 levels by 2025. Three weeks later, President Barack Obama and President Xi Jinping of China jointly committed to formally join the Paris Agreement as soon as possible this year. Together, the two countries represent 38 percent of global greenhouse gas (GHG) emissions according to the UNFCCC, more than half of the 55 percent of global emissions required to bring the Paris Agreement into force. The fact that these top emitting countries are on board sends a strong signal to others to formally join the group. (The agreement also requires that at least 55 countries join.)

Many more countries are taking action as well. Morocco recently switched on the first phase of its concentrated solar power plant, which will be the world's largest solar plant. Thanks to Mexico's first Clean Energy Auction, solar power there is projected to grow 521 percent this year. The Pacific island nation of Tonga's new national climate change policy aims for 100 percent renewable energy and 30 percent of land utilized for agroforestry or forestry by 2035. Both Argentina and Indonesia intend to enhance their national climate plans, while Papua New Guinea becomes the first country to officially submit its Nationally Determined Contribution. Fiji, Marshalls Island, Palau, Tuvalu and Switzerland have all completed their domestic approval processes to formally join the Paris Agreement on April 22.

Support for developing countries will be crucial to realize the full cumulative potential of all national climate plans. To that end, the World Bank has recently adopted a climate action plan that will help countries in need meet their pledges to the Paris Agreement.

Cities, Businesses and Others

Momentum is growing among cities, regions, businesses, civil society groups and cooperative initiatives. Since the December Paris meeting, more than 500 new commitments have been recorded in a database that tracks climate commitments by non-state actors. This includes growing participation by cities in the Compact of Mayors and the Covenant of Mayors and by businesses in Caring for Climate, the UN's initiative for business leadership on climate change.

Cities, states and regions have taken significant action this year. San Diego, California, plans to make the transition to 100 percent renewable energy by 2035, while the U.S. state of Oregon passed legislation to end coal use and increase renewable energy to 50 percent by 2040. In Australia, the city of Adelaide committed to become the world's first carbon neutral city. Mato Grosso do Sul, the sixth largest state in Brazil, also announced its pursuit of becoming a carbon neutral state.

Businesses, banks and investors are increasing their climate action role. Microsoft partnered with the state of Virginia and Dominion Virginia Power to invest in a 20 megawatt (MW) solar energy project. Crédit Agricole, one of the largest banking groups in Europe, recently said it aims to achieve 100 percent renewable energy in global operations by the end of 2016. India's TATA Motors and technology giant Hewlett-Packard are among the new recruits of the RE100 initiative since Paris, pledging to achieve 100 percent renewable energy. A consortium of financial institutions led by Bank of America has pledged \$8 billion to scale up climate change investment.

Building on Momentum

More than 130 governments are expected to sign the new Paris Agreement on climate change on Earth Day. Many are also expected to formally join the Agreement in the coming months, offering countries an opportunity to reinforce their commitments to action. This is of critical importance to give the planet a fighting chance of limiting global warming and avoiding the most damaging effects of a changing climate.

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Creating a Green, Profitable US Post Office

SustainableBusiness.com News

By Rona Fried

As you may know, there's a quiet, ongoing push in the US to privatize the US Postal Service (USPS) - and schools, and even air traffic control - but lawmakers like presidential candidate Senator Bernie Sanders (I-VT) are against these moves.

Imagine a public postal service that "delivers the sustainable infrastructure of the next economy" by delivering food from farmers straight to homes, finances green energy, checks in on seniors and provides coast-to-coast charging stations for electric cars.

"Our post office can deliver" the "equitable, climate-friendly economy," says a report. The USPS and its vehicles would be powered by renewable energy. It could sign people up for community-owned wind and solar projects across the country, and make banking much more affordable for people in rural areas, in addition to the profitable service it currently provides delivering packages.

A partial view of a 2 1/2 acre green roof on top of USPS's distribution center in NYC. When built in 2009, it was one of biggest in the country:



While all this certainly could apply to the USPS, these proposals are from the Canadian Union of Postal Workers, which faces similar pressures.

[<Source>](#)

Operating in the dark: How climate change will affect food

By Jason Clay

The year is 2020 and the world is on the cusp of a global food crisis. Throughout the next decade, the world will struggle to meet a host of escalating food security issues, price hikes and scarcity caused by population growth, rapid urbanization, extreme weather and political upheaval.



A retired tractor under the night sky.

World Bank and, lastly, business and investors.

The exercise was designed to help decision-makers better understand the interdependencies of food, climate, trade and political stability, as well as the cascading effects of collective and individual policy decisions.

For someone like me, who has been working with companies for nearly three decades on developing approaches to manage resource scarcity and increase sustainable production, one of the most instructive outcomes of the exercise was

That's the scenario that drove a recent real-time simulation, Food Chain Reaction: A Global Food Security Game. The exercise divided 65 thought leaders and policymakers from several countries into eight teams: Brazil, China, the EU, India, the U.S., continental Africa, multilateral institutions such as the U.N. and

how the private sector reacted to the stress that climate change had on the food system.

"Real-time awareness of food security drivers and indicators will lead to the development of better-informed actions."

Faced with the risk of shortages, the private sector team became one of the most forceful advocates for increased transparency across global food supply chains. The group began calling for better global food security information, including "accurate measures of food stocks and flows, and improved forecasts of potential shortages."

They also proposed developing publicly accessible reports that would use — but still protect — private industry data, and supported other state-level and multilateral institutions' push for information transparency across global food supply chains.

They did not just focus on improved transparency for things such as plantings, yields and areas of production. The private sector, as well as all other players, wanted more information on a much wider range of variables: food demand; water availability, usage, and rights; access to markets; infrastructure; and information on key inputs for food production, processing and handling.

The consensus among all teams was that real-time "awareness of food security drivers and indicators will lead to the development of better-informed actions capable of pre-empting or mitigating crises." In short, we can all learn more by sharing our respective data than we give up by trying to protect it.

That increased transparency, access to information and open-source data would be one of the first things the private sector players focused on was no surprise. It highlighted the crucial role of better information in improving sustainable production and trade, while also shining a light on our lack of good information on the wider global food system.

You manage what you measure

Business owners understand that transparency is directly linked to the principle that you manage what you measure, and that it also helps companies prioritize what to manage first. But in the real world, the dated approaches of 20th century thinking continue to hang on and drive decisions. Despite the obvious need, global transparency remains an aspiration rather than a reality.

"The most significant impact of any company is how its raw materials are produced and how consumers use and then dispose of their products."

There are reasons for this. The global commodity trading system that we rely on for efficiency and reliability was established in a way that eliminated the type of transparency that we need in a 21st century trading system, such as where a product was produced, who produced it, how it was produced, the impacts of production this year and in the past, and the implications of weather variability now and in future production. This is precisely the type of information that companies and governments need to identify risks and anticipate changes in the global food system.

Some technologies make it easier for companies to improve transparency and traceability of certain commodities from farm to shelf. Different platforms manage aggregated data at scale and help buyers engage with suppliers. Some companies require suppliers to be more transparent in reporting impacts, including emissions, water use, etc.

But these individual efforts fall short of what is needed because they only focus in scope on one or two impacts: what a company is directly responsible for or what it is linked to directly.

The most significant impact of any company is how its raw materials are produced and how consumers use and then dispose of their products. What we really need is a global approach to impacts and traceability that addresses issues that transcend borders as well as any specific company's value chains.

Yet, according to [nonprofit CDP \(PDF\)](#) (formerly the Carbon Disclosure Project), when nearly 8,000 suppliers of 75 multinational members of CDP's Supply Chain Program — with a spend of more than \$2 trillion — were asked to disclose their climate and water data to help assess climate-related risks and opportunities along the supply chain, 49 percent did not supply the information.

"The food sector needs to address planetary risks, and the best way to do that is to collect and process and share data on a planetary scale."

It is not clear whether the companies simply did not have the information or felt that it was proprietary — or at least not the business of companies to whom they sell. In any case, this reaction suggests we have a long way to go before companies willingly share data that is key to managing supply chain risks.

precompetitive approach to information sharing is critical to respond to climate change.

Transparency is not just about a producers' accountability to a retailer, or a retailer's accountability to a consumer. It also goes beyond reputational risks to companies. Transparency is about developing a sector-wide understanding of supply chains that will help us mitigate or even pre-empt climate impacts on food production.

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Cleantech Incubators Expand Into Water Innovation

SustainableBusiness.com News

Worldwide, three of every four jobs depend on water, whether it's used for farming, industry, fisheries or forestry, according to United Nations World Water Development Report 2016.

The water industry is already huge, but most of it is involved in basic activities like pumping water to homes and treating wastewater. While water recycling, nontoxic water treatment, and advanced irrigation systems are becoming more common, there's an enormous need for innovation on sustainable water technologies.

Massachusetts is home to several cleantech incubators, and they are all seeing a spike in applications from water start-ups.

In response, **Cleantech Open Northeast** launched CTO-H2O, noting that about a third of applicants are entrepreneurs trying to commercialize water technologies.

"As a water-innovation consultant and judge for Cleantech Open Northeast, I am excited and amazed at the increased volume of innovative water technologies and solutions applying to our Northeast regional accelerator incubator and accelerator programs," says Marcus Oliver Gay, a water-innovation consultant and member of the New England Water Innovation Network.

Greentown Labs is also expanding its mission to create a home for the world's most disruptive water startups.

"With global water use skyrocketing and availability of freshwater declining, the planet is moving closer towards an inflection point that will be challenging to return from. With this resource challenge comes an immense opportunity for water entrepreneurship, innovation, and leadership," they say.

A new cleantech incubator, Cascadia CleanTech Accelerator, just launched to assist entrepreneurs across the Pacific Northwest.

Last year, the Department of Energy (DOE) launched the US Clean Energy Incubator Network to coordinate and facilitate the work of cleantech incubators across the country. There are 12 clean energy incubators in New England alone.

Lab-Corps - which helps researchers at DOE's national labs get their products to market - is in the midst of a 7-week entrepreneurial bootcamp.

14 teams of researchers from seven national labs are participating to get help on commercializing promising technologies in energy efficiency, renewables and sustainable transportation.

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Climate change threat to public health worse than polio, White House warns

Obama administration report details the diversity of risks and claims global warming is a far more challenging danger than polio virus in some cases

By Suzanne Goldenberg



The US surgeon general, Vivek Murthy: "By the end of the century we are looking at increase of tens of thousands of illnesses and death episodes because of climate change." Photograph: Andrew Harnik/AP

Climate change poses a serious danger to public health – worse than polio in some respects – and will strike especially hard at pregnant women, children, low-income people and communities of color, an authoritative US government report warned on Monday.

The report, *The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment*, formally unveiled at the White House, warned of sweeping risks to public health from rising temperatures in the coming decades – with increased deaths and illnesses from heat stroke, respiratory failure and diseases such as West Nile virus.

"Every American is vulnerable to the health impacts associated with climate change," John Holdren, the White House science adviser, told reporters on Monday. "Some are more vulnerable than others," he went on.

These included pregnant women, children, the elderly, outdoor workers, low-income people, immigrants, communities of color and those with disabilities or pre-existing medical conditions.

The diversity of risks – and vulnerable populations – made climate change a far more challenging threat to public health than even the polio epidemics in the past in some regards, said Vivek Murthy, the surgeon general.

"I don't think we have seen something like this before where we have a force that has such a multitude of impacts," Murthy said.

Polio was eradicated with a specific vaccine, but there was no such quick fix for climate change, he said. "Climate change is not like that. There is not one single source that we can target," he went on. "As far as history is concerned this is a new kind of threat that we are facing."

The grim, climate-inflected scenarios in the report – including projections of an additional 11,000 heat-related deaths by 2030 – intensify the efforts by the White House to rally public support for the Paris climate agreement and the clean power plant rules, which face a legal challenge on 2 June.

Governments will gather in New York on 22 April to formally sign on to the agreement reached in Paris. The Obama administration is leading a push by the United Nations to get the agreement signed and into force by the end of this year – a process that requires the support of 55 countries representing 55% of global greenhouse gas emissions.

The White House, Democrats in Congress and campaign groups are also working to gin up public support for the clean power plant rules ahead of the 2 June hearing into a legal challenge brought by a coalition of states and industries.

The findings in the report were broadly in line with a draft released by the White House in April last year.

The research – conducted by 100 scientists working across eight government agencies – represents the most exhaustive look to date at the health impacts of climate change within the US, officials claimed on Monday.

Earlier researchers have called attention to the risks of heatwaves, air pollution and illnesses borne by insects such as mosquitoes under climate change as well as the declining nutritional value of food staples such as wheat and rice. Last year, scientists warned that extreme heat could make outdoor work perilous and parts of the Middle East uninhabitable.

The officials made it clear they hoped the findings would broaden public support for cutting the carbon emissions that cause climate change.

"Climate change is already under way and no matter what we do it can't be stopped overnight," Holdren told reporters. "But there is a huge difference in magnitude of impacts if we fail to act and the much smaller magnitude we expect if we take aggressive action set out in the president's climate action plan."

The urgency of the warning reflects growing understanding among scientists of the widespread impacts of climate change.

It also lays to rest the false claim by those obstructing efforts to cut emissions that there are more positives than negatives in warmer temperature conditions.

Hot, sunny days cook more smog which makes breathing conditions worse for sufferers of asthma, emphysema and other respiratory conditions. Warming temperatures also extend the allergy season and fuel the risk of wildfires – whose smoke also worsens air quality.

"By the end of the century we are looking at an increase of tens of thousands of illnesses and death episodes because of climate change," the surgeon general told reporters.

Higher temperatures were also encouraging the spread of illnesses carried by ticks and mosquitoes such as Lyme disease and West Nile virus, Murthy went on. The report did not look at Zika.

The public health threats laid out in the report were on the cards for future generations of Americans even with the emissions commitments contained in the Paris climate agreement, the officials said.

Governments have been clear from the outset that the agreement reached in Paris last December was only a preliminary step towards limiting warming to 2C above pre-industrial levels.

Under the agreement, governments committed to make even deeper cuts in emissions in the coming decades.

"We will need a big encore after 2030 in terms of further deep cuts in order to avoid the bulk of the deeper impacts described in this report," Holdren said.

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The farm that grows climate change solutions

By Eric Toensmeier



Carbon farming: agriculture's answer to climate change?

The following originally appeared on *Ensis*, and is adapted from *"The Carbon Farming Solution: A Global Toolkit of Perennial Crops and Regenerative Agriculture Practices for Climate Change Mitigation and Food Security."*

High in the mountains of Veracruz, Mexico, a small cooperative is "farming carbon" — practicing agriculture in a way that fights climate change while simultaneously meeting human needs.

Although these practices are used by millions of people around the world in some way, people in Western nations are largely unfamiliar with them, and there is little coordinated support to encourage farmers to adopt them.

But if supported, implemented and developed on a global scale in conjunction with a massive reduction in fossil fuel emissions, these "carbon farming" practices — a suite of crops and practices that sequester carbon while simultaneously meeting human needs — could play a critical role in preventing catastrophic climate change by removing carbon from the atmosphere and safely storing it in soils and perennial vegetation.

The cloud forest region of Veracruz, Mexico, is a humid tropical highland ecosystem that combines a mostly temperate canopy of trees such as oaks and hickories encrusted with epiphytic ferns, orchids and bromeliads with an understory of mostly tropical vegetation such as cannas, wild taros, passion fruits and tree ferns. But the cloud forest is disappearing. Between 70 and 90 percent of it has been deforested, and what remains is highly fragmented, with only tiny pockets of old growth. Much of the former forest is degraded pasture. XXXX

Many people in this region are farmers. Cattle and coffee are the primary products. Neither provides much income, and cattle farming as practiced degrades the soil.

Ricardo Romero of Las Cañadas, the small cooperative described above, is working to develop food production systems that provide a complete diet while incorporating as much of the ecosystem function of the cloud forest as possible. Such systems could also serve as corridors to reconnect fragments of intact forest. And it could do all this while sequestering impressive amounts of carbon.

Romero and his team are doing something very important beyond practicing small-scale sustainable agriculture, fostering community self-reliance, creating jobs, improving biodiversity and bringing degraded land back to life. In 1988 Romero began managing the site for pastured cattle. Over the ensuing seasons, he observed the continued degradation of the soils and ecosystem functions.

Degraded soils give up much of their carbon to the atmosphere as carbon dioxide, a greenhouse gas. In 1995 he sold his cows and undertook an impressive ecological restoration effort, propagating and planting 50,000 native trees on 60 hectares (148 acres) while allowing another 40 hectares (99 acres) to regenerate naturally. This was the beginning of an ecotourism enterprise that included tours of an awe-inspiring old-growth cloud forest.

Romero also planted native trees on 22 hectares (54 acres) of the remaining pasture and carefully reintroduced cattle. This system, called silvopasture, combines livestock production with the ecological benefits of trees, including soil regeneration.

Romero and his team are doing something very important beyond practicing small-scale sustainable agriculture, fostering community self-reliance, creating jobs, improving biodiversity and bringing degraded land back to life. These same practices sequester carbon, making Las Cañadas a showcase of some of the world's best climate mitigation techniques.

Many forms

The term carbon farming is used to describe a suite of crops and agricultural practices that sequester carbon in the soil and perennial biomass. If widely implemented, these practices have the capacity to sequester hundreds of billions of tons of carbon from the atmosphere in the coming decades. Unlike high-tech geoengineering strategies, these practices can also feed people, build more fertile soils and contribute to ecosystem health.

Las Cañadas practices managed grazing, fodder banks and silvopasture — all of which have been shown to sequester carbon. Carbon farming can take many forms. First and simplest are modifications to annual crop production to reverse the loss of soil carbon from tillage.

For example, Las Cañadas practices biointensive crop production with very high yields in small spaces through sophisticated organic techniques. Practices like this have been found to sequester more carbon than even the best conventional annual cropping systems. The largermilpas, or crop fields, demonstrate carbon-sequestering agroecological approaches to production of maize, beans and soybeans, including crop rotation, cover crops and contour hedgerows.

Although these practices have a fairly low carbon sequestration rate, they are widely applicable and easily adopted and thus have great global mitigation potential.

Certain livestock systems also constitute carbon farming. These systems are climate friendly even when we account for methane releases. For example, Las Cañadas practices managed grazing, fodder banks and silvopasture — all of which have been shown to sequester carbon. Improved livestock production models typically have a low to moderate carbon sequestration on a per-area basis, but like improved annual cropping systems, they don't require people to change their diets. Given that more than two-thirds of global farmland is pasture, there is great potential to scale up these practices to mitigate climate change.

It is perennial crops, however, that offer the highest potential of any food production system to sequester carbon, especially when they are grown in diverse, multi-layered systems. With their plant nursery and seed company, Romero has assembled a world-class collection of perennial crops for their climate with a special focus on perennial staple crops, analogs to maize and beans that grow on trees, vines, palms and herbaceous perennials. The cooperative has also planted a highly diverse edible forest of these species in a system called multistrata agroforestry — the gold standard of biodiversity and carbon sequestration in agriculture.

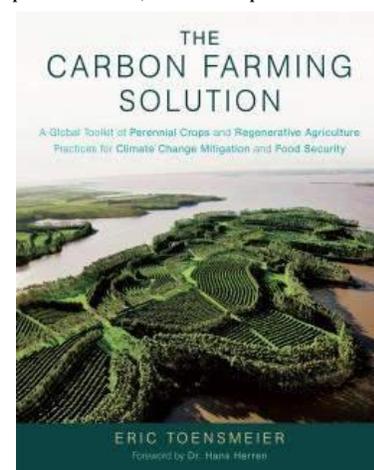
Carbon farming alone is not enough to avoid catastrophic climate change. ... But it does belong at the center of our transformation as a civilization. All that said, producing food, growing industrial materials and sequestering carbon is not enough for a 21st-century farmer. Agriculture must also adapt to a changing climate.

Las Cañadas has a stated goal to "establish production systems that are resilient to prolonged droughts, excessive rains, floods or abnormal frosts." Although carbon farming practices aren't necessarily adaptive, in practice almost all of them are. Among the agricultural adaptation techniques on display at Las Cañadas are increases in soil organic matter, crop diversification and livestock integration.

At present, the tropics have stronger carbon farming options than colder climates; many of the agroforestry techniques that have the highest sequestration rates are largely confined to the tropics, and most of the best perennial crops available today are also native to, or grown best in, the tropics. The head start the tropics have on carbon farming provides an excellent opportunity for wealthy countries to repay climate debt by bankrolling mitigation, adaptation and development projects in the Global South and to take lessons from the endeavors already under way there.

Carbon farming alone is not enough to avoid catastrophic climate change, even if it were practiced on every square meter of farmland. But it does belong at the center of our transformation as a civilization.

Along with new economic priorities, a massive switch to clean energy, and other big changes to the way our societies work, carbon farming offers a pathway out of destruction and a route to hope. Along the way it can help address food insecurity, injustice, environmental degradation and some of the core problems with the global food system.



[<Source>](#)

Edible cutlery company wants us to eat our way out of plastic pollution

The spoon tastes like a cracker and its manufacturer hopes to expand into forks and chopsticks

By Valerie Flynn



Even if the spoons aren't eaten, once used, they can decompose in a few days. Photograph: Bakeys

Plastic waste covers our oceans and landfill. The past 70 years of plastic waste have resulted in pollution so ubiquitous scientists say it's a marker of a new geological epoch, the manmade Anthropocene.

Plastic cutlery is a contributor to this enormous problem – estimates suggest the US alone uses 40bn plastic utensils a year – but the founder of Indian cutlery company Bakeys thinks he might have a solution. Cutlery you can eat.

The vegan friendly spoons are made from rice, wheat and sorghum, an ancient grain originally from Africa. Sorghum was chosen as a primary ingredient for its tough quality (it doesn't go soggy in liquids) and because it is suitable for cultivation in semi-arid areas.

The cutlery comes in three flavours – savoury (salt and cumin), sweet (sugar) and plain. "It tastes like a cracker, a dry cracker because we don't put any fat in it. It can complement any food. The taste of the food gets into the spoon," says company founder Narayana Peesapaty.



Photograph: Bakeys

and it is this simplicity that has caught the attention of most people," he says.

With a background in forest management, Peesapaty previously worked at the International Water Management Institute's crop research centre and says he wanted to use a raw material that won't put much pressure on water resources.

Even if the spoons are dumped after use, they decompose in a few days, according to the company. Bakeys says this makes its product more environmentally friendly than biodegradable plastic utensils made from corn plastic, which need to be subjected to high heat in specialised composting facilities to break down.

The spoons are packaged in paper bags and shipped using styrofoam to prevent breakage. Peesapaty acknowledges this is the least sustainable part of the operation and is looking for alternatives.

Although the edible cutlery has only just found a following – a recent Facebook video with Peesapaty has had more than 5m views – Bakeys has been making spoons at its factory in Hyderabad, India, since 2011, where it employs nine women. It sells 1.5m spoons per year to catering companies serving food at weddings and other events, but Peesapaty hopes take-up among food vendors will grow.



There are challenges. While Peesapaty hopes to expand Bakeys' offering to edible chopsticks and forks, edible knives are out as moisture blunts them. The biggest hurdle is probably cost. Bakeys can sell an edible spoon for 2 rupees (2p), cheaper than the wooden equivalent but twice the price of a plastic spoon.

Peesapaty's goal is to get the cost of a spoon down to 1.5 or 1 rupees. He hopes to do this by sourcing crops directly from farmers and building an economy of scale by adding new production lines with the investment raised online.

[Source](#)

No More Deonar Fires, These Mumbai Teens Invent Device to Convert Dry Waste into Electricity!

By Neeti Vijaykumar

Four bright young minds in Thane, Mumbai, have come up with an idea to use dry waste to generate electricity. Instead of dumping dry waste into a garbage bin and filling up landfills, this novel idea makes use of domestic waste that every household in India produces, and turns it into a sustainable form of energy. And it can prevent mishaps like the Deonar dumping ground fires, too.

Aged between 10 and 13, the girls have devised an instrument with two parts that converts dry waste into electricity.

The bottom part of the instrument burns dry waste. The heat generated from this is used to move the turbines attached in the top-most part of the furnace. These turbines help in creating electricity.



The girls, Pooja Ramdas, Nikita Dhamapurkar, Jovila D'souza and Sharanya Bhamble spent two weeks figuring out the minute details, researching and experimenting. They were inspired by the working of a pressure cooker.

Sharanya Bhamble explains the eco-friendly process: it starts off with segregating dry and wet waste. While the dry waste is burnt in the furnace, the wet waste is used for composting.

"The toxic fumes produced in the process (of burning dry waste) are filtered, making it pure and released in the environment," she said. "Meanwhile, we put seawater in the top part of the two-part-furnace, which turns into steam when the waste is burning. This steam is then released on a set of turbines which rotate and produce electricity in the process."

To test the device, the girls used a cycle pump to create air pressure. This generated enough electricity to light up the bulbs that were fixed to the device.

In Mumbai, about two-thirds of its solid waste that is dumped into landfills is illegal and beyond the capacity of the landfill.

Repeated dumping, with no waste segregation, caused the massive Deonar fires in the months of January and February this year. Smoke from these fires covered the areas surrounding the dumping ground, forcing schools and colleges to shut, and people to fall ill.

Most of the waste that ends up in landfills are actually biodegradable or fit to be converted into energy. With waste segregation and municipal body support, sustainable waste management isn't difficult.

While on a macro-level, the municipal solid waste-to-energy process requires installation of biogas plants, on an individual level, devices such as the one invented by the students can help reduce the negative impact on the environment.

[Source](#)

India close to being water scarce from water stressed: TERI

By admin, greentechlead



India is close to being water scarce from water stressed, said The Energy and Resources Institute (TERI), at the India Water Forum.

TERI announced signing of an MoU with WAPCOS, a PSU under the aegis of Union Ministry of Water Resource, River Development & Ganga

Rejuvenation, Government of India.

The agreement aims at addressing the looming water scarcity and water pollution crisis in India. It will address the challenges of climate change and water scarcity through interventions like enhancing water use efficiency, water conservation, recycle and reuse, water demand management through a participatory mechanism for a period of three years.

India is facing multiple challenges in water sector as many states are facing frequent droughts and groundwater in several regions stands overexploited.

Water is a finite resource, and its availability will soon be a significant challenge amongst all users and sectors due to continually rising and competing demand, inefficient use, pollution, cropping pattern, cross subsidies and potential risks due to climate change.

The continuously declining per capita water availability in India (from about 5,177 cubic metres (m³) in 1951 to 1,545 m³ in 2011) has put the country into a 'water stressed' category and is close to being categorized as 'water scarce', said TERI.

Uma Bharti, Union Minister for Water Resources, River Development & Ganga Rejuvenation, Government of India, said that rejuvenating Ganga will become a model for our other rivers.

"We should look at interlinking of rivers. It will be link only surplus and monsoon flows through new rivers. This will be done in a people and environment friendly manner. TERI can play a crucial role in this as well as providing solutions for conserving groundwater," the Minister said.

TERI mentioned that a combination of interventions at various levels needs to be undertaken with a participatory approach for sustainable water management. Besides these, policy interventions like incentive & disincentive mechanisms, participatory programs are vital to the success of water management.

Dr. S K Sarkar, director, Water Division, TERI said, "Studies show that by 2030, the world's demand of fresh water uses will be over 40% of existing reliable supplies. The highest water use is in agriculture, where efficiency is very low, and the demand side needs to be managed. IWF will aim at and discussing and indicating solutions to these and more."

Over the years, TERI has been working with multiple stakeholders at various levels to identify interventions for policy reforms as well as sustainable and efficient water management solutions. TERI also assists local communities in interventions on drinking water and sanitation as well as participatory watershed management and groundwater conservation.

[<Source>](#)

Environment ministry releases new Bio-medical waste management rules

Source Name: *The Economic Times*

The Environment ministry today released the new Bio-medical Waste Management Rules, 2016 which will bring in a wider and more comprehensive regime for bio waste management.

"The new bio-medical waste management rules will change the way country used to manage this waste earlier. Under the new regime, the coverage has increased and also provides for pre-treatment of lab waste, blood samples, etc. It mandates bar code system for proper control. It has simplified categorisation and authorisation. Thus, it will make a big difference to clean India Mission", Union Minister of State (IC) Environment, Forest & Climate Change, Prakash Javadekar, said.

Biomedical waste comprises human & animal anatomical waste, treatment apparatus like needles, syringes and other materials used in health care facilities in the process of treatment and research.

The quantum of waste generated in India is estimated to be 1-2 kg per bed per day in a hospital and 600 gm per day per bed in a clinic. 85% of the hospital waste is non-hazardous, 15% is infectious/hazardous.

The ambit of the new rules has been expanded to include vaccination camps, blood donation camps, surgical camps or any other healthcare activity and also phase-out the use of chlorinated plastic bags, gloves and blood bags within two years. They also call for pre-treatment of the laboratory waste, microbiological waste, blood samples and blood bags through disinfection orsterilisation on-site in the manner as prescribed by WHO or NACO;

As per the new rules, a Bar-Code System will be brought in for bags or containers containing bio-medical waste for disposal and Bio-medical waste will be classified in to 4 categories instead 10 to improve the segregation of waste at source. As per these rules, existing incinerators will be required to achieve the standards for retention time in secondary chamber and Dioxin and Furans within two years, emissions limits will be specified for Dioxin and furans.

State Governments will be required to provide land for setting up common bio-medical waste treatment and disposal facility and no occupier shall establish on-site treatment and disposal facility, if a service of 'common bio-medical waste treatment facility is available at a distance of seventy-five kilometer.

The hospitals servicing 1000 patients or more per month are required to obtain authorisation and segregate biomedical waste in to 10 categories, pack five colour backs for disposal. There are 198 common bio-medical waste treatment facilities (CBMWF) are in operation and 28 are under construction. 21,870 HCFs have their own treatment facilities and 1,31,837 HCFs are using the CBMWFs.

[<Source>](#)

Kerala company builds country's largest solar ferry

By Debjoy Sengupta, ET Bureau



(The commercially viable...)

KOLKATA: The backwaters of Kerala will soon have the country's largest solar-powered ferry ferrying vehicles and passengers between Vaikom and Thavanakadavu in Alappuzha.

The commercially viable solar ferry, having the size of four buses arranged in a matrix of 2x2, would cost more than conventional diesel powered ferries of the same capacity, but, Sandith Thandasherry, chief executive officer at NavAlt Solar & Electric Boats that builds the vessels, claimed that the additional cost can be recovered in about two-three years.

"The solar ferries, would cost around Rs 2.5 crore, while conventional ones of same capacity costs around Rs 1.5 crore," he said. "Nevertheless, diesel ferries would require around Rs 26 lakh every year on fuel, plus it incurs engine maintenance costs, making the total at least Rs 30 lakh every year." Solar ferries would need to spend Rs 30 lakh on battery replacement every five years and a daily grid charging cost of Rs 1.4 lakh per year. This averages out to Rs 6.4 lakh per year against Rs 30 lakh annually for diesel ferries, Thandasherry said.

[<Source>](#)

Why Clog the Landfills When You Can Now Convert Organic Waste into Compost in Just 24 Hours!

By **Aparna Menon**

Bioneer is a revolutionary machine that can create compost from organic waste in just 24 hours. An innovation of Mumbai-based Excel Industries Private Limited, this product is in the market now.

Everyday, our growing cities generate more and more waste and this is overloading our municipal systems. Governments as well as the common people have fortunately come to realize that responsible and inclusive waste management is the only sustainable solution to this mounting problem we face.

Excel Industries is an Indian company involved in the manufacture of domestic chemicals. It was set up as an agro-chemical manufacturing company in 1941. But it was only 20 years ago that it stepped into waste management in a big way.

Instead of letting waste just fill up landfills, this company has been coming up with various technologies to convert organic waste into compost.



"The first step towards effective waste management was to establish the Centralized Waste Management units. In these CWM units, all municipal solid waste, whether segregated or not, would be converted into compost. These large plants are capable of treating waste ranging in

quantities from 100 to 500 tons of municipal solid waste," says Saurabh Shah, Vice President, Environment and Biotechnology Division, Excel Industries.

The flagship plant of the company at Ahmedabad treats up to 500 tons per day and produces a rich organic manure brand called Celrich.

One of the chief innovations of the company is the Organic Waste Converter. There are at least 1500 installations of this converter all over India.

This decentralized waste management system can turn large amounts of organic waste — like kitchen waste, garden waste and food processing waste — into compost.



OWC 130
Capacity: 50Kg per batch
Power: 8 HP
Dimensions: 2.18m x 1.19m

An Organic Waste Converter

Last year the company came up with a more compact unit that is faster in composting too. It is called Bioneer. This unit makes compost out of organic waste within 24 hours.

Bioneer, revolutionary in-vessel composter, has the potential to change how the world treats organic waste.

Mr Amit Choudhary, who is a resident of Rajnagar Extension in Ghaziabad, heard about this machine from one of his friends. He saw it being used at another location and convinced the people of his own housing colony to invest in it.



The Compact Bioneer

"We have placed the machine in the car parking space and since it is very compact no one is complaining. We have our rag pickers who collect the garbage from door to door every day and after segregating the waste, the organic waste is stored in a pit. Once a week we put it all into the Bioneer machine and by the next day compost is ready. This is fed immediately to our plants in the colony garden as well as in personal gardens. Everyone in our colony is very happy with this system of waste disposal," he says.

Excel has also created Bioculum and Sanitreat, two in-house manufactured powders, which help the converters do the composting easily.

Sanitreat is a free flowing light brown powder. It is a non-hazardous mixture of mineral and herbal components that control the putrefaction process of organic waste materials.

Since Sanitreat retards the formation of toxic leachates and gases, it is able to make organic garbage stink free in just a few minutes.



Sanitreat, the odour control agent

Sanitreat powder should be sprayed dry over the garbage using a powder sprayer. Though no special handling precautions are necessary, it is

advisable for the users to wear gloves

when handling this powder. The amount to be used varies upon the organic content of the waste material, the climatic conditions and how old the material is. About 2 kgs is enough to cover 1 metric ton of waste, which need not necessarily be segregated waste.

Bioculum is another mixture of micro organism cultures that accelerates the aerobic composting of bio degradable organic waste. It also treats the waste and makes it free from pathogens, foul smells and weed seeds.

Bioculum is free from any toxic or hazardous components and preserves the vital nutrients and organic matter in the waste.



Bioculum, a mixture of micro organism cultures

"Bioculum is a key input in the Organic Waste Converting process and consists of cultures of naturally occurring bacteria, fungi and actinomycetes and enzymes. These facilitate the rapid conversion of organic waste into a bio-stabilized compost," says Saurabh Shah.

If the organic waste is properly treated with Bioculum, the waste can be converted into stable organic manure that can be used for bio-organic enrichment (especially of soil).

In the Organic Waste Composter, as well as Bioneer, only segregated organic waste is put into the machine. The waste matter is mixed with Bioculum and an absorbant as recommended. For absorbant, the users of the machine can put in sawdust or even dry grass.

Within 15 minutes the organic waste composter processes the waste and the output is a moisture free material which is placed in open trays for curing for around ten days. After this it becomes ready to use compost. However, in the Bioneer unit, within 24 hours an innocuous, nuisance free output is produced.

This output can immediately be mixed with soil and within two or three days the product begins to work as compost.



Compost created by Excel machines

Mr MK Garg, a horticulturist by profession, has invested in Bioneer as well as the Organic Waste Converter and is very happy with these products.

"Composting, especially with Bioneer, is an extremely hassle free method. We have it in our housing society in Greater Noida, and the organic waste of all the houses is converted into compost within a day," he says.

The compost is used by all the residents in the society as well as by Mr Garg for his horticulture plants.

"The output from this machine is a nutrient enriched fertilizer, which is 10 times better than normal manure. Over the past year I have grown many vegetables and flowering plants with this compost mixture and have noticed that growing high density vegetables in pots is very easy with this manure," he adds.

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Government notifies new hazardous waste management rules

Source Name: *livemint*

India has banned the import of solid plastic waste, including PET bottles, as part of new hazardous waste management rules that aims to prevent the country from becoming a dumping yard for industrialised nations.

The Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 notified by the Union environment ministry on Sunday replaces its older version made in 2008. The new rules distinguish hazardous waste from others such as waste tyre, paper waste, metal scrap and used electronic items. The rules recognise the latter as a resource for recycling and reuse supplementing industrial processes, thereby reducing the load on the country's resources.

Among other items banned for import are waste edible fats and oil of animals, household waste, tyres for direct re-use purpose, solid plastic wastes, including PET bottles, waste electrical and electronic assemblies scrap and other chemical wastes especially in solvent form.

"PET bottles are used by the fibre industry in India and import of plastic waste (PET bottles) is preferred because that ensures bulk availability. But India itself has a huge amount of plastic waste including PET bottles that remain uncollected and harm environment. These rules will ensure their collection and reduce load on our pollution," said a senior environment ministry official, who did not wish to be named.

The official added that industrialised countries like the US also do not allow importing plastic waste. "The new hazardous waste rules will ensure resource recovery and disposal of hazardous waste in an environmentally sound manner. The rules are environment and industry-friendly. The provisions of the new rules are in line with this government's priority for Ease of Doing Business and Make in India, but with responsible concerns for sustainable development," said Union minister for environment, forest and climate change Prakash Javadekar.

Metal scrap, paper waste and various categories of electrical and electronic equipment for re-use purpose, however, can be imported without permission from the environment ministry.

Hazardous waste includes material like lead acid battery scrap, used oil, waste oil and spent catalysts.

According to the Central Pollution Control Board, total hazardous waste generation in India in 2015 was 7.46 million metric tonnes from about 44,000 industries.

Unscientific disposal of hazardous and other waste through burning or incineration leads to emission of toxic fumes comprising mercury, heavy metals, causing air pollution and associated health-related problems. Disposal in water bodies or municipal dumps leads to leaching of toxic substances in land and water, degrading soil and water quality.

The rules make state governments responsible for environmentally sound management of hazardous and other wastes and mandate them to set up industrial space or sheds for recycling, pre-processing and other utilization of hazardous or other waste.

The state authorities have also been asked to register the workers involved in recycling, undertake industrial skill development activities and ensure safety and health of workers. States must also submit annual reports regarding implementation of these rules to environment ministry. This is because workers employed in unscientific hazardous waste management practices suffer from neurological disorders, skin diseases, genetic defects and cancer.

The rules also mandates state pollution control boards to prepare an annual inventory of the waste generated, recycled, recovered, utilised including co-processed, waste re-exported and waste disposed.

Experts welcomed ban on import of plastic waste, but cautioned about allowing used electronic items as e-waste is already a huge problem in India. As per official estimates, everyday, 15,000 tonnes of plastic waste is generated in India of which only 9,000 tonnes is collected and processed. Thus every year, India has two million tonnes of plastic waste that is not collected. Similarly, India generates 17 lakh tonnes of e-waste a year, and it is rising at the rate of 5% a year.

"We have enough generation of plastic waste in country. So, it's good that we are banning import of any plastic waste. It is a welcome step. But we need to be careful about import of used electronic items as they should not end up as cheap imports and increase India's problem of electronic waste," said Ravi Agarwal, director at Toxics Link, a Delhi-based non-profit working on environmental issues.

[<Source>](#)

Delhi Youth Finds Way to Conquer the Odd-Even Scheme – with a Hybrid Car Conversion Kit

By *Tanaya Singh*

Nikhil Khurana, a 23-year-old graduate from IP University in Delhi, has developed a hybrid car conversion kit that can convert any car into a hybrid one, and it costs around Rs. 1 lakh. Hybrid cars utilize more than one source of energy – like fuel and electricity.

With the view towards promoting the use of clean fuel, the Delhi government has already exempted CNG and hybrid cars from the odd-even scheme.



Go Green : Go Hybrid

Source: *Facebook*

Nikhil started a company named Folks Motor with two of his friends when he was in college, and developed the kit. Once it is installed, the vehicle can run on either fuel or power modes.

"Once the car is running, the batteries get charged automatically and can be used to drive the vehicle at a maximum speed of 60 km/hour. So, if a car runs around 10 km on fuel then it can run for 4 km on the batteries improving the total mileage by 40 per cent," he told *The Indian Express*.

The battery is charged to its maximum limit if the car runs for 70-75 km and gives extra mileage of 30-35 km. The kit also provides an optional automatic drive mode under which once the vehicle is put on electric mode, one can drive it without using gears. According to Nikhil, this is a zero maintenance product and Folks Motor will give a one year warranty on mechanical and electrical performance to the users.

He added that in comparison to CNG kits, which take a lot of space, the hybrid kit takes only 20 percent of that space in the car.



Source: *Facebook*

The kit has a published patent and Nikhil claims that other than providing a clean or alternative fuel technology, it also reduces running cost by 30%. He had begun working on this kit in the first semester of his college. He read and researched all the materials available on hybrid vehicles and was ready with the concept in the first six months. But his proposal for collaboration with automobile giants and financiers was turned down by many. Later, his father helped him with the initial funds and they got a manufacturing partner to provide a space for conducting the trials. He did the first trial on a Maruti 800 bought by his sister. By middle of 2015, all the trials were completed. Nikhil will roll out the product by the end of this year.

[<Source>](#)

India, Israel to further cooperation to water conservation

Israel is partner country in India's 'water week' starting on 4 April; many related technologies by Israeli firms will be on display

By Elizabeth Roche, liveMint

New Delhi: After cementing their partnership in defence and agriculture, India and Israel are looking to further their cooperation to water conservation, recycling and desalination.

Israel is the partner country in India's "water week" starting on 4 April and many technologies in water conservation and desalination pioneered by Israeli companies will be on display.

According to David Carmon, Israel's ambassador to India, prime minister Benjamin Netanyahu suggested water conservation and other related areas as the new frontier of cooperation between the two countries during President Pranab Mukherjee's visit to the country in October and also during foreign minister Sushma Swaraj's visit earlier this year.

"The prime minister (Netanyahu) offered the president (Mukherjee) a project—in water management, in water desalination, in water recycling or in all of them together. He said we would love to share the expertise that Israel has in water, we would love to do this on a government to government basis, we would love to offer through a consortium of Israeli companies... we could encourage Israeli companies to join the Israeli side of the partnership," Carmon told reporters in New Delhi on Wednesday.

Noting that the two countries had a deep collaboration in defence and agriculture, Carmon said, "The next big thing we would like to do is...in water. We are already engaged in this sector but the potential is enormous."

The southern Indian city of Chennai was already using Israeli desalination techniques to supply water to residents in the city, he said.

In agriculture, Israel's drip irrigation method is popular in many parts of India. Once on opposite camps because of India's staunch support to the cause of Palestine's statehood, ties between India and Israel rapidly warmed after the two countries established diplomatic relations in 1992. Since then political and people-to-people ties have grown along with defence relations, with Israel numbering among the top arms exporters to India.

Then Israel president Ezer Weizman visited India in 1997 followed by then prime minister Ariel Sharon in 2003. Indian president Pranab Mukherjee visited Israel last year and prime minister Narendra Modi is scheduled to travel to Israel soon.

Currently, the two sides cooperate in intelligence sharing, counter-terrorism, cyber security and a host of other areas. In agriculture, Israel has set up Centres of Excellence (CoE), given the high priority for food security in India. At present there are 26 CoEs across nine Indian states. Haryana, Punjab, Rajasthan, Tamil Nadu, Gujarat and Karnataka were among the states that benefited from Israel's expertise in agriculture, Carmon said.

The two countries are expected to open another CoE in Ladua, Haryana, next week during the visit of Israel agriculture minister Uri Ariel. "Our approach is aimed at bringing applied research which provides solutions to the farmers, addressing gaps via implementation of Israeli technology and know-how tailored to local conditions," Carmon said.

[<Source>](#)

This Eco Cooker Can Cook Multiple Items Together Using Steam, Saving About 60% LPG

By Tanaya Singh

Domestic and commercial cooking at many places in India involves an open pan or pot that is placed on an open flame. This results in increased wastage of energy because heat is lost along with the steam when cooking without a cover. Moreover, since there is no insulation on the cooking vessel, a lot of heat loss takes place from the sides of its surface as well, which further leads to the need for continuous cooking to maintain a constant temperature.

It is to change this situation that researchers of the Land Research Institute (LRI), along with the students and faculty members of Institute of Chemical Technology (ICT), Mumbai, have designed the Eco Cooker – an innovative equipment for cooking that helps save LPG, especially in places where large scale cooking for the masses is taking place.

According to the research, the Eco Cooker helps save 75% fuel under laboratory conditions and offers about 60% saving on the use of LPG in domestic and commercial kitchens.

It works on the principle of retaining steam inside a closed vessel, so that the steam helps cook the food while retaining its flavours and nutrients.

The cooker consists of a modified regulator, which releases gas to maintain a constant temperature. Research by ICT indicated that the cooking process of pulses continues once a temperature of 90 degree Celsius is obtained and rice cooking continues above 75 degree Celsius. They used these facts and incorporated the features to overcome the shortcomings of open pan cooking. Using a burner of suitable size, the cooker helps in controlled gas flow to minimize heat loss.

Vessels are placed in a stack one above the other inside an enclosed system, which does not allow the loss of any steam. Thus, the steam generated in the lower vessel heats up the vessels above it. Each vessel is adequately insulated to ensure minimum loss of heat.



This way, temperature of the items being cooked is maintained well above 90 degree Celsius for a long time after the burner is switched off. So the cooker needs fuel only to bring the contents of the vessel to a boiling point, after which the burner can be turned off.

It can be useful in areas where a large quantity of food is prepared, such as community kitchens, canteens, hotels, etc. With the help of eco cooker, multiple items such as rice, dal, vegetables and meat can be cooked in one go.

Land Research Institute is an NGO involved in research work to create a positive impact in rural India. It constitutes of a group of technocrats who have come together for a common cause, most of whom have retired from their jobs.

LRI and ICT patented the design of the cooker and gave the patent rights to Aurangabad-based

Sanjay Technoplast, which is an industrial organisation.

"Sanjay Technoplast has sold about 200 units of Eco Cooker till now. We used the first prototype in the institution canteen itself where 30 cylinders were being used per month. 15 of those were used for cooking dal, rice and curry. Since they have started using Eco Cooker, only five LPG cylinders are required for cooking dal, rice and curry every month," says Kishore V.Mariwala, one of the members of LRI.

The LRI team meets at ICT once every two weeks to discuss different technologies that they can work on to help in the development of rural India.

[<Source>](#)



Government Holds Manufacturers Responsible for Collection of e-waste: New e-waste Management Rules 2016

Source Name: chennaionline.in

With nearly 17 lakh tonnes of e-waste generated annually in the country, the central government today fixed responsibility of manufacturers for collection of e-waste and announced to levy financial penalty for violation of provisions under the law.

The Ministry of Environment and Forests notified the new e-waste management rules 2016 under which the manufacturer has been held responsible to collect e-waste generated during the manufacture of any electrical and electronic equipment and channelise it for recycling or disposal and seek authorization from state pollution board.

As per the new rules, liability for damages caused to the environment or third party due to improper management of e-waste including provision for levying financial penalty for violation of provisions of the Rules has also been introduced.

"Every year more than 17 lakh tonnes of such waste is generated and it is growing at a five percent rate every year and is set to grow further. Also, dismantling of e-waste is done in an unorganised way," said Environment Minister Prakash Javadekar.

For the first time, the producers will be brought under Extended Producer Responsibility (EPR) and made responsible for collection of e-waste and its exchange.

"The bulk consumers must collect the items and hand them over to authorised recyclers. Various producers can have a separate Producer Responsibility Organisation (PRO) and ensure collection of e-waste as well as its disposal in an environmentally sound manner," he said.

Compact Fluorescent Lamp (CFL) and other mercury containing lamp brought under the purview of rules. A Deposit Refund Scheme has been introduced as an additional economic instrument wherein the producer charges an additional amount as a deposit at the time of sale of the electrical and electronic equipment and returns it to the consumer along with interest when the end-of-life electrical and electronic equipment is returned.

"The Central Pollution Control Board (CPCB) will give the single authorisation throughout the country," he said.

The Union Minister added the role of state governments has also been introduced to ensure safety, health and skill development of the workers involved in dismantling and recycling operations.

[<Source>](#)

A Revolutionary Machine That Cools Like an AC While Consuming 10% of Its Electricity

By **Tanaya Singh**

Imagine a cooler that works like an air conditioner, fights humidity, does not require water refills every few hours, and consumes only 10% of the electricity an AC does? It's a reality now!

"One fine day during the summer of 2008, I reached home to find my husband Pranav and his team of technicians working on an air cooler. I was working as a professor in a business school at that time and Pranav had started an air conditioner repair, installation and distribution business from a home office. When I asked him what he was doing, he said - 'I am inventing something. I have found a way to make ice in this cooler with the things used in any air conditioner.' He loves experimenting with electronic appliances and, at that time, I honestly didn't believe that something like this was possible. I just thought it was another one of his whims. But it turned out to be really good and that is how Vaayu Hybrid Chillers came into existence," says Priyanka Mokshmar, one of the founders of Vaayu.

This couple has now started a business making hybrid cooling machines that blend the technology of traditional coolers with compressors used in air conditioners.



The idea first came to Pranav when his father informed him that their electricity bill was coming way too high because of the air conditioner in the office room that was used all day long. With a view towards saving electricity, Pranav replaced the air conditioner with a cooler. However, it wasn't much use in the tough summers of Indore.

"Based on the humidity, air coolers

usually bring down the temperature of a room by five degrees, which was not enough. Pranav started trying to put ice in the cooler everyday but it was practically not possible to keep doing so at regular intervals. That was when he decided to utilise all the equipment used in an AC and make ice in the cooler itself. Once it was ready, the cooler was able to bring down the temperature of the room to 18 degrees," says Priyanka.

The Vaayu Hybrid Chiller basically works with the help of a refrigeration cycle operating via the compressor and condenser connected to it.



When switched on, a refrigerant from the compressor flows into the cooling coil of the condenser, reaching the water in the cooler and chilling it. The condenser cools down the refrigerant and helps in dehumidification to control the humidity level. The chilled water is circulated on the pads covering the sides of the cooler with the help of a pump. There is a thermostat to maintain the water temperature, which automatically

switches the compressor off as soon as ice is formed. The cold water further reduces the temperature of the air that is pushed out.

"We installed the entire refrigeration cycle inside a cooler-like body. It can be any metal body. We make ice inside the body at temperatures of -8 to -10 degree Celsius. Because of that ice, the water around it gets chilled up to 10 to 12 degrees. And because of the chilled water, the air delivered outside varies from 18-24 degrees Celsius. This temperature is maintained even if the outside temperature goes as high as 42 or above. The compressor also has an exhaust fan like cooling system, which prevents it from heating up," explains Priyanka.

In this process, the compressor is being used only for making ice. The thermostat switches it off as soon as adequate ice is formed. This is different from normal ACs, in which the compressor-condenser cycle is continuous. Thus the power consumption by Vaayu is only 10% that of an AC. "Suppose you have a 200 square feet area, you will need a two ton AC that will consumes more than 2500 watt electricity. But Vaayu consumes 250 watt power," claims Priyanka.

One also does not need to fill water into this hybrid cooler again as again, as it takes water automatically from a tap connection, like any water RO system, whenever the water level goes below a certain limit.



Once they were ready with the design, it took the couple about two years to finish the process of obtaining a patent for Vaayu. In 2014, Priyanka left her job and joined Pranav to start their organization. And finally, after several visits to venture capitalists, they acquired a funding of Rs. 1 crore under the collateral-free Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE) scheme of the government of Madhya Pradesh. In addition, Priyanka and Pranav put in whatever money they had from their savings as well.

Today, they have a team of 40 people, two manufacturing plants in Indore, and distributors in five states including Madhya Pradesh, Chhattisgarh, Haryana, and Maharashtra.

They have set up Vaayu experience zones in different regions for people to see how the machine operates because it is a new concept.



A Vaayu Samadhaan app helps in after sales service; users can register a complaint simply by scanning the barcode on their warranty cards.

The cost of Vaayu chillers begins at Rs. 22,500. Their biggest machine, MIG 24, which is meant for cooling a 1000 square feet area, is available for Rs. 85,000. According to Priyanka, an equivalent air conditioner will cost about Rs. 1.25 lakh.



[<ReadMore>](#)

How Jharkhand's Waterman Is Ensuring All Year Water Supply in 51 Villages & Bringing Back the Forest

Source: TBI Reader

This 84-year-old man, a Padma Shri awardee, has transformed the lives of thousands of villagers in Jharkhand with his massive tree-planting and water conservation efforts.

Little has changed in Simon Oraon's daily routine in the last 60 years. At 84, he gets up at 4.30 in the morning, goes to the fields, diligently checks the saplings he has planted around the village, takes a round of the forest he has grown all on his own while facing great odds, and traces his steps back to his house in time for lunch.

Simon Oraon, popularly known as Baba in his area, is also referred to as 'Jharkhand's Waterman,' by the media.



He has changed the lives of thousands of villagers with a massive tree plantation drive and has organised a well and pond digging initiative to store rainwater as well.

Simon Oraon is a resident of Khaksi Toli village, which comes under Bero block, about 35 kms from

Ranchi. He has been working in 51 villages of Bero to protect natural flora for decades and was awarded the Padma Shri recently.

Ironic as it may seem, Jharkhand, known for its lush green forests, is reeling under severe water scarcity. Indiscriminate deforestation and erratic weather patterns are playing havoc in the state, causing crop failures. Faced with all these calamitous conditions, Simon is nonetheless undeterred from his mission of water conservation and forest plantation. His earlier efforts are still alive today. The residents of these 51 villages owe him the agricultural prosperity he brought them through simple water conservation efforts.

Today, his village is one of the state's agri-produce hubs, supplying more than 25,000 metric tonnes of vegetables to various districts of Jharkhand and nearby locations.



Simon's journey started in 1961 after he dropped out from school to help his parents in the fields. The monsoon had failed and drought had gripped the hinterland where Simon lived with his family. Water shortage brought desperation and hunger to his land.

The tribals in the area had traditionally always grown a mono crop of paddy (that too with frequent failures) and were oblivious to the

harm being done to the environment by the felling of forests. Every year, after sowing paddy, Simon's father and uncle would leave for the city to look for odd jobs. Simon started taking care of his family, as well as the farming work.

He grew up with the vicious cycle of poverty and saw how, after the crops failed, the old people and infants became victims of hunger. Young Simon saw this cycle of life and death year after year.

When the TBI team reached Simon's village, we found he had left for his routine rounds of the forest. But we met after a few hours and Simon's introductory words touched us: "As a child, I had seen trees in Bero cut and transported in huge trucks. I was even initially fascinated by these huge machines. But I realised after several years, when a severe drought in 1961 caused total crop failure, how much harm this deforestation was causing. I took the lead, called all the villagers of Khaksi Toli village, and urged them to stand firm against the mindless cutting of trees."

"We initially started with only our villages. But then word spread and more villages joined in the mission against wood smugglers. It was a tough task but we did it and stopped forest mafias and wood smugglers in our areas. It was all team work with the support of the villagers," adds Simon.

His efforts took time to show results but paid off finally. In addition to afforestation, Simon has also ensured the year around supply of water to all 51 villages of his block. This magic happened due to his creative ideas.

He did a great job with water conservation, through rainwater harvesting and building dams to check the flow of seasonal rivers.



He constructed the first dam near his village in Narpatna in 1960. The dam, however, was washed away during the next monsoon. In the starting phase, several dams failed to withstand the monsoon water. Then, after the water resource department intervened, the size and width of the dams were increased and the concrete strengthened.

These dams have not faced any cracks since. In addition to constructing dams in Jharia , Narpatna and Kharia, Simon and his team also built dams in Gaighat, Deshbali and a few other locations in nearby villages. All ponds are linked with dams, which act as water reservoirs, ensuring continuous water supply to meet the needs of the villagers.

"We have worked hard to reinstate our forests. It is because of the blessings of the forest gods that more than 1600 families

here now reap three crops besides paddy every year, from nearly 2100 acres of land. Migration has declined. Additionally, we are now supplying vegetables to Ranchi, Jamshedpur and Kolkatta. We are able to do so because of our forest and water conservation steps," Simon shared with TBI.

When we asked Simon about his selection for the Padma Shri award, he smiled and said: "I had no idea about the award until a friend from the media called up that afternoon to congratulate me. Whatever I have done is due to the support of the community. How can I take the award alone? It's a Padma Shri for all those who made my mission succeed."

Jharkhand's 'waterman,' Simon Oraon, will now be working on creating awareness among the people of his state about the importance of water harvesting. He will be motivating farmers to work hard to preserve rain water to sustain agricultural activities.

The 'waterman' has now been appointed brand ambassador of the watershed programme by the Rural Development Department, Government of Jharkhand.



When asked about his new responsibility as brand ambassador, Simon said: "This is a very big responsibility for me. However, I am elated. The Minister of Rural Development said that I speak well on these issues so I should be invited to meetings and conferences to talk about water-harvesting. I have accepted the offer as it is a chance to work for the state."

Simple living and high thinking is the best way to explain Simon Oraon's lifestyle. Nothing has changed in his life. He lives in a small house and continues with his mission to plant 1000 trees every year. "As long as I

have the energy to walk and work, I will keep planting trees. These trees give us life and it's our duty to protect them. We should make trees our partners for a green revolution and development," he concludes.

[<Source>](#)

Welcome to Sustainable Development Conference 2016: Green technology, Renewable energy and Environmental protection

July 7th - 9th 2016

Kuching, Malaysia

Sustainable Development Conference 2016: Green technology, Renewable energy and Environmental protection, will take place from July 7th - 9th 2016 in Kuching, Malaysia. This conference is being organized by a non-profit organization Tomorrow People Organization an internationally recognized non for profit organization with head quarters in Belgrade, Serbia.

Delegates from over 40 countries are expected to attend the conference. The conference targets Government officials and policy makers, NGOs working in the field of supporting the sustainable development, Students & Scholars, Company representatives, and others those interested in making some positive changes around them and gaining new knowledge, skills and friends and becoming more useful to their own communities.

The topics of interest include almost all important topics related to Pollution, Bio fuels, Clean and renewable energy, Climate Change, Ecosystems, Global warming, CSR and Sustainable Development, Ecology and Biodiversity Conservation, Waste Treatment and disposal, Recycling technologies, and Sustainable Development and Education.

[<ReadMore>](#)

CleanEnviro Summit Singapore: Innovative Clean Enviro-Solutions for Growing Cities

10th to 14th July 2016

Singapore

National Environment Agency Singapore is organizing CleanEnviro Summit Singapore, in conjunction with the Singapore International Water Week and the World Cities Summit, this will provide a global platform for government and industry leaders to share and develop solutions to address environmental challenges in growing cities.

The summit is a five day long event and speakers from Australia, Belgium, Denmark, Germany, India, Italy, Japan, Malaysia, Netherlands, Singapore, UK, and USA etc. The delegates include policy makers, industrial representatives, practitioners, service providers. There are two tracks for deliberations Cleaning track and Waste Management track. It is expected that the summit will provide an excellent platform for sharing knowledge, keeping pace with latest developments. CleanEnviro Summit Singapore (CESS) 2016 is a must-attend event for industry and government leaders from all corners of the world. The event will provide opportunity:

- to address future challenges for a liveable and sustainable environment in this global forum
- to share experiences, best practices and discuss innovative and practical environmental solutions for Asia cities
- and Engage with practitioners in the marketplace on best practices, latest environmental technologies and services

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Healthcare, Safety, and Climate 2016 Global Conference

July 28, 2016

Washington DC

The Healthcare, Safety, and Climate Global Conference will be held at the Double Tree by Hilton Hotel downtown Washington DC on July 28, 2016. Keynote speaker at the conference will be **Dr. Cliff Cockerham**, *President*, Physicians for Social Responsibility - TN Chapter. The 2016 Healthcare, Safety, and Climate Global Conference will provide the ideal opportunity to delegates to present their projects and experiences to leaders, academics, experts, and practitioners in healthcare, public health, management, and health sciences. Also, the conference provides an excellent venue for them to present their research and receive quality feedback.

Speakers and presenters will share new concepts, best practices, knowledge, experience, and solutions, with a focus on promoting healthcare efficiency, safety, climate challenges, and health needs of peoples, medical research, quality management for healthcare delivery, entrepreneurship in healthcare industry, innovation, and business ethics.

Also among conference topics feature Global Climate Change Challenges, Healthcare, Innovation, Research & Development in Renewable Energy, Community Health Services, Environmental Science, and Pollution Control, Climate Change and Global Warming Issues, and Environmental Law, Public Health, and Policies.

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The Times of India, Delhi
dated March 27, 2016

The Times of India, Delhi
dated March 28, 2016

Climate change may ruin wine production

Caroline Mortimer

Wine production will be severely hampered by climate change in the long run, according to new research. The rise in global temperatures has seen the European wine industry enjoy a boom in recent years but it will not last forever.

In western Europe, the best wines are produced in hot summers when end-of-season droughts are followed by heavy spring rains. Indian summers reduce surface moisture and dry out the soil which makes the grapes ready for harvest. As temperatures rise, the soil dries out quicker and wine growers do not need droughts as much.

The study by scientists at Columbia University's Lamont-Doherty Earth Observatory and the Nasa Goddard Institute for Space Studies found that from 1980 onwards, the harvest was an average of two weeks later in France compared to the 400-year average.

Professor Elizabeth Wolkovich, an ecologist at Harvard University, said the switch had not harmed the wine industry yet but it was only a matter of time. She said "so far, a good year is a hot year" but noted that the hottest year on record in France, 2003, led to the grapes being picked a full month earlier than usual yet they were not good vintage. "That may be a good indicator of where we're headed," she said. "If we keep pushing the heat up, vineyards can't maintain that forever". THE INDEPENDENT

Green penalty may go up from ₹1 lakh to ₹5cr

Govt Plans Bill In 2nd Half Of Budget Session

Vishwa.Mohan@timesgroup.com

New Delhi: Seeking to impose a serious and effective deterrent to prevent violation of environmental laws, the Centre plans to introduce an amendment bill proposing to scale up the fine to a minimum of Rs 5 crore up from Rs 1 lakh and imprisonment up to seven years for causing 'substantial' environmental damage.

The bill will be introduced during the second half of the budget session between April 25 and May 13.

The bill sets the upper limit of fine as high as Rs 20 crore and imprisonment may be extended to a life term. If the damage has been unabated over a period of time, violators may have to pay additional Rs 1 crore a day.

While the government has moved to ease what has been described as "green tape" and make clearances faster and more transparent, it expects industries to adhere to the law or face stiff penalties if caught violating regulations. "The law ministry has already cleared the draft of the Environment Laws (Amendment) Bill — meant to amend the existing Environment (Protection) Act, 1986 and the National Green Tribunal Act, 2010 — and sent it back to the environment ministry. It will now go to the Cabinet and will be introduced in the Parliament after the recess", said an official.

The proposed amendment suggests that the penalty amount will be used for remediation and reclamation of polluted sites and improvement of environment - measures that also seem intended to counter criticism that the government has been keen to cater to big business.

At present, a violator has to pay a fine of Rs 1 lakh and faces imprisonment up to five years (can be extended to seven years in certain cases) on conviction. In case the violation continues, the offender has to pay additional fine up

STIFF PENALTY FOR VIOLATORS PROPOSED

Green violations to be categorised as

Minor | An act of omission or commission by a person causing damage to environment due to failure of compliance of the provisions of environment laws

Substantial | Damage to environment by release of environment pollutant or handling of hazardous substance

Non-substantial | Damage to environment which is neither a minor violation nor a substantial damage



PENALTY FOR SUBSTANTIAL DAMAGE

➤ ₹5cr fine on anyone causing substantial damage to an area within a radius 5 km from outer boundary of project (can go up to ₹10cr)

➤ ₹10cr penalty on anyone causing substantial damage to an area beyond 5 km but within 10 km radial distance

from outer boundary of project (up to 15cr)
➤ ₹15cr fine on anyone causing substantial damage to an area beyond 10 km radial distance from outer boundary of project (up to ₹20cr)
➤ Additional penalty in case of continued damage



Punishment | Whoever causes major damage can get 7-yr jail which can be extended to life term

Violator can appeal in NGT but will be heard only if he deposits 75% of penalty

Centre notifies bio-medical waste rules

The government on Sunday notified new bio-medical waste management norms bringing in its ambit vaccination camps, blood donation camps, surgical camps or any other health-care activity which generates hazardous medical waste. The rules make provisions for phasing out chlorinated plastic bags, gloves and blood bags within two years and establishing a 'bar-code system' for containers containing bio-medical waste for disposal. This will help the agencies in monitoring the movement of the containers. It also prescribes more stringent standards for incinerators to reduce emission of pollutants. "The new rules will change the way country used to manage this waste earlier. The coverage has increased. It also provides for pre-treatment of lab waste," said environment minister Prakash Javadekar. TNN

to Rs 5,000 a day during which the contravention continues.

Officials argue the stiff fines will force polluting industries to take corrective measures that they are willing to avoid. "At present, many violators find it easier to pay fine and carry on with their activities," an official said.

Under the existing law, state pollution control boards act as appellate authorities for assessing environmental damage and impose a fine. But the proposed amendment has separate provisions of categorisation of violations into 'minor', 'non-substantial' and 'substantial' on extent of damage. "It will minimise the discretion of the state boards. In absence of the process of

quantification or assessment and corresponding provision of penalty, some cases land up in a long legal battle", said the official.

There is also a proposal of setting up an adjudicating authority, comprising of a district judge and two technical environmental experts, that will assess the damage on the basis of quantified parameters and impose fines accordingly.

Under the proposed amendment, the violator will be allowed to appeal before the National Green Tribunal against the order of the adjudicating authority. But then, the violator will have to deposit 75% of the amount of penalty imposed by the adjudicating authority.

The Times of India, Delhi dated March 29, 2016

Fight against bad air gets bigger, better

Odd-Even Remains Central To Govt Plan But No Extra Funds For Yamuna

TEAM TOI

New Delhi: The government announced a slew of measures during the budget speech on Monday that promise to lessen pollution in the city. If the announcements made by deputy chief minister Manish Sisodia while presenting the 2016 budget are implemented seriously, Delhi may be able to keep a portion of its particulate matter emissions under check and ensure relatively cleaner air in the future.

The budget has set aside Rs 100 crore for mechanized sweeping of roads and for the washing and cleaning of signage and other street furniture. This could prove significant in the fight against pollution given that IIT Kanpur estimated that around 38% of the city's PM2.5 emissions originated as road dust. Sisodia reiterated during his budget speech that the odd-even plan on cars with specific number plates driving only on designated days, which was aimed at reducing vehicular pollution, would continue through 2016-17.

The budget also allocated Rs 137 crore for LED screens that will display air pollution levels in different parts of the city alongside traffic infor-

Environment HIGHLIGHTS

► **Number of ambient air quality monitoring stations to be increased from 6 to 9.** One mobile monitoring van proposed too

► **₹100 cr allocated** for a new scheme, 'comprehensive maintenance of roads'. To be used for mechanised sweeping of roads, washing and cleaning of street furniture and signage, collection of debris through mechanical sweepers and use of disposable biodegradable bags, washing of kerbstones and subways, and civil, electrical and horticulture work

► **2 construction and development (C&D) waste handling plants** to be set up with a daily capacity of 500 metric tonnes each at Libaspur and Tikri border

► **₹137cr allocated** for LED screens to be installed at different places displaying air pollution levels and traffic information



mation that will help address logjams. The number of ambient air monitoring stations will go up from six to nine, and they will be boosted by the procurement of a por-

table monitoring station.

Two plants to handle construction and demolition waste will be set up at Libaspur and the Tikri border to assist the 500 MT one cur-

rently operating at Burari. Waste material of this nature is responsible for 2% of PM 2.5 emissions, according to the IIT report. In the absence of processing capacity, much of this waste is dumped on the Yamuna floodplain and in water channels leading to clogged wetlands and polluted air.

Many other environmental strategies were part of plans for other sectors, like transport and roads. Environmentalists, for instance, welcomed the budget's focus on public transport – increased subsidy for battery-run rickshaws, road tax exemption for electric vehicles and improved road infrastructure. Eleven PWD roads are being redesigned to provide space for cyclists, pedestrians and the differently-abled and would feature solar lighting and rainwater-harvesting structures.

While welcoming these measures, Anumita Roychowdhury, executive director at the Centre for Science and Environment, was disappointed that "restraint" measures were missing in the budget initiatives. "The taxes on cars and fuels are the lowest in Delhi despite the per capita income here being three times the nation-

al average," she said. "Augmenting public transport without simultaneous restraints does not fully help."

When asked why no funds were reserved to deal with the polluted Yamuna, Sisodia said many projects related to the river were in limbo due because they were dependant on the central go-

Two plants to handle construction and demolition waste will be set up at Libaspur and Tikri border to assist the 500 MT one that is currently operating at Burari

vernment. "A large portion of the river land lies with DDA, a central agency, another portion is Uttar Pradesh and some with the Delhi Government. The water resources ministry is also involved," Sisodia pointed out.

He said that Delhi had proposed the creation of a special purpose vehicle to the centre. "Only when such an SPV is created will the Yamuna be cleaned. Budget funds can be allocated only to an SPV," the deputy chief minister said.

The Economic Times, Delhi dated 29 March, 2016

₹1,000cr Fund to Plant Trees Along Highways in the Works

Rajat.Arora@timesgroup.com

New Delhi: The road transport and highways ministry is likely to set up a first of its kind ₹1,000-crore green fund for 2016-17 to be utilised for plantation along the highways.

Officials said the ministry has set a target of greening about 10,000 kilometres of existing national highways during the financial year by planting fruit-bearing trees and shrubs. It will entrust the job to over 200 non-governmental and rural organisations, they said.

The green fund is proposed to be set up under the ministry's green highways policy that was unveiled last year. Under this policy, all upcoming and existing national highways will be converted to green highways. As per the policy, 1% of the total highway cost has to be set aside for planting trees in a planned manner.

The ministry plans to award road contracts worth at least ₹1.5 lakh crore in the fiscal. The

Green Dream

- Highways ministry has set a target of greening 10,000 km of NHs
- To entrust job to over 200 non-governmental & rural organisations
- Ministry plans to award road contracts worth 1.5 lakh crore
- Cost of plantation to be borne by concessionaire in case of BOT projects & NHAI or ministry for public-funded projects

cost of plantation and maintenance will be borne by the concessionaire in the case of BOT (build-operate-transfer) projects and by the National Highways Authority of India (NHAI) or the ministry for public-funded projects.

The ministry is encouraging state governments to follow the same policy for all state highway projects. The NHAI will act as a fund manager for maintaining the green fund and release payments based on recommendations of officials and agencies concerned.

For monitoring of the green corridor project, the government plans to set up a dedicated green agency with its head-

quarters at Transport Bhawan in Delhi along with field offices in regional headquarters.

"A third-party audit will be conducted time to time to ensure the survival of trees. Also, unmanned aerial vehicles will be used for monitoring," a senior government official said.

The official, who did not wish to be identified, said the government plans to create a brigade of 1,000 green organisations, mostly NGOs and rural social enterprises, to fulfil this task. "The project would be done in participation with local community, farmers, NGOs, private sector, government agencies and forest department," he said.

The Times of India, Delhi dated
March 30, 2016

Govt frames rules to tackle construction dust pollution

NOW, YOU CAN BREATHE EASY



530 MILLION TONNES of construction and demolition waste is being generated annually (rough estimate based on 2013-14 figures)



1 Duties of waste generators (individuals/builders/infrastructure firms etc)

- ▶ Every waste generator will have to segregate C&D waste and deposit at collection centres or hand it over to authorised processing facilities
- ▶ Ensure that there is no littering or deposition so as to prevent obstruction to the traffic or the public or drains
- ▶ Ensure ongoing construction site is properly covered
- ▶ Mandatory use of water sprinklers to suppress dust
- ▶ Waste has to be transported in covered vehicles
- ▶ Large generators (who generate more than 20 tonnes or more in one day or 300 tonnes per project in a month) will have to submit waste management plan and get appropriate approvals
- ▶ Large generators shall segregate waste into different streams such as concrete, soil, steel, wood and plastics, bricks and mortar
- ▶ Large generators will pay relevant charges for collection, transportation, processing and disposal

2 Duties of state government and local authorities

- ▶ To provide suitable sites for setting up of storage, processing and recycling facilities for construction and demolition waste within 18 months
- ▶ To procure and utilize 10-20% materials made from construction and demolition waste in municipal and government contracts
- ▶ Million-plus cities will commission processing and disposal facility within 18 months
- ▶ Cities with population between 0.5m and 1m will commission processing and disposal facility within 2 years
- ▶ For other cities (< 0.5 million population) will commission processing and disposal facility within 3 years

Vishwa.Mohan
@timesgroup.com

New Delhi: Taking a decisive step towards combating the problem of dust from construction activities polluting the air, the Centre on Tuesday notified the country's first ever 'Construction and Demolition Waste Management Rules' to stipulate proper disposal and recycling of such waste.

The rules, which are to be implemented and enforced by states with the help of local civic authorities, will not only reduce pressure on fresh resources but also help in tackling air pollution, triggered by dust particles (particulate matter - mainly the dangerous PM10).

Under the rules, permission for building construction or any other infrastructure activity will not be given unless the waste generators submit specific plans to local authorities on how to dispose of the waste.

Besides, large generators of waste will have to pay relevant charges for collection, transportation, processing

and disposal as separately notified by the concerned authorities. It will have provisions of penalty that will be imposed on violators.

Littering or obstruction to public drains, water bodies, traffic and direct dumping of construction and demolition (C&D) waste in landfill sites will completely be prohibited under the rules that prescribe very comprehensive dos and don'ts for waste generators and civic agencies. "These rules are an initiative to effectively tackle pollution and waste management", said Union environment minister Prakash Javadekar while noting that the country generates about 530 million tonnes of C&D waste annually and the dust from such waste contributes 20% of the air pollution in big cities.

Emphasising that the "C&D waste is not a waste, but a resource", the minister said the basis of these rules was to "recover, recycle and reuse" and cited examples of products like pebbles, tiles and pipes which can be made of such waste.

Referring to the rules

which are to be implemented with immediate effect, Javadekar said segregating C&D waste and depositing it to the collection centres for processing would be the responsibility of the waste generator.

The minister noted that the better way of handling such waste will prevent indiscriminate disposal and ensure scientific conversion of C&D waste into useful raw material for buildings/construction.

Under the rules, the processing/recycling site will be away from habitation clusters, forest areas, water bodies, monuments, national parks, wetlands and places of important cultural, historical or religious interest.

"A buffer zone of no development will be maintained around solid waste processing and disposal facility, exceeding five tonnes per day of installed capacity", said the notification.

Earlier, such waste was managed under the existing solid municipal waste management rules and provisions of the Environment (Protection) Act, 1986.

The Times of India, Delhi dated
March 31, 2016

Recycled water to keep parks green

TIMES NEWS NETWORK

New Delhi: In a bid to ensure greenery in 16 parks under the South Delhi Municipal Corporation in Munirka and to curb misuse of water, a treatment plant was inaugurated at JP Vasant Continental hotel on Wednesday.

Launching the project, Union minister Venkaiah Naidu appreciated the step taken by the corporation and said, "This needs to be expanded. It is the need of the hour to make use of recycled water." The sewage water will be treated at the plant installed in Vasant Continental and the horticulture department of the corporation will receive around one lakh litres of treated water for irrigating parks in Munirka and Munirka Vihar area.

The Times of India, Delhi dated
March 31, 2016

NGT notice to Centre on microbeads in cosmetics

Experts Flag Damage To Marine Life

Jayashree.Nandi
@timesgroup.com

New Delhi: The National Green Tribunal (NGT) has recently issued notices to the ministries of environment, water resources, and health, asking for their comments on microbeads found in personal care products.

Microbeads are tiny plastic substances that act as exfoliators (that remove dead cells) on skin and teeth when used in soap, toothpaste and other products. Nearly all leading brands, including some "herbal" brands, manufacture beauty products with these exfoliating beads. But toxicology and marine experts are sounding alarm bells on their impact on the environment.

Alok Dhawan, director, Indian Institute of Toxicology Research (IITR) under Council of Scientific and Industrial Research (CSIR), told TOI "precautionary principle" should be applied. "There is a lot of research already flagging the concerns.

TINY POLLUTANTS, BIG PROBLEM

What are microbeads made of?
Polyethylene (PE) or polypropylene (PP), polyethylene terephthalate (PET), polymethyl methacrylate (PMMA) and nylon



About 5,000 to 95,000 microbeads are released with every single use of personal care product that contains microbeads according to a study published in the Marine Pollution Bulletin last year

Microbeads are ingested and accumulated in fish, mussels and other marine animals

When plastics breakdown, more toxic substances that are linked to neurological and hormonal imbalances are released

In an overview published for the Convention on Biological Diversity, it was shown that over 663 different species were negatively impacted by marine debris with approximately 11% of reported cases specifically related to the ingestion of microplastics

Because these are cosmetics and not drugs, one can surely live without them. Why would anyone want to use something that destroys the environment?" he said, adding that concerns are similar to nanoparticles in cosmetics which have been linked to DNA damage in humans.

Microbeads escape the filtration and treatment processes for wastewater and end up in rivers, eventually in the ocean. Scientists from IITR pointed to the Canadian government's recent science summary on microbeads that indicates they cannot be collected through filtration

and even absorb a variety of local pollutants like persistent organic pollutants (POPs) and others in waste water. While plastics are already wreaking havoc in water bodies, microbeads are even more dangerous because their size varies from 1 micron to 1mm. "It can take them anywhere from three months to a few years to start degrading," added Dhawan.

Marine scientists say there is very little research in India but the repercussions could be alarming. "They get into the digestive tracts of even large mammals and small fish and choke them to death," said Deepak Apte, director of Bombay Natural History Society. The US already has "Microbead-Free Waters Act of 2015" that prohibits "manufacture and introduction into interstate commerce of rinse-off cosmetics containing intentionally added plastic microbeads."

The NGT petition filed by lawyer Ashwini Kumar seeks a complete ban on the use of microbeads in the manufacture, import and sale of various cosmetics or personal care products. The Centre's views will be heard on April 18. Officials from the ministry of water resources said it has not been discussed yet.

The Times of India, Delhi dated April 01, 2016

Green cess delivers the goods in 3 months

POLLUTION FIGHT ON THE RIGHT TRACK

EPCA on Thursday filed a status report with the Supreme Court on measures taken by Delhi in pursuance of the court order

DIVERSION OF NON-DESTINED TRAFFIC BY HARYANA AND UP | Haryana has set up 13 check-posts, resulting in diversion of 6,300 vehicles daily between January 21 and March 28. UP has also started setting up check-posts

UPGRADE OF ALTERNATIVE BYPASS AVAILABLE | EPCA has identified alternate roads. It has requested SC to direct the transport ministry to upgrade critical roads that allow bypass

INSTALLATION OF WEIGH-IN-MOTION BRIDGES AT ALL ENTRY POINTS | EPCA pleads with SC to direct NHAI to commission weigh-in-motion bridges at the earliest. NHAI must also ensure provisions to levy 10 times the applicable rate as penalty for trucks carrying load

UTILISATION OF ECC | Over ₹ 152 crore collected under ECC until February 2016. EPCA has asked Delhi government to submit its plan for utilisation of ECC. Also, it has sought that SDMC be compensated at ₹ 1 crore per week for loss of revenue due to ECC



INSTALLATION OF RFID FOR EFFECTIVE TOLL COLLECTION

EPCA has consulted experts and prepared a plan for radio frequency identification. The cost will be paid from the ECC collections. The tender notice will be completed by April-end

PRE-2006 TRAFFIC NOT TO BE ALLOWED WITHIN CITY LIMITS | The transport ministry's Vahan database is being used to track pre-2006 vehicles

TAXIS IN NCR TO RUN ON CNG | EPCA has asked SC to direct governments of Haryana, Delhi and UP to ensure that taxis registered under the national taxi permit give an

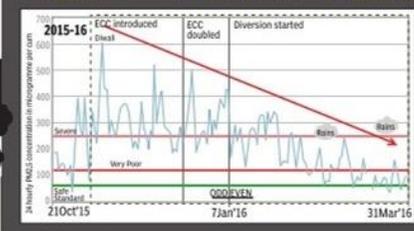
undertaking that they will provide pick up and drop outside NCR

ENSURING AVAILABILITY OF CNG IN NCR | There are 347 CNG stations in NCR; 104 new ones will be commissioned

ENSURING LAND AVAILABILITY FOR BUS DEPOT | EPCA's assessment says the city needs about 132 to 330 acres of additional land to meet its target of having more than 11,000 buses

AUGMENTATION OF METRO |

SUSTAINED MEASURES IN THE LATER MONTHS OF THE PREVIOUS YEAR HELPED REDUCE POLLUTION IN CAPITAL



EPCA will recommend actions required within 2 weeks

RECOMMENDATION REGARDING EXEMPTION TO SPG VEHICLES | Exemption to be made for 12 SPG vehicles because they are needed as escort vehicles that need to be comparable with armored vehicles already purchased

ADVANCING BS-VI FUEL AND VEHICLE TECHNOLOGY | It is being reviewed with the ministries concerned

POLLUTION THROUGH CONSTRUCTION ACTIVITIES | EPCA has developed a guidance note for inspection of construction sites

CHECKING ROAD DUST | PWD has informed EPCA that it has given 142 road-cutting approvals between December 2015 and February 16

WASTE BURNING | Working on an accountability system and mobile app for monitoring

EPCA has asked the Delhi government to submit a fund utilisation plan.

EPCA also pointed out that pollution peak episodes had reduced significantly after ECC was doubled by the apex court in December last year.

Its report contains a graph that shows that the PM 2.5 peaks have fallen from 400-500 micrograms per cubic metres to 200-150 micrograms per cubic metres by March-end. There has been a steady decline in

80% Decline In Delhi-Bound Trucks, SC Told

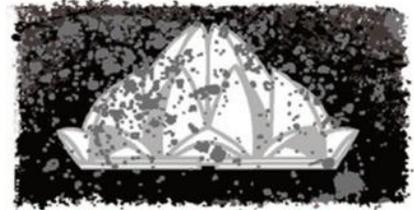
Jayashree.Nandi @timesgroup.com

New Delhi: The green tax imposed by the Supreme Court has drastically brought down the number of trucks entering the city. According to documents submitted by the Environment Pollution Control Authority (EPCA) to the apex court on Thursday, around 9,000 vehicles enter Delhi after paying the mandatory environment compensation charge (ECC) every day. The figure lied somewhere between 22,000 and 38,500 earlier.

EPCA, a Supreme Court-mandated body to see the implementation of anti-pollution measures in NCR, said there was a decline of about 80% in the number of Delhi-bound trucks after ECC came into effect. It also submitted that around Rs 152 crore was collected as green tax till February 12, which will be used in improving public transport and roads in the city. EPCA has asked the Delhi government to submit a fund utilisation plan.

EPCA also pointed out that pollution peak episodes had reduced significantly after ECC was doubled by the apex court in December last year.

Its report contains a graph that shows that the PM 2.5 peaks have fallen from 400-500 micrograms per cubic metres to 200-150 micrograms per cubic metres by March-end. There has been a steady decline in



LET DELHI BREATHE

the pollution level in the past three months. There was no clear trend in the same period last year though.

EPCA made this analysis on the basis of daily PM2.5 average concentration at four stations under Delhi Pollution Control Committee (DPCC). "The data shows that actions taken by SC is making a difference. It also suggests that levels of pollution are still high and require more-enforcement and steps to combat the deadly health scourge," the EPCA note said.

It further said that the Haryana government had set up 13 check posts and was diverting around 6,300 vehicles to alternative routes every day. Between January 21 and March 28, Haryana diverted more than four lakh vehicles every day. UP prevented 2,831 trucks from entering Delhi in the same period.

EPCA submitted a detailed compliance report on va-

rious directions SC had issued on December 16. It said Haryana had registered 806 CNG taxis while UP had registered 680 CNG cabs after the order. The Delhi transport department informed EPCA that it had issued national taxi permits to 29,358 diesel cabs. These taxis will give an undertaking that they will pick up and drop passengers outside NCR. Ola and Uber have given written undertakings to EPCA that they will switch to CNG.

Experts said the SC order had provided a major boost to the anti-pollution drive. Said Anumita Roy Chowdhury of Centre for Science and Environment: "SC has really reduced the public health risk arising out of diesel emissions. The trucks are paying ECC under the 'polluter pays' principle. This benefit shouldn't be undermined by owners of luxury cars. They have to come under the 'polluter pay' principle too."

Source: Based on DPCC Real-time monitoring data

Deccan Chronicle, Hyderabad dated April 02, 2016

CLIMATE CHANGE

INDIA TO FACE SEVERE WATER CRISIS BY 2050

■ 1 billion people will be water-stressed in Asia in next 35 yrs

Washington, April 1: Countries in Asia, including India, may face severe water shortage by 2050 due to rising economic activity, growing populations and climate change, MIT scientists have warned.

There is a "high risk of severe water stress" in much of an area that is home to roughly half the world's population, scientists said.

Having run a large number of simulations of future scenarios, the researchers found that the median amounts of projected growth and climate change in the next 35 years in Asia would lead to about 1 billion more people becoming "water-stressed" compared to today.

While climate change is expected to have serious effects on the water supply in many parts of the world, the study underscores the

extent to which industrial expansion and population growth may by themselves exacerbate water-access problems.

"It's not just a climate change issue," said Adam Schlosser, from the Massachusetts Institute of Technology (MIT) in US.

"We simply cannot ignore that economic and population growth in society can have a very strong influence on our demand for resources and how we manage them. And climate, on top of that, can lead to substantial magnifications to those stresses," said Schlosser.

To conduct the study, the scientists built upon an existing model developed previously at MIT, the Integrated Global Systems Model (IGSM), which contains probabilistic projections of population growth, economic expansion, cli-

mate, and carbon emissions from human activity.

They then linked the IGSM model to detailed models of water use for a large portion of Asia encompassing China, India, and many smaller nations.

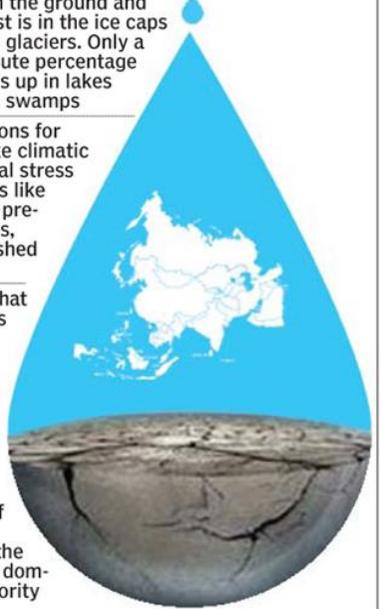
The scientists then ran an extensive series of repeated projections using varying conditions.

In what they call the "Just Growth" scenario, they held climate conditions constant and evaluated the effects of economic and population growth on the water supply.

Approaching it this way gave the researchers a "unique ability to tease out the human (economic) and environmental" factors leading to water shortages and to assess their relative significance, Schlosser said.

—PTI

71% of Earth is covered by water, majority of which is in the oceans, only 30 percent of freshwater is in the ground and most is in the ice caps and glaciers. Only a minute percentage ends up in lakes and swamps



THERE ARE many reasons for this water shortage like climatic changes, environmental stress and some other factors like the best access to the precious natural resources, says the reports published in Journal PLOS One.

THE SCIENTISTS said that socioeconomic changes is have little significance today and worsening climate change will still contribute to severe water stress

4.4B

The total population of Asia. The biggest land on the Earth. Overall, the data is critical since it dominates constitutes majority

The Times of India, Delhi dated April 02, 2016

Asia faces severe water crisis by '50

Rising Economic Activity, Population Boom & Climate Change To Blame: MIT

Washington: Countries in Asia, including India, may face severe water shortage by 2050 due to rising economic activity, growing populations and climate change, MIT scientists have warned. There is a "high risk of severe water stress" in much of an area that is home to roughly half the world's population, scientists said.

Having run a large number of simulations of future scenarios, the researchers found that the median amounts of projected growth and climate change in the next 35 years in Asia would lead to about 1 billion more people becoming "water-stressed" compared to today.

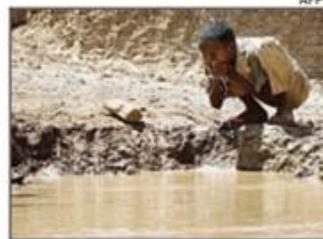
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AFP

FUTURE TENSE

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They then linked the IGSM model to detailed models of water use for a large portion of Asia encompassing China, India, and many smaller nations.

The scientists then ran an ex-

tensive series of repeated projections using varying conditions. In what they call the "Just Growth" scenario, they held climate conditions constant and evaluated the effects of economic and population growth on the water supply. In an alternate "Just Climate" scenario, scientists held growth constant and evaluated climate-change effects alone.

And in a "Climate and Growth" scenario, they studied the impact of rising economic activity, growing populations, and climate change. Approaching it this way gave the researchers a "unique ability to tease out the human (economic) and environmental" factors leading to water shortages and to assess their relative significance, Schlosser said. PTI

The Times of India, Delhi dated April 06, 2016

Nasa is facing a climate change countdown

Much Of Space Agency's Land And Structures Are Near Coasts Which Face Threat From Rising Sea Levels

John Schwartz

Kennedy Space Center: The concrete block perches absurdly atop a piling, elevated about 10 feet above the beach sand. Is it art? A bulky milepost?

Carlton Hall, chief scientist of Nasa's ecological programme, explained that it was once a tie-down block for securing structures like antenna towers. When he started working a few decades ago, the block had been buried. Now the sand that developed it is gone, swept away by coastal erosion and storms.

Like so much of Florida, America's 'Space Coast' — a 72-mile stretch along the Atlantic — is feeling the threat of climate change. It already has, with Hurricane Sandy, whose power was strengthened by climate change, flattening in 2012 an al-



The Launch Complex 39B at Kennedy Space Center on the coast of Florida

ready damaged dune line that provided protection from the Atlantic's battering.

A rising sea level will bring even greater risk over time, and according to a study, warming pressure on the Antarctic ice sheet could help push sea levels

higher by as much as five or six feet by the end of this century.

Nasa isn't just a victim of climate change. It contributes to climate science in many ways. Astronaut Scott Kelly, who recently returned from a year in space, took hundreds of pho-

'Global warming has ties to health risks'

Global warming could lead to an increase in allergies and asthma, deaths by extreme heat and proliferation of insect-borne diseases, according to a White House report titled 'The Impacts of Climate Change on Human Health in the US: A Scientific Assessment'. US health officials said the study offered strongest evidence linking climate change to health risks. THE INDEPENDENT

tographs that could seem like abstract art or a dire warning. "It seems there is more pollution in India and China than what I saw last time," he said.

Nasa, which has \$32 billion worth of structures, has about two-thirds of its land within 16

feet of mean sea level and much of it is near the coasts. Johnson Space Centre in Texas sits by Clear Lake, an inlet of Galveston Bay and the Gulf of Mexico. The surge from Hurricane Ike in 2008 caused power failures and debris pileup that shut down the centre for a week.

The agency's Climate Adaptation Science Investigators working group has predicted that sea level rise of five inches to more than two feet by 2050 could cause widespread problems for the five coastal Nasa sites.

Nasa has options that include hardening facilities with barriers and structures adapted to storms and flooding, or if adaptation is not possible, to strategically retreat. It has already spent much of a \$3 million appropriation to rebuild a long dune to replace protective

sands that have been washed away. However, as Nasa sits in the middle of a vast wildlife refuge, the sand brought in had to resemble the sand that had been washed away. Workers took cuttings of plants from the old dunes, grew them and put in 1,80,000 individual plants to secure the new dunes.

The question is, for how long? Why the Coast? Launching over water is safer than land and people. Also, rockets are best launched from sites closer to the Earth's Equator, where the greater diameter of the planet provides a slingshot effect that gives each rocket more bang for the propulsion buck.

And that is the conundrum. Water, once the solution to many of the space agency's problems, is becoming its biggest threat. NYT NEWS SERVICE

The Economic Times, Delhi
dated April 07, 2016

The Times of India, Delhi dated
April 08, 2016

K'taka ban on serving & packing food in plastic cans comes into force

Eateries Land in a Plastic Soup

Richa Maheshwari &
Ratna Bhushan

Bengaluru | New Delhi: Quick service restaurant (QSR) chains operating in Bengaluru and other parts of Karnataka have a huge packaging problem to grapple with.

The state's ban on serving and packing fresh food in plastic containers, effective April 1, means popular eating out and coffee chains including Café Coffee Day, McDonald's and KFC have to change their packaging strategy overnight.

This means food service businesses will have to switch to biodegradable packaging, which restaurateurs say would increase costs to the tune of 18-30%, and would have to factor in additional costs if the move goes pan-India.

Rahul Singh, founder of The Beer Café and representative of the National Restaurant Association of India, said: "Measures such as these have a cascading all-India impact. With lack of many workable options and not enough clarity, restaurateurs are working out sustainable solutions to comp-

Eco-friendly, but Expensive

The alternative is biodegradable packaging

COST PUSH

20% Bagasse plates

30% Glass bottles

15% Starch-based cutlery



plastic coated plates and introduced 100% plant material and bio-degradable bagasse-based plates and bamboo stick stirrers, while cold beverages it delivers will be done in glasses instead of plastic cups. "All such measures are more expensive and we are exploring ways to meet the extra costs. Either we will add the cost for deliveries or price our premium products factoring the packaging costs. Soon we will roll out all these measures across cities we are present in," Bijral said.

On average, biodegradable packaging such as bagasse plates are 18-20% more expensive than plastic coated ones, while glass bottles are 30% costlier and rice and corn starch based spoons and forks are 15% more expensive.

The country's largest coffee chain Café Coffee Day's group president, marketing, Bidisha Nagaraj said the brand is working on alternative solutions to certain plastic products that it has been using at its

outlets such as cold beverage cups (typically used for takeaway orders), stirrers, straws and spoons. Likewise KFC and McDonald's.

A spokesperson for KFC said the firm is "supportive of this environment-friendly initiative to reduce plastic usage and is working with authorities to get complete clarity on the law, and find a cost-effective and sustainable solution".

McDonald's India (west & south) managing director Smita Jatia said: "We are working towards customising our packaging to meet a holistic approach."

According to a report published by Freedonia Group, the packaging food service disposable market in India is pegged at \$575 million by 2020.

Delhi-based biodegradable tableware maker Ecoware cofounder Rhea Singhal, which supplies to leading hotels and QSR chains said the new law is expected to accelerate demand for such products.

But the challenge, say restaurateurs, is lack of options. Rashmi Daga, founder of online food ordering startup Freshmenu said: "There are hardly any end-to-end options for biodegradable products."

Airline carbon tax will burden poor countries: BASIC

Vishwa Mohan
@timesgroup.com

New Delhi: The BASIC countries — Brazil, South Africa, India and China — are opposed to any move of the International Civil Aviation Organisation (ICAO) on carbon emission tax on airlines in the garb of offsetting emission in the aviation sector as they believe it would impose inappropriate economic burden on developing countries.

The unanimous stand emerged during the two-day ministerial meeting of the BASIC group here. The grouping also expressed its concerns over the recent draft proposal of the ICAO and its plan to cap the aviation sector's emission by introducing a market-based mechanism.

Though aviation was not included in the Paris climate agreement that was adopted by 195 countries in Decem-

ber last year, the ICAO is scheduled to meet in September to finalise such a taxation regime.

Union environment and climate change minister Prakash Javadekar said, "We are opposed to any proposal of developed countries to bring such tax in a different name in the airline sector... (Uski khilafat humne ki hai)".

Javadekar, who represented India in the BASIC group meeting, said, "It (the move) will impose inappropriate economic burden on developing countries. We have, therefore, asked the ICAO that it must develop global market measures (to curb emission in aviation sector) that must align with the spirit of the Paris Agreement".

Under the Paris climate agreement, all the countries are supposed to take measures voluntarily as per their national climate action plans.

The Times of India, Delhi dated
April 08, 2016

Earth Care Awards for green firms

TIMES NEWS NETWORK

New Delhi: After decades of talks, 195 nations adopted an ambitious deal in Paris last December to limit greenhouse gas (GHG) emissions and strive to prevent dangerous impacts of climate change. The deal cannot be met without action by businesses. The JSW-The Times of India Earth Care Awards (ECA) seek to identify businesses that have kept climate change mitigation high up on their agenda. The application process for participation at the seventh edition of the awards is now open. Applications can be submitted till April 15, 2016.

Industries across the South Asian region are already deliberating on how to improve processes and services to tackle climate change impacts. In fact, programmes

such as Corporate Social Responsibility Act (CSR), Carbon Disclosure Project and India GHG programme already have participation of leading companies. The awards will be focused on businesses that have the willingness and a plan to reduce carbon intensity in their operations. The crux of the Paris deal is to get the fossil fuel-based economy to move to a clean energy economy that will be mainly dependent on how businesses change their behaviour.

India is the world's third largest emitter and, at the same time, highly vulnerable to the impacts of climate change. India's per capita emissions are far lower than even the world average. India's commitment to reduce its emission intensity per unit GDP by 33% to 35% below 2005 by 2030 and increase its share

of clean energy to 40% by 2030, can be achieved through a sustained effort from various sectors of the economy which includes businesses and urban communities that are also the largest emitters.

ECA focuses on responses generated from the South



Asian region. This is because of the vulnerability the region faces—common challenges such as poverty, depleting natural resources, uncertainty of monsoon, lack of resilience in the face of natural disasters and conflict over limited resources.

There are four categories for the award—community,

innovation, industry and small and medium enterprises. In 2015, RBS Foundation India and MS Swaminathan Research Foundation (MSSRF) won the award in community category, Larsen & Toubro, Datamatrix Infotech Pvt Ltd, Gujarat Energy

Research and Management Institute in the innovation category, Raymond UCO Denim Pvt Ltd in industry, JB Chemicals and Surat Municipal Corporation in small and medium enterprise category.

L&T was awarded for its innovations in structural and solar plant designs, thereby increasing generation and re-

ducing the cost. MSSRF won for integrated mangrove fish farming systems and empowering coastal communities, thereby increasing their adaptive capacity.

The jury include Global Research Alliance president R A Mashelkar; Centre for Environment Education founder director Kartikeya V Sarabhai, Technology, Education, Research and Rehabilitation for the Environment chairperson Rajendra Shende, Centre for Development Studies and Activities executive director Aneeta Benninger; McKinsey and Company director Rajat Gupta, Centre for Science and Environment deputy director general Chandrabhushan and World Resources Institute (India) managing director Nitin Pandit.

Log on to www.earth-careawards.com for details

The Economic Times, Delhi dated April 08, 2016

STARING AT A HEALTH CRISIS 'Won't be able to treat emergency cases after 15 days'; Most doctors say there isn't enough water to wash their hands before an operation

Docs Put Off Surgeries in Drought-Hit Marathwada



FILE PHOTO

Krishna.Thevar@timesgroup.com

Latur: The severe drought in Marathwada, that had rocked the rural economy and led to farmer suicides, may now become a full-blown public health crisis that threatens over 5 lakh people in Latur, one of the worst drought-affected districts in the state. The situation is so grim that doctors in the region are finding it tough to treat patients and are putting off surgeries because there simply isn't enough water, and the district is running on whatever little water it is getting from tankers.

"We have to depend on tanker water — if we order a tanker today, it comes after two or three days, it is so bad. The tankers are finding it hard to supply water because they get water from borewells from far flung areas where the water table is going down," said Deepak Gugale, president of the Latur

Indian Medical Association, adding we will not be able to treat emergency cases also after 15 days. "We will only be able to run our OPDs." Most doctors here said there wasn't enough water to wash their hands before a surgery.

As a result, hospitals are forced to compromise on hygiene. While some surgeries can be put off, some like deliveries can't. Snehal Deshmukh, a gynaecologist who runs a maternity hospital in Latur, is facing a tough time. "We can't postpone deliveries, and maternity hospitals require a lot of water. A woman after a caesarian delivery used to be in the hospital for 5-7 days, but are now being discharged on the fourth day if she is medically fit," said Deshmukh.

Latur has a government hospital too, which is facing an even worse crisis as it is flooded with patients. Urologist Dr Hansraj Baheti said the quality of tanker water is so bad that people are contracting diseases such as jaundice, typhoid, hepatitis and gastroenteritis. "The number of people suffering from kidney stones has increased three fold, this is because they are drinking borewell water which is hard."

LEFT HIGH AND DRY IN PARCHED LAND



GETTY IMAGES

The Economic Times, Delhi dated April 08, 2016

Tesla says it Just Made Car History

Business Insider

New York: Tesla announced on Thursday that it has taken more than 3,25,000 pre-orders for its mass market Model 3 sedan.

Tesla's announcement — made through a post on the company's blog — comes just one week after the electric-automaker began taking \$1,000 deposits for the car.

In the blog post, Tesla claims the aggregate value of the reservations to be equal to about \$14 billion in future sales.

According to the company, the staggering reaction to the Model 3 makes it "the single biggest one-week launch of any product ever."

"Unlike other major product launches, we haven't advertised or



paid for any endorsements," Tesla said. "Instead, this has been a true grassroots effort driven by the passion of the Tesla team that's worked so hard to get to this point, and our current and future customers who believe so strongly in what we are trying to achieve."

The Times of India, Delhi dated
April 09, 2016

To check climate change, stop wasting food: Experts

Better Management Can Cut Emission From Agriculture By 14%

Barcelona: Reducing food waste around the world would help curb emissions of planet-warming gases, lessening some of the impacts of climate change such as more extreme weather and rising seas, scientists said on Thursday.

Up to 14% of emissions from agriculture in 2050 could be avoided by managing food use and distribution better, according to a study from the Potsdam Institute for Climate Impact Research (PIK). "Agriculture is a major driver of climate change, accounting for more than 20% of overall global greenhouse gas emissions in 2010," said co-author Prajal Pradhan. "Avoiding food loss and waste would therefore avoid unnecessary greenhouse gas emissions and help mitigate climate change."

Between 30 and 40% of food produced around the world is never eaten, because it is spoiled after harvest and during transportation, or thrown away by shops and consumers.

The share of food wasted is expected to increase drastically if emerging economies adopt Western food habits, including a shift to eating more meat, the researchers warned.

Richer countries tend to con-



© Paul Souders/Corbis

HEAT IS ON: As world's population grows, emissions associated with food waste could soar from 0.5 gigatonnes of carbon dioxide equivalent per year to 2.5 gigatonnes annually by mid-century

Earth's internal heat melting Greenland ice

Greenland sits over an area of abnormally hot mantle material that drives a widespread melting beneath the ice sheet and rapid ice flow over a distance of several hundred kilometres, a study by researchers of German Research Centre for Geosciences has found. Greenland's lithosphere has hot depths which originate in its distant geological past and cause the island's ice to rapidly flow and melt from below. An anomaly zone crosses Greenland from west to east where present-day flow of heat from the Earth's interior is elevated. PTI

sume more food than is healthy or simply waste it, they noted.

As poorer countries develop and the world's population grows, emissions associated with food waste could soar from 0.5 gigaton-

nes of carbon dioxide equivalent per year to between 1.9 and 2.5 gigatonnes annually by mid-century, showed the study published in the Environmental Science & Technology journal. REUTERS

NGT: Test groundwater of six West UP districts

Sandeep.Rai@timesgroup.com

Meerut: An NGT bench headed by Justice Swatantra Kumar has directed the UP government to test groundwater of six Western UP districts (Meerut, Ghaziabad, Saharanpur, Baghpat, Muzaffarnagar and Shamli) for heavy metals.

The tribunal was responding to the petition of Doaba Paryavaran Samiti that highlighted the plight of villagers in this area who are suffering from dreaded diseases like cancer and bone deformities due to consumption of

HEAVY METALS

groundwater contaminated by the polluted rivers flowing nearby. The petition was filed in November 2014 and from time to time, NGT had been directing UP government to improve drinking water facilities for the villagers, especially those living close to highly polluted rivers like Hindon, Krishna and Kali.

Little has been done in this regard as people continue to die of diseases like cancer. In the latest of the series of directions, NGT on August 5, 2015, had directed the state to provide potable drinking water to severely affected villages of six districts of UP West. On November 5, 2015, NGT reprimanded UP government for not complying with the August 5 order. It directed the government to seal all handpumps of Western UP villages drawing contaminated water.

The Times of India, Delhi dated April 11, 2016

Climate-related death of coral alarms experts

Michelle Innis

Sydney: Kim Cobb, a marine scientist at the Georgia Institute of Technology expected the coral to be damaged when she plunged into the deep blue waters off Kiritimati Island, a remote atoll near the centre of the Pacific Ocean. Still, she was stunned by what she saw as she descended some 30 feet to the rim of a coral outcropping.



A dying cauliflower coral around Kiritimati

"The entire reef is covered with a red-brown fuzz," Dr Cobb said. "It is otherworldly. It is algae that has grown over dead coral. It was devastating."

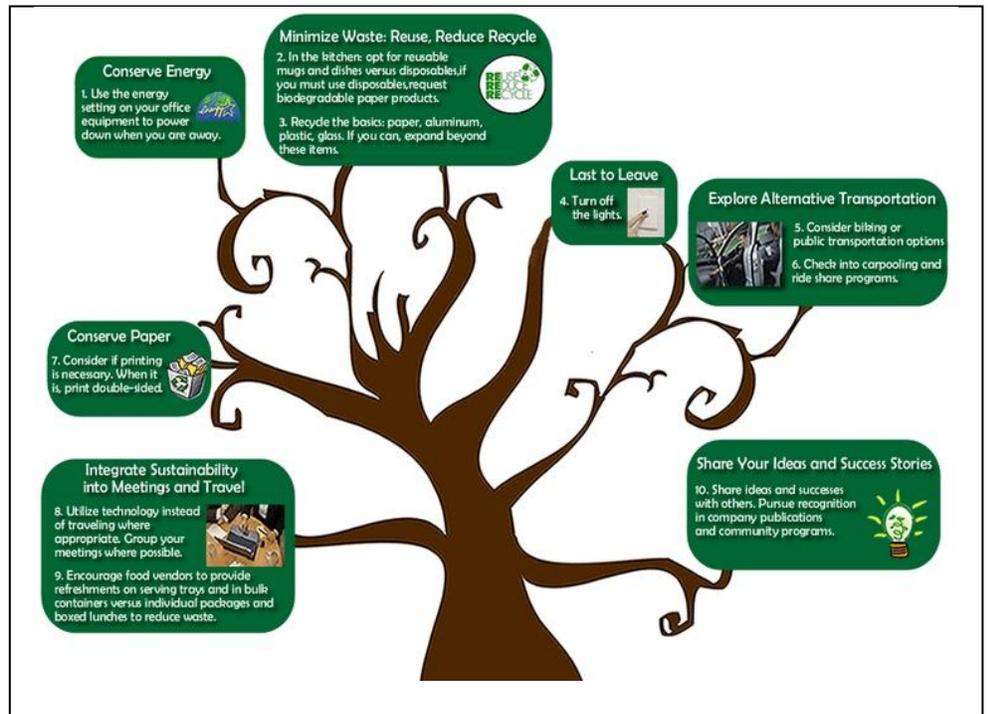
The damage off Kiritimati is part of a mass bleaching of coral reefs around the world, only the third on record and possibly the worst ever. Scientists believe that heat stress from multiple weather events including the latest severe El Niño, compounded by climate change, has threatened more than a third of Earth's coral reefs. Many may not recover.

Coral reefs are the crucial incubators of the ocean's ecosystem, providing

food and shelter to a quarter of all marine species, and they support fish stocks that feed more than one billion people.

"This is a huge, looming planetary crisis, and we are sticking our heads in the sand about it," said Justin Marshall, the director of CoralWatch at Australia's University of Queensland.

Damaged, dying reefs have been found from Réunion, off the coast of Madagascar, to East Flores, Indonesia, and from Guam and Hawaii in the Pacific to the Florida Keys in the Atlantic. The largest bleaching, at the Great Barrier Reef, was confirmed last month. NYNEWSERVICE



The Times of India, Delhi dated April 12, 2016

India not as healthy as Bharat; pollution, bad diet to blame

Survey: Men Less Likely To Take Ill

Mahendra.Singh @timesgroup.com

New Delhi: Urban India is more sick than the rural hinterland despite the mushrooming of health and wellness clinics and super-specialty hospitals, besides better per capita earnings. And this could well be attributed to increasing pollution levels and unhealthy dietary habits.

A government health survey has revealed that around 11.8% of urban and 8.9% of rural population reported ailments during a 15-day reference period.

Women were found to be more vulnerable to diseases in both cities and villages. The survey found that 13.5%

THE HEALTH DIVIDE

HOSPITALISATION	EXPENDITURE
<ul style="list-style-type: none"> > About 4.4% of the urban population was hospitalised (excluding childbirth) at least once during a reference period of 365 days. This was lower in rural areas (3.5%) > In cities as well as villages, hospitalisation (excluding childbirth) was most frequent (around 25%) for 'infection' (all types of fever, jaundice, TB, tetanus, diarrhoea/dysentery and other infections) 	<ul style="list-style-type: none"> > Out of the total medical expenditure, around 72% in rural and 68% in urban areas was for purchasing medicines for non-hospitalised treatment > Villagers spent around ₹5,636 for treatment at a public sector hospital and ₹21,726 at a private hospital > Rural households primarily depended on 'household income/savings' (68%) and on 'borrowings' (25%), while 75% in cities relied on income/savings and only 18% on borrowings

of women, as compared to 10.1% of men, fell sick in urban areas, while the figures were 9.9% and 8%, respectively, in rural India.

What's worrisome is that a high chunk of the population (86% in rural and 82% in urban areas) remains outside any scheme of health expenditure support.

The NSSO survey released on Monday also reiterates that people rely more on private hospitals, with over 70% spells of ailment (72% in rural areas and 79% in urban areas) being treated in the private sector. Also, private institutions dominated both rural (58%) and urban areas (68%) in treating inpatients.

Allopathy remains the preferred treatment in rural as well as urban areas. The survey found that over 90% of rural and urban population relies on allopathic treatment despite the government's efforts to promote alternative medicine.

The survey found that around 97% of urban and 96% of rural population was administered some treatment, which included self-medication, use of medicines taken on chemists' advice and AYUSH treatment. In previous surveys, 'treatment' administered on medical advice was considered as 'treatment'.

It was found that financial constraints (57% in rural and 68% in urban) were the key reasons for going for treatment without any medical advice. Absence of medical facilities in the neighbourhood accounted for 15% of self-medication cases in rural areas.

*The Times of India, Delhi dated
April 13, 2016*

IGI's triple jump: More solar power to save Rs 12cr per year



GOING GREEN: More than half of the energy requirement of Terminal 1D is met by the solar power plant

Anvit.Srivastava@timesgroup.com

New Delhi: Aiming not only to save money, but also to take a stand against global warming, the Indira Gandhi International Airport has tripled its solar power generation capacity to meet a portion of its huge power needs. The green initiative will save the airport Rs 12 crore annually.

More than half of the power requirement of Terminal 1D is met by the airport's solar power plant, which became operational in October last year.

Delhi International Airport Limited (DIAL), which manages the airport, had commissioned a 2.14-Mw plant in January 2014. It has enhanced its generating capacity to 7.84 Mw since. DIAL claims not only financial savings with this measure, but also the status of becoming the first airport in the world to be registered under the Clean Development Mechanism of the United Nations Framework Convention on Climate Change.

DIAL revealed that internally

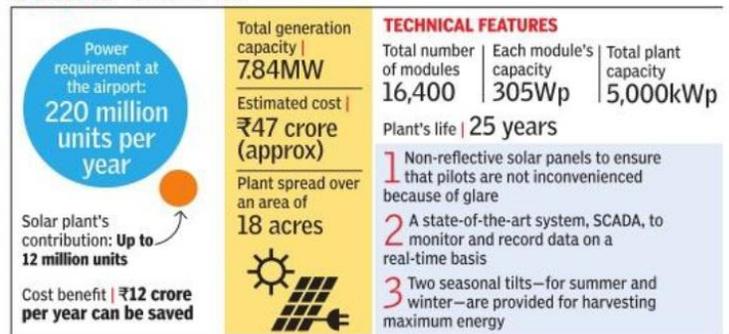
generated power now constituted 5% of the total power consumption of the airport. To curb the present annual energy bill of over Rs 200 crore, DIAL aims to raise the generation capacity of the solar power plants to 20 Mw by 2020. I Prabhakara Rao, CEO, DIAL, said the airport currently consumed around 220 million units of power per year, and the plan is to generate 12 million units of solar power every year. "IGI airport has always given the utmost importance to factors affecting the environment," said Rao. "We have taken various efficiency measures at Delhi airport, including waste water management system and clean development mechanism." The project, which is spread over 18 acres, has so far seen an investment of about Rs 47 crore.

Sujit Nag, executive vicepresident for

engineering and projects at DIAL, said that the airport is ideally aligned to make the best use of solar power. "Our panels are south-facing. This helps us make the best use of the solar energy," he said. "The system works on the state-of-art SCADA system to monitor and record daily, real-time data. An independent weather monitoring system to record the parameters in order to validate the plant performance has also been installed"

Airport officials said the panels of the plant have been constructed in such a way that they have anti-reflective qualities that do not disrupt flight operations. Nag said all steps have been taken in following security measures. The plant has been set up in consultation with security agencies and civil aviation authorities, he said.

SUNNY SIDE UP



5 Paper Tips: Think Before You Print

1. Use both sides of the paper
2. Go digital – read, send and store digital documents
3. Be selective about what you print
4. Reach for the right paper
5. Recycle

Source: Xerox Corporation

**Live small
Buy less
Waste nothing
Tread lightly
Bike more
Walk more
Share more
Be smart
Think Ahead**

The Economic Times, Delhi dated April 14, 2016



HARNESSING THE SUN

Rupee 29,500 crore has been disbursed for renewable energy sector since last February

By A Correspondent

As many as 40 Banks and Non-Banking Financial Companies (NBFCs) have sanctioned an amount of Rs. 71,201.54 crore to finance the various renewable energy projects and disbursed Rs. 29,529.57 crore against the sanctioned amount since February 2015 (till 21 March, 2016). This is a part of commitment made by them during RE-INVEST 2015.

It may be recalled that during RE-INVEST 2015, 40 major Banks and Non-Banking Financial Companies committed to provide debt funding to Renewable Energy Projects aggregating to over 78.75 GW during the span of next five years. Loans sanctioned by these Banks and FIs for RE projects are 18.63% of commitments made. The commitments made by country's Banks & NBFCs to finance RE projects and agreements with Foreign Banks & FIs to provide low cost and on long term funding are expected to boost the growth of the Indian renewable energy sector.

Ministry of New and Renewable Energy had organized First Renewable Energy Global Investor Meet and Expo (RE-INVEST 2015) from 15-17 February, 2015 in New Delhi. RE-INVEST 2015 saw RE capacity commitments of over 283 GW from stakeholders. Further, there was commitment of over 62 GW of manufacturing of RE equipment in India. Ministry of New and Renewable Energy

have been getting monthly status reports on achievements made so far by the Banks & NBFCs who have given commitments to finance RE bankable projects.

The Government has set an ambitious target of 175 GW of Renewable Energy capacities by 2022. Achieving this target require capital outlay of US \$ 160 billion including equity of US \$ 40 billion. In addition, huge investment is required for transmission; up-gradation of infrastructure in order to utilize power generated through Renewable Energy sources. As such Banks & NBFCs have to play a major role to provide low cost and long term financing for these projects.



Over the last few years some private banks in India have signed deals with development banks to provide loans at concessional rates. The Indian Renewable Energy Development Agency (IREDA) is also providing loans at low rates following its recent agreements with banks like KfW, AFD, Nordic Investment Bank, World Bank, Asian Development Bank, the European Investment Bank, and Japan International Cooperation Agency.

SOLAR ROOFTOPS IN INDIA

Recently, the Cabinet Committee on Economic Affairs, chaired by the Prime Minister Shri Narendra Modi has approved the scaling up of budget from Rs. 600 crore to Rs. 5,000 crore for implementation of Grid Connected

Rooftops systems over a period of five years upto 2019-20 under National Solar Mission (NSM). This will support Installation of 4200 MW Solar Rooftop systems in the country in next five years.

The capital subsidy of 30 percent will be provided for general category States/UTs and 70 percent for special category States i.e., North-Eastern States including Sikkim, Uttarakhand, Himachal Pradesh, Jammu & Kashmir and Lakshadweep, Andaman & Nicobar Islands, There will be no subsidy for commercial and industrial establishments in the private sector since they are eligible for other benefits such as accelerated depreciation, custom duty concessions, excise duty exemptions and tax holiday etc. This capacity of 4200 MWp will come up through the residential, Government, Social and institutional sector (hospitals, educational institutions etc.). Industrial & commercial sector will be encouraged for installations without subsidy. This will create the market, build the confidence of the consumers and will enable the balance capacity through market mode to achieve the target of 40,000 MWp by 2022.

The Government has revised the target of National Solar Mission (NSM) from

Smart Energy

Today it is possible to generate low-cost solar power from the solar rooftop systems at about Rs.6.50/kWh

20,000 MWp to 1,00,000 MWp by 2022. Out of the 40,000 MWp is to come through grid connected solar rooftop systems. This approval will boost the installations in a big way and will act as a catalyst to achieve the goal of 40,000 MWp.

A large potential is available for generating solar power using unutilized space on rooftops in buildings. Solar power generated by each individual household, industrial, Institutional, commercial or any other type of buildings can be used to partly fulfil the requirement of the building occupants and surplus, if any, can be fed into the grid. So far, 26 States have notified their regulations to provide Net Metering/Gross metering facilities to support solar rooftop installations.

Today it is possible to generate solar power from the solar rooftop systems at about Rs.6.50/kWh. This is cheaper than the diesel gen-sets based electricity generation.

The Economic Times, Delhi dated April 14, 2016

NEWS BYTES

QUALITY SOLAR POWERED PRODUCTS

In a move that could hit Chinese goods, India is planning to restrict import of inferior quality solar products, an official said. "We are working to impose quality standards on all the imports. We are working on the legal aspects of this, to get that



quality order issues so we can restrict poor quality products from being imported here," said Joint Secretary, New and Renewable Energy, Tarun Kapoor at The Energy and Resources Institute's (TERI) flagship project "Lighting a Billion Lives".

He said that his ministry is shifting its focus from subsidies to standards and quality solar products including solar panels and services in the market. The Indian solar market, which often dubs Chinese panels as 'e-waste', had been demanding quality regulation. Inferior quality Chinese solar panels and other solar products, often sporting fake insignia of Indian products, last only a few months. According to Indian entrepreneurs, Chinese products dominate the Indian solar

market with 60 percent share, as they are sold more than 50 percent cheaper than Indian solar products.

TECH CAMPUSES TO GO GREEN

Top technology institutes in like Indian Institute of Engineering Science and Technology (IIST), NIT-Durgapur and IIT-Kharagpur, will soon turn into solar hubs with many already installing solar panels to become energy-efficient campuses. The national solar mission, through the ministry of new and renewable energy (MNRE) has persuaded the ministry of human resource and development to request all academic institutes to set up roof-mounted solar plants. The HRD ministry is providing 30 percent subsidy, in some cases even more depending on the campus location, for the project. By introducing solar panels, every institute's power consumption will reduce the burden on the power grid. "They will be less dependent on the power-grid supply and it will

make their own system more reliable. Academic institutions will use this opportunity to enhance teaching and research activities and not merely as a capacity-building mechanism," said Prabodh Bajpai of IIT-Kharagpur, who is involved the solar power project. The ministry has asked all major Indian Institute of Technologies (IITs) and National Institute of Technologies (NITs) to "go green". While at IIT-Roorkee, the work on the solar campus is nearing completion, IIT-Kharagpur has embarked upon a completely new mission. The country's oldest IIT not only wants to become a solar energy efficient institute, but also wants to be self-reliant in power generation.

MORE SOLAR POWER CAPACITY

Government intends to raise solar power generation capacity to 48GW by early 2019, out of 100 GW envisioned from the

clean source by 2022 under the National Solar Mission. The Ministry of New and Renewable Energy in its latest projections, has set a target of having 48GW grid connected cumulative solar power generation capacity by 2018-19. According to latest targets, the ministry has envisaged adding 12GW capacity from the renewable source in the current fiscal. It plans to add 15GW and 16GW in 2017-18 and 2018-19 respectively.

SUBSIDY FOR SOLAR POWER USERS

In Himachal Pradesh, people can have access to new and clean renewable source of energy in the form of solar photovoltaic lights (SPV) at 70 percent subsidy, as per the guidelines of the Ministry of New and Renewable Energy (MNRE). People opting for grid connected rooftop solar panels/power plant are being given 70 percent subsidy, and surplus power would be further sold to HPSEBL at the rate of rupees five per unit, which would also add to the income of the individual, besides using free solar power. Chief Minister Virbhadra Singh said this while presiding over the meeting of the governing body of HIMURJA in Shimla. He said to empower people in remote and rural areas of the state with round the clock power by way of centralized solar power supply, HIMURJA - under the general scheme for individuals - would provide 1kWp each up to 168kWp initially.



Manufacturers to Gain from Solar Power Policy Push

Niti Aayog-coordinated policy is expected to go to cabinet shortly, may include offtake guarantees, 100% payment guarantees and stringent offset



FILE PHOTO

Deepshikha.Sikarwar @timesgroup.com

New Delhi: India is readying a major solar push to build on recent successes with a brand new policy to aid manufacturing of equipment that's going

to be in great demand if the government's plans fructify.

Backed by Prime Minister Narendra Modi, the Niti Aayog-coordinated policy is expected to go to cabinet shortly. "The new framework is almost ready...It is expected to be taken up by the cabinet soon," a senior government official told ET.

The proposed policy aims to create enabling conditions for solar generation capacity and could include offtake guarantees, 100% payment guarantees, an institutional hedging mechanism for foreign currency funds and a stringent offset.

The National Clean Energy Fund's corpus could be used to provide capital subsidies to domestic manufacturers, reeling under financial stress, for technological upgradation. This fund could also be used to provide hedging support. Viability gap funding

could be offered to developers as part of the package.

A new bidding framework is being designed in line with the government's solar plan.

The policy is being designed based on the recommendations of a high-level, inter-ministerial panel that was set up by the department of industrial policy and promotion.

The government is bullish about developing solar capacity but policymakers are concerned that this could lead to a surge in imports and something needs to be done to incubate manufacturing in the country quickly.

The government is eyeing a generation capacity of 100GW by 2022; so far only about 6,000 MW has been set up. This suggests vast demand for equipment as the rollout picks up pace through a composite policy of roof-top and large-scale generation.

It is looking at urgently unveiling a new scheme to establish 5,000 MW of solar photovoltaic manufacturing capacity by 2019. More is expected through this new policy.

Solar manufacturers in the country largely assemble equipment from components imported from China making them costlier than rival products from that country and Taiwan. The government's solar mission offers subsidies to solar developers sourcing components from local manufacturers. This mandatory sourcing from domestic manufacturers faces a challenge at the World Trade Organisation after India lost a case filed by the US on the issue.

The government is now keen on devising a policy that would encourage overseas companies to set up manufacturing facilities in the country as part of the Make in India initiative to avoid a confrontation at WTO.

The Economic Times, Delhi dated April 14, 2016

HARYANA MAKES SOLAR PLANTS MANDATORY

States have been realizing the potential of solar energy and offering incentives

Haryana has made solar power plants mandatory for housing societies, industries and other specified categories of buildings. "The notification has been issued in this regard to achieve higher trajectory for solar power generation and promote green energy," principal secretary for renewable energy Ankur Gupta said.

Under Haryana's solar power policy for 2016, the state government is providing various incentives including industrial status, exemption from change of land use approval and cess, free wheeling and banking facility, exemption of T&D and cross-subsidy charges. Besides, the government has decided to purchase solar power over and above the solar Renewable Purchase Obligation (RPO), Gupta said. The Government has revised the National Solar Mission target of Grid Connected Solar Power projects from 20,000 MW by 2022 to 1,00,000 MW by 2022.

A total investment of around Rs. 6,00,000 crore has been estimated to achieve the target of 100 GW. Solar power projects are installed by both, private and public sector companies. Banks and Financial Institutions have given green commitments to finance upto 78,850 MW. The organisations setting up the projects raise equity and loan from domestic as well as international sources. Financial institutions in India are also providing loans to this sector based on their prudential lending norms, the Minister added.

He said 40 investors have signed memorandum of understanding adding to over Rs 98,000 crore with the aim of adding 8,531.75 MW of solar power, besides setting up of bio CNG, module or cell manufacturing, and research and development units in the state. Describing Haryana as an emerging state in the renewable energy sector, Gupta said that the government was encouraging small investors by reserving 20 per cent of the target for projects of 1-2 megawatt capacity, giving price preference of 2 per cent to the plants installed in the state. The government is also promoting rooftop solar power plants to replace diesel gensets in the state, with an aim to reduce pollution and emission of greenhouse gases. In Haryana, a solar power plant can work for about 330 days a year, every kilowatt of which

produces about 1,600 units of electricity a year.

A typical 1KW solar power plant costs Rs 55,000-60,000, after availing



2,000 acres

Haryana government has identified about 2,000 acres of panchayat land in the state having potential of installation of solar power plants of 200 Mw capacity

subsidy. While the payback period is four-five years, the system lasts for more than 25 years. The government is also providing 30 per cent subsidy, subject to a maximum of Rs 20,000 per kilowatt peak (kWp), on installation of solar power plants for certain categories of buildings, Gupta said.

LAND FOR SOLAR POWER PLANTS

Haryana government has said it has identified about 2,000 acres of panchayat land in the state having potential of installation of solar power plants of 200 Mw capacity.

A feasibility study is also being carried out for the installation of solar power plants on canal tops and canal banks, a spokesman of the Haryana Renewable Energy Department (HAREDA) said that in order to generate solar power, 50 Mw solar power projects would be installed in 2015-16. Apart from this, the department would also install 5 Mw solar power plants which were sanctioned by Ministry of New and Renewable Energy (MNRE) in 2014-15. He said HAREDA would promote setting up of institutional biogas plants in the 'goshalas' (cow sheds) and dairies where sufficient cow dung is available. Other states have been offering similar incentives as well.

The Times of India, Delhi dated April 20, 2016

'Aravali waste spill spoils groundwater'

Bagish.Jha@timesgroup.com



Central body wants Gurgaon municipal body to explain why

Gurgaon: The Central Ground Water Authority (CGWA), in the affidavit filed on Tuesday before the National Green Tribunal (NGT), has partially agreed to the allegation in a petition that the groundwater in Aravalis is being polluted by untreated waste lying near Bandhwari waste treatment plant on Gurgaon-Faridabad road.

In its three-page affidavit, filed on the direction of the NGT, CGWA has agreed to most of the allegation related to unscientific dumping of waste around Bandhwari waste plant by municipal corporations of Gurgaon and Faridabad. It also taken notice of the claims that leachate has contaminated ground water, thus affecting Gurgaon, Delhi and Faridabad water tables.

The CGWA affidavit has accepted that report published in **TOI** on September 8, 2015 that the pit where a lake of leachate has been created us-

ed to be a seasonal water body of the village, and that the contamination might have even made the water carcinogenic.

The affidavit also put the onus of providing an explanation to the claims made in the petition on MCG. "Municipal solid waste management falls under the purview of the local municipal bodies. The concerned local municipal bodies are believed to be exercising their constitutional powers and functions to enforce the municipal laws/rules. The municipal bodies have since been made parties in the matter; they will explain their stand," reads the affidavit.

'50% of Great Barrier Reef coral dying'

93% Of World's Largest Living Ecosystem Has Fallen Prey To Bleaching: Researchers

Sydney: Australian scientists said on Wednesday that just 7% of the Great Barrier Reef, which attracts around \$3.9 billion in tourism every year, has been untouched by mass bleaching that is likely to destroy half the coral.

Bleaching occurs when the water is too warm, forcing coral to expel living algae and causing it to calcify and turn white. Mildly bleached coral can recover if the



A diver checks the bleached coral at Heron Island on the Great Barrier Reef

temperature drops, otherwise it may die. Although the impact has been exacerbated by one of the strongest El Nino weather systems in nearly 20 years, scientists believe climate change is the underlying cause. "We've never seen anything like this scale of bleaching before. In the northern Great Barrier Reef, it's like 10 cyclones have come ashore all at once," said professor Terry Hughes, convener of the National Coral Bleaching Taskforce, which conducted aerial surveys of the World Heritage site.

"Our estimate at the moment is that close to 50% of the coral is already dead or dying," Hughes said. The Great Barrier Reef stretches 2,300 km along Australia's northeast coast and is the world's largest living ecosystem. "There were some who said that the worst had passed. We rejected that, and they were wrong," environment minister Greg Hunt told reporters. "Let it be known that this is a significant event. We take it seriously."

Unesco's World Heritage Committee last May stopped short of placing the Great Barrier Reef on an "in danger" list, but the ruling raised long-term concerns about its future.

Australia is one of the largest carbon emitters capita because of its reliance on coal-fired power plants for electricity. "The bleaching is extreme in the 1,000km region north of Port Douglas all the way up to the northern Torres Strait between Australia and Papua New Guinea," said Andrew Baird from the ARC Centre of Excellence for Coral Reef Studies.

The findings will likely place pressure on Prime Minister Malcolm Turnbull ahead of an expected federal election on July 2. Turnbull is an advocate of carbon trading and supports progressive climate policies, but has left some disappointed over a failure to strengthen his party's commitment to addressing climate change.

Not only sugarcane states, others too abuse groundwater

Punjab, Haryana, Rajasthan Face Severe Depletion

Vishwa.Mohan@timesgroup.com

New Delhi: Over 90% of the extracted groundwater in India is used for irrigation. Though this has never been a secret, the quantum of groundwater use in different states shows that the culprits are not only the sugarcane producing states like Maharashtra, Uttar Pradesh and Karnataka. The onus of abusing groundwater resources also lies with wheat, rice, maize and oilseeds producing states like Punjab and Haryana.

Groundwater use pattern of these two states show they are extracting more water than can be replenished, driving home the urgent need for farmers to adopt efficient micro-irrigation systems like drip and sprinkler which can help conserve water.



The Central Ground

Water Board (CGWB) in its latest assessment report noted that though Punjab has only 20.32 Billion Cubic Meter (BCM) of annual groundwater availability, it extracts 34.88 BCM annually. Similarly, Haryana extracts 13.05 BCM as against the availability of only 9.79 BCM. Of this, Punjab uses 34.17 BCM for its irrigation needs, while Haryana uses 12.35 BCM of groundwater it extracts annually for the same purpose.

Referring to such indiscriminate use of groundwater, the Union water resources minister Uma Bharti on Wednesday expressed her concern that prosperous states like Haryana and Punjab have "abused" groundwater over the years and now most of their blocks fall under 'dark' zones or highly groundwater exploited areas.

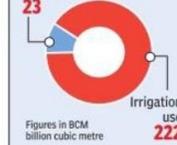
"More than 70% of their blocks are falling under dark zones now. A state like Maharashtra had reported water deficit situations earlier as well. But Punjab and Haryana tell us a tragic story," Bharti said while addressing the 'India Water Forum', organised here by The Energy and Resources Institute, on

DEPLETING RESOURCES

Annual replenishable ground water resources in India 433 (1 cubic metre = 1000 litres)

245 BCM of ground water extracted annually for different use

State	SITUATION IN STATES		
	Extraction	Irrigation	Domestic+Industrial
Punjab	34.88	34.17	0.71
Haryana	13.05	12.35	0.71
Karnataka	9.41	8.59	0.82
West Bengal	10.69	9.72	0.97
Maharashtra	17.18	16.15	1.03
Madhya Pradesh	18.83	17.48	1.35
Bihar	11.95	10.25	1.70
Rajasthan	14.84	13.13	1.71
Tamil Nadu	14.93	13.17	1.76
Uttar Pradesh	52.78	48.74	4.04



(Source: CGWB Report of July 2014. This is the latest assessment report that took ground water data as on March 31, 2011)

the ongoing water crisis.

Though the situation of groundwater use is more or less same in many states, Punjab, Haryana and Rajasthan are especially guilty because of the excessive pumping causing severe groundwater depletion.

What's the way forward? Sudhir Panwar, Lucknow University professor

and president of the Kisan Jagriti Manch, said government policy should be tweaked in such a way that farmers could conveniently move towards sprinkler and drip irrigation systems the twin methods of using water in most judicious way in agriculture

DPCC sent notices to corpns for fire at landfill sites



STRICT WATCH: DPCC found instances of burning after conducting inspections once in 2015 and thrice this year

Suraksha.P@timesgroup.com

New Delhi: Even as a desperate bid is being undertaken by Delhi government in the form of the odd-even scheme to curb air pollution, it has been revealed that the Delhi Pollution Control Committee (DPCC) issued show-cause notices to North and East municipal corporations last month for garbage catching fire at Bhalaswa and Ghazipur landfill sites.

Ironically, the corporations are the enforcement agencies to penalise anyone Rs 5,000 for burning garbage, plastic or leaves as per National Green Tribunal's order. "We sent the show-cause notices to both the corporations in March. It's strange that their landfill sites are catching fire even though they are responsible for penalising those burning

waste," said Kulanand Joshi, member secretary, DPCC.

The DPCC found instances of burning after conducting inspections twice in March and once in February this year, and once in 2015. "Unless they process the garbage and send only inert waste to the sites, methane gas will continue to be generated. The municipal bodies can't seem to do anything about the fires as the existing landfills have long crossed their expiration dates," said DPCC senior environment engineer, BL Chawla.

However, chief engineer of department of environment management services, East Corporation, Pradeep Khadwal, said that they have already replied to DPCC. "We are not liable to pay any fine as the fire was not intentional. This problem has existed for long," he said.

"But we are taking precautionary measures like covering the garbage with construction and demolition waste and using water sprinklers to douse fires. Processing the waste or mixing inert garbage won't help now as the landfill has been existence for long," he added.

The Bhalaswa landfill site was set up in 1994, much before the Municipal Solid Waste (MSW) rules came into force in 2000. Around 2,150 metric tonnes of garbage are dumped here by both North and South corporations. The Ghazipur site is the oldest functioning landfill in the city having been set up in 1984. East Corporation dumps around 2,200 metric tonnes of garbage at this site. All the three functioning landfill sites in the city are not designed as per the MSW rules and do not have any authorisation by DPCC.

Patrika, Udaipur, dated April 21, 2016

राजस्थान के युवक ने निकाला दिल्ली के ऑड-ईवन का तोड़

Patrika news network Posted: 2016-04-21



उदयपुर के अरुण भाटी ने कार पुलिंग (किसी की कार में तय राशि देकर आने-जाने) को लेकर 'ओ राही डॉट कॉम' कम्पनी बनाकर एक विशेष एप तैयार किया।

उनको दिल्ली का दर्द हमेशा सालता रहा। तीन वर्ष पहले कार पुलिंग से कवायद शुरू की।

नहीं मानी हार

कार पुलिंग के मामले में पहले कई समस्याएं और खामियां आईं। खामियां सामने आने पर अरुण तीन साल तक सॉफ्टवेयर में सुधार करते रहे। अब एप डाउनलोड करने वाले की पुष्टि नियोजित की जाती है। उसके घर एवं कार्यस्थल की जानकारी जुटाई जाती है। सभी मेम्बर एक-दूसरे की सारी जानकारी देख सकते हैं। कार पुल करने वाले के बैंक खाते से साढ़े तीन रुपए प्रति किलोमीटर की दर से राशि कंपनी के खाते में आ जाएगी। वहां से संबंधित के खाते में जमा हो जाएगी।

पर्यावरण को फायदा

अभी 70 हजार से ज्यादा लोग नियमित कार पुलिंग सेवा का फायदा ले रहे हैं। 26 लाख किलोमीटर से ज्यादा का सफर पुलिंग से हो चुका है। इससे करीब 350 टन कार्बन का उत्सर्जन कम हुआ है। अरुण बताते हैं कि उनकी कम्पनी जन तक पणे, मम्बई और बेंगलुरु में भी इस सेवा का विस्तार करेगी।

दीपक शर्मा/उदयपुर

नामी कम्पनी में 50 लाख रुपए से ज्यादा सालाना पगार। लेकिन, उदयपुर के एक युवा को इस हाई प्रोफाइल जॉब से ज्यादा दिल्ली की सड़कों पर वाहनों का दबाव और प्रदूषित होती आबोहवा विचलित कर रही थी। दूसरों को राह दिखाने के लिए मूलतः उदयपुर के अरुण भाटी (45) ने कार पुलिंग (किसी की कार में तय राशि देकर आने-जाने) को लेकर 'ओ राही डॉट कॉम' कम्पनी बनाकर एक विशेष एप तैयार किया। आज यह दिल्ली की पहली पसंद बन गया है।

कम्पनी ने हाल ही ऑड-ईवन सॉफ्टवेयर बना सुर्खियों में आए 13 साल के अक्षत मित्तल के सॉफ्टवेयर को भी खरीद लिया है। अरुण की 12वीं तक पढ़ाई उदयपुर के सरकारी विद्यालय में हुई। एनआईटी से कम्प्यूटर साइंस में इंजीनियरिंग करने के बाद आआईएम कोलकाता से एमबीए किया और सोनी एरिक्सन कंपनी गुडगांव में नौकरी हासिल की। अरुण कंपनी के उच्च पद पर पहुंच गए, लेकिन

Deccan Chronicle, Hyderabad
dated April 22, 2016

NATURE'S FURY ■ Data shows arctic sea ice was already extraordinarily thin in 2015 summer

Arctic ice may shrink to record low of '12

Berlin, April 21: The sea ice cover in the Arctic Ocean this summer may shrink to the record low that was seen in 2012, scientists have warned after evaluating satellite data about the thickness of the ice cover.

The data show that the arctic sea ice was already extraordinarily thin in the summer of 2015. Comparably little new ice formed during the past winter.

Predicting the summer extent of the arctic sea ice several months in advance

is one of the great challenges facing contemporary polar research.

Until the end of the melting season, the fate of the ice is ultimately determined by the wind conditions and air and water temperatures during the summer months. Foundations are laid during the preceding winter, however.

This spring, they are as disheartening as they were in the negative record year of 2012. Back then, the sea ice surface of the Arctic shrunk to a



Warmth did not result in the thinning of the sea ice cover in some regions over the course of the winter.

record low of 3.4 million square kilometres.

"If we compare the ice thickness map of the previous winter with that of

2012, we can see that the current ice conditions are similar to those of the spring of 2012 - in some places, the ice is even thin-

ner," said Marcel Nicolaus, from the Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research (AWI) in Germany.

Researchers evaluated the sea ice thickness measurements taken over the past five winters by the CyroSat-2 satellite for their sea ice projection.

Seven autonomous snow buoys, which the AWI researchers had placed on floes (sheets of floating ice) last year, supplied additional important clues.

In addition to the thick-

ness of the snow cover on top of the sea ice, the buoys also measure the air temperature and air pressure.

A comparison of their temperature data with the long-term measurements showed that the temperature in the central Arctic in February this year exceeded average temperatures by up to 8 degrees Celsius.

This warmth did not result in the thinning of the sea ice cover in some regions over the course of the winter. — AFP

Cutting forests turns TS, AP into green hell

■ Isro study puts out scary figures on forest cover loss

V. NILESH | DC
HYDERABAD, APRIL 21

Friday will be observed as World Earth Day. This year's theme being "Trees for Earth", the time is ripe for the state governments of Andhra Pradesh and Telangana to take the issue of deforestation seriously.

Recent studies by ISRO's National Remote Sensing Centre in Hyderabad have revealed some worrying figures and exposed failures of the AP and TS governments in protecting their forests.

In a research to classify forests in AP as per "hotspots", NRSC researchers found that on an average, in AP 40.2 per cent of forest were deforestation hotspots, 35.9 per cent were high fragmentation hotspots and 19.2 per cent are forest fire hotspots.

A worrying part is that the NRSC researchers have found that major protected areas of AP, Nagarjunasagar Srisaalam Tiger Reserve (NSTR) - the country's largest tiger reserve - Sri Peninsula Narasimha Sanctuary, Papikonda Sanctuary and Sri Venkateswara Sanctuary have become deforestation and degradation hotspots.

In another research on forests of Telangana, the NRSC researchers found that 18.5 per cent of Telangana's forests have been categorised as criti-

WORLD EARTH DAY
FRIDAY WILL BE OBSERVED AS WORLD EARTH DAY.



■ IN TELANGANA state forest fires are very common and in any given year 16 per cent of forest area is burned. Between 2005 and 2014, 10327.6 sq km area was burned

■ FOREST FIRES are a major problem in both AP and TS, found the NRSC researchers.

■ The total notified forest area in AP is 36,914 sq km, which is 22.73 per cent of the geographic area, and in Telangana the forest cover is around 24 per cent of its geographic area, which is 26,903 sq km, as per the State of Forest Reports of both states.

In 2014, 3,489 sq km of forests were burnt

CARBON SINK CAPACITY OF SUNDARBANS QUANTIFIED

DC CORRESPONDENT
HYDERABAD, APRIL 21

Mangroves play an important role in controlling global warming by absorbing carbon dioxide (CO2) from the atmosphere. India has the largest mangrove forest in the world, the Sundarbans, which at 9630 sq km, accounts for 6-7 per cent of the world's mangrove forests.

While many have spoken of the importance of the Sundarbans, scientists from ISRO's National Remote Sensing

Centre (NRSC) in Hyderabad have finally quantified the carbon absorbing capacity of the forest at 249 grams per square meter per year (sq m/year).

This finding was published this year by the NRSC scientists. The figure roughly translates to 24 lakh metric tonnes of carbon and 88 lakh metric tonnes of carbon dioxide per year.

This data was obtained after scientists installed a one-of-its-kind, observation tower in the Sundarbans.

India generates 18.5L tonne e-waste

Bengaluru, April 21: India generates about 18.5 lakh metric tonnes (MT) of electronic waste every year, with Mumbai and Delhi-NCR accounting for the biggest chunk, a study says.

The figure is likely to reach up to 30 lakh MT per year by 2018, growing at the rate of 25 per cent, it said. Mumbai, with 1,20,000 MT has topped the list in generating e-waste followed by Delhi-NCR producing 98,000 MT and Bengaluru producing 92,000 MT, the joint-study by Assocham and Frost and Sullivan said.

Besides, Chennai with 67,000 MT of e-waste, Kolkata 55,000 MT, Ahmedabad 36,000 MT, Hyderabad 32,000 MT and Pune 26,000 MT have made to the list, it said.

Just 2.5 per cent of India's total e-waste gets recycled due to poor infrastructure, legislation and framework, the study said that this has led to a waste of diminishing natural resources, irreparable damage of environment and health of the people working in industry, the study said.

Over 95 per cent of e-waste generated is managed by the unorganised sector and scrap dealers in this market, dismantle the disposed products instead of recycling it, it added.



■ MUMBAI, with 1,20,000 million tonne e-waste has topped the list followed by Delhi-NCR producing 98,000 MT and Bengaluru producing 92,000 MT.

In India, about 5 lakh child labourers between the age group of 10-14 are observed to be engaged in various e-waste (electronic waste) activities, without adequate protection and safeguards in various yards and recycling workshops, Assocham secretary-general D.S. Rawat noted.

"It is a matter of concern that most of our e-waste is handled in the most unscientific way by scrap dealers, who may be inadvertently handling radioactive material, as was brought to light in the past in Mayapuri (west Delhi) case," he added.

Deccan Chronicle, Hyderabad
dated April 22, 2016

Paris climate agreement on track for early start

United Nations, April 21: About 160 countries are expected to sign the Paris Agreement on climate change Friday in a symbolic triumph for a landmark deal that once seemed unlikely but now appears on track to enter into force years ahead of schedule.

U.N. officials say the signing ceremony Friday will set a record for international diplomacy: Never before have so many countries inked an agreement on the first day of the signing period.

That could help pave the way for the pact to become effective long before the original 2020 deadline — possibly this year — though countries must first formally approve it through their domestic procedures.

Even if the Paris pledges are implemented in full, they are not enough to get us even close to a two-degree pathway

— JOHN STERMAN, of the Massachusetts Institute of Technology

“We are within striking distance of having the agreement start years earlier than anyone anticipated,” Brian Deese, an adviser to President Barack Obama, said in a speech last week at Reed College in Portland, Oregon.

The U.S. and China, which together account for nearly 40 percent of global emissions, have said they intend to formally join the agreement this

year. It will enter into force once 55 countries representing at least 55 percent of global emissions have done so.

“There’s incredible momentum,” former New Zealand PM Helen Clark, who heads the U.N. Development Program, said. “We’re moving as quickly as possible to action,” she added. She said her agency is working with more than 140 countries on climate change-related issues, and that financing to make the Paris Agreement a reality is “critical, and let’s hope everyone lives up to commitments made.” The agreement, the world’s response to hotter temperatures, rising seas and other impacts of climate change, was hammered out in December outside Paris. — AP

The Times of India, Delhi dated April 23, 2016

India, 174 others ink Paris pact on Day 1

Vishwa.Mohan | TNN

New Delhi: At least 175 countries, including India, China and the US, signed the Paris Agreement on climate change at the UN headquarters in New York on ‘International Mother Earth Day’ — the first day of the signing ceremony of the historic global deal.

On behalf of India, environment minister Prakash Javadekar signed the pact, which aims to take multiple measures to save the world from disastrous consequences of climate change. The deal was adopted by 195 countries in Paris on December 12 last year. Mahindra Group chief Anand Mahindra addressed the gathering and joined UN secretary general Ban Ki-moon and select heads of states and countries, who also spoke on the occasion.



The Paris pact aims to take multiple measures to save the world from disastrous consequences of climate change

The agreement broke the previous record for the most number of countries to sign an international agreement in a day, which was set in 1962 when 119 countries signed the ‘Law of the Sea Convention’.

However, merely signing the pact will not make it operational. At least 55 countries accounting for an estimated 55% of the total global greenhouse gas emissions will have to ratify the agreement before it can come into force.

The Times of India, Delhi dated April 24, 2016

Pollution fight bites the dust

Neha.Lalchandani
@timesgroup.com

New Delhi: Even as the debate on whether limiting cars on the roads has helped bring down vehicular emissions rages, another prime cause of poor air quality in the capital — dust from construction sites — hasn’t got the attention it should have. The government may have resorted to vacuum cleaners to clean the roads, but it has not been able to exercise control over building projects to curb dust pollution.

Little has changed on the numerous construction sites across Delhi. For the past several weeks, for instance, mounds of dirt have been piled up along the flyover going to Laxmi Nagar from Mother Dairy, where PWD is carrying out repair work. The area is thick

with dust, making it difficult to breathe.

The Chhattarpur-Mahipal road up to the Fortis Hospital crossing is another case in point. For two years since work on widening the road began, no effort has been made to barricade the exposed areas where digging has taken place. Vasant Kunj resident Vaani Banal, describing a bus ride from

DRAGGING FEET

the Chhattarpur Metro Station to her house, said that she almost always reached home covered in white dust on the way. “My father has stopped stepping out of the house as he is allergic to the dust,” she said.

A little distance away, the dismantling of the BRT corridor is being carried out during

daytime, resulting in the heavy traffic dispersing heavy plumes of dust as the JCBs knock down the redundant bus stops. Amid all this, PWD maintains that it keeps a strict watch on its contractors though it admits that “there are occasions when rules are not followed”.

PWD minister Satyendar Jain said he had given strict instructions to the department to follow construction protocols and threatened to take strict action if there were shortcomings. “We have fined Delhi Metro as well as PWD, so we do not spare anyone,” claimed Rai, who felt that there ideally should not be traffic when construction work is taking place to avoid dispersal of dust. But that is impossible in a place like Delhi. However, he reiterated, “I will order an in-

spection of all construction sites, especially those of PWD. Any violation will be dealt with sternly.”

Like dust, construction debris too continues to be a bane. Earlier waste construction material was strewn along the Yamuna’s banks, but after the National Green Tribunal ordered a cessation, it is being dumped along roads and on any vacant land. Obviously, this uncovered dirt contributes majorly to the dust pollution.

PWD is lately in the process of building a few plants to treat construction waste. But this could hit a roadblock because there is a tussle between it and the municipal corporations about whose responsibility it is to remove the debris being dumped illegally not just by private builders but also by government agencies.

Photos: Sanjeev Rastogi



KICKING UP A STORM: The government has not been able to exercise control over building projects to curb dust pollution



Edited by: Prof. Sushil Kumar
Centre for Business Sustainability,
IIM Lucknow