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Business Sustainability News

International

An 'Irish goodbye' to fossil fuels

By Mike Hower



This St. Patrick's Day, the Emerald Isle is going green.

Aside from serving as the inspiration for Americans celebrating St. Patrick's Day each year, Ireland is known as the "Emerald Isle" for its verdant, rolling hills — and the country is making moves to keep it that way.

But several geographical and political factors complicate the European island's sustainability situation.

Political strife historically has overshadowed the island's environmental concerns. The sovereign state of Ireland shares the island with Northern Ireland, a UK province, and it's only been about two decades since political tensions have relaxed somewhat.

Still, climate change doesn't respect political boundaries. In 2005, the two set aside their differences to develop a document called the *All-Island Energy Market-Renewable Electricity: A 2020 Vision* (PDF), which commits Ireland and Northern Ireland to pursue a "harmonized approach to renewable energy that supports energy sustainability and economic competitiveness north and south of the island."

Ireland is one of the least energy self-sufficient countries in the world — around 90 percent of its energy comes from imports, according to the Sustainable Energy Authority of Ireland (SEAI). This reliance on energy imports also has galvanized the population to support renewable energy adoption — if not for environmental reasons, then for security ones.

Ireland and Northern Ireland have established goals to generate 40 percent of electricity generation from renewable sources by 2020. To achieve this, both are turning to the same winds that help keep their air clean.

Realizing Ireland's renewable energy potential

Ireland is lucky to have one of the best wind resources in the world, according to the European Wind Atlas. In Ireland, wind energy penetration rates hover around 20 percent — one of the highest in the world. Since the start of 2015, wind energy has met a third of all electricity demand from consumers in Ireland, says the Irish Wind Energy Association.

This also may prove to be an economic boon — Ireland may soon be able to export significant wind energy to the UK, which is falling short of its 2020 European Union renewable energy targets.

Tidal energy also is emerging as a potentially game-changing renewable energy source in Ireland. This is a form hydropower that converts the energy of tides into useful forms of power, primarily electricity. According to SEA, an early study of the European wave energy resource found that the average wave power in Europe is highest near the west of Ireland.

Solar energy has found less of a following in Ireland, given the the country's overcast climate — but there is potential for growth in solar energy generated by indirect sunlight.

Its prime location on the Atlantic means fresh westerly winds help keep the island's air among the cleanest in Europe. Ireland's small stature also means it has few large cities,

which is significant considering cities are responsible for some 70 percent of global greenhouse gas emissions.

A greener economy for a green island

While Ireland is also exploring other climate and energy-focused measures, the nation about the size of South Carolina also faces several broader development challenges.

For starters, scarce real estate and limited natural resources are likely to increasingly come into play as the region rebounds from dramatic population declines of the 19th and 20th centuries.

The dual potential and pressure to capitalize on sustainable business innovation in Ireland is magnified by the country's status as the European headquarters for such tech giants as Google, Apple, Amazon and eBay. Although this is largely due to low corporate taxes, Ireland's increasingly high concentration of tech savvy human capital could be a boon to the island's sustainable economy if perennial concerns like data center pollution are kept in check.

The Irish legislature currently is considering a comprehensive climate action bill called the *Climate Action and Low Carbon Development Bill 2015* (PDF), which sets out a national plan to transition Ireland to a low carbon, climate resilient and environmentally sustainable economy by 2050.

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Biggest Food Service Companies Switch to Cage-Free Eggs

SustainableBusiness.com News

Millions of chickens that live out their short lives in conditions where they can barely move, will finally be treated more like sentient beings.

All three of the largest food service companies - that deliver food to schools, campuses and corporations - are switching to cage-free eggs.

Compass Group, the world's largest food service company, is switching to cage-free for the entire US, freeing a million hens from confinement by 2019. They also have policies with suppliers to end lifelong confinement of pigs, and a "Be A Flexitarian" program encourages customers to try more plant-based meals.

Last week, Sodexo, its top competitor, and Aramark, the largest in the US, made similar announcements. All three have been leading on sustainable policies for many years, such as seafood policies at Compass and Sodexo, and Aramark's zero waste program at universities.



Together, these moral decisions will impact about 3.5 million chickens that produce eggs for us to eat. In the US, laws against animal cruelty do not apply to farm animals destined for human consumption. About 280 million hens produce eggs for the US market.

It's time for the era of confining animals for profit to end, even if it's only because of California's new law.

Enacted in 2008 as a result of a voter referendum, the law went into effect this year. It requires calves, pigs and chickens to have enough room to lie down, turn around, stand up, and fully extend their limbs. All eggs sold in the state must come from chickens that have this modicum of space, and it pretty much bans veal crates, chicken battery cages, and pig gestation crates. What goes in California, spreads to the rest of the US.

Safeway is the first national grocer to sell only certified cage-free eggs.

Factory farms are also huge sources of water and air pollution, including greenhouse gases. Organic farms operate on different principles.

[<Source>](#)

Air pollution will kill thousands in Europe, EEA warns

EU environment watchdog blames governments for failing to act on air pollution warnings saying it will lead to premature deaths across the countries

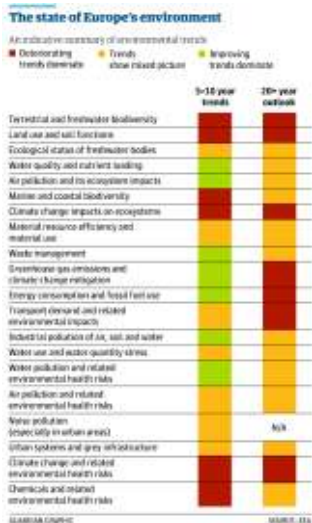
By Fiona Harvey



A signpost warns of smog in Brussels, Belgium. A new report states diesel vehicles are spewing more pollutants leading to breathing difficulties among vulnerable people, especially children and the elderly. Photograph: Julien Warnand/EPA

Tuesday.

There have been some successes: coastal water pollution has been cleared up in many regions in the last two decades, as untreated sewage is no longer allowed to foul bathing beaches, and greenhouse gas emissions have been reduced overall. But the EEA warned that although on areas such as industrial pollution, air pollution and waste management the EU was showing good progress, the outlook for two decades from now was increasingly grim on all environmental fronts.



The agency rated key environmental indicators on a "traffic lights" system, rating them red, amber or green for how well they are being dealt with currently, and how that is likely to change in the next 20 years as current and prospective policies take a longer term effect. None of the 20 key indicators were rated as "green" in its 20 year-plus forecast.

In its five-yearly report, the EEA also urged member state governments to take a more "joined-up" view of environmental issues. The study identified as a key problem the lack of coordination of regulation intended to address different aspects of environmental damage, such as water systems and biodiversity.

This can sometimes lead to trade-offs between good and bad effects. For instance, for more than a decade EU member states have tended to encourage the rise of diesel vehicles, with favourable tax regimes and pricing structures.

This has been one factor in bringing down greenhouse gas emissions from fossil fuels used for road transport, as diesel engines are more fuel-efficient than their petrol counterparts. But it has had an unintended consequence in the form of greater air pollution, because diesel engines spew out more particulate matter and nitrogen dioxide than petrol-driven cars, giving rise to breathing difficulties in vulnerable people, such as children and older citizens.

Hans Bruyninckx, executive director of the EEA, called for a "systemic" approach to protecting Europe's environment. "It is not enough to look at these issues in isolation," he told the Guardian. "They are interconnected and the way we study them and measure them and deal with them must be interconnected too."

Although member states are currently doing well on bringing down greenhouse gas emissions, this will be a problem in 20 years' time, the report found. Ecosystems across the continent are in dire straits, with terrestrial and freshwater biodiversity rated as "red" based on current trends, and in the outlook for two decades hence. Land use and the health of the soil receive a similar "red" warning, as does the impact that climate change is likely to have on ecosystems.

Bruyninckx said: "Our analysis shows that European policies have successfully tackled many environmental challenges over the years. But it also shows that we continue to harm the natural systems that sustain our prosperity. While living within planetary limits is an immense challenge, there are huge benefits in responding to it. Fully using Europe's capacity to innovate could make us truly sustainable and put us at the frontier of science and technology, creating new industries and a healthier society."

[<Source>](#)

Breakthrough Makes Space-Based Solar Power Possible

Source Name: Huffington Post

Space-based solar power is now a legitimate possibility following a breakthrough by Japanese researchers, who successfully transmitted electric power wirelessly to a pinpoint target using microwaves.

The researchers were able to transform 1.8 kilowatts of electric power into microwaves and transmit it with accuracy into a receiver located 55 meters away, said Japan Aerospace Exploration Agency (Jaxa).

In an experiment conducted last week in Hyogo prefecture in western Japan, the microwaves were successfully converted into direct electrical current, 'The Wall Street Journal' reported.

The experiment was the first in the world to send out high-output microwaves wirelessly to a small target, a Jaxa spokesman said. In space-based solar power generation, sunlight is gathered in geostationary orbit and transmitted to a receiver on Earth.

Unlike solar panels set on Earth, satellite-based solar panels can capture the energy around the clock and are not affected by weather conditions.

If implemented, microwave-transmitting solar satellites would be set up approximately 35,000 kilometres from Earth.

Researchers "are aiming for practical use in the 2030s," Yasuyuki Fukumuro, a researcher at Jaxa, said.

According to Jaxa, a receiver set up on Earth with an approximately 3-kilometre radius could create up to one gigawatt of electricity, about the same as one nuclear reactor.

[<Source>](#)

Tips:

Almost every day we talk of environment, climate change, sustainability promoting practices, but what has been our contribution in this. People very conveniently pass the responsibility on to the Government and administration. But we think it's not fair, we must do whatever is possible. The consumerism and population growth is resulting on more and more pressure on the natural resources. Convenience is the mostly responsible for present situation. Buying local produce is another good way to help promote sustainability. Here are some tips that can be very easily included in our habits and that will certainly contribute positively to sustainability.

1. Learn to cook: Opt for cooking food yourself instead of going for packed ready to eat foods. It will help to a great extent in promoting sustainability.
2. If you care for healthy eating, delicious food, and support your local economy always source local ingredients.
3. Learn how to preserve harvest so that you can store them for consuming when the season has gone. There are food preservation centers promoted by Food and Horticulture department, where you may avail preservation services at a very nominal cost and also learn how to preserve vegetables.
4. Prepare your own Tomato puree and Tomato sauce/ ketchup either yourself or get help of food preservation center. Likewise you can preserve so many things, which will save you money and product will be pure and good for health.
5. Eating seasonal vegetables and fruits, is also going to help promote the cause of sustainability.
6. In our country peas are most common vegetable that is used to cook along with other vegetables. You may either dehydrate them or preserve in bottles and use when the season has gone and prices have gone very high and availability is low.
7. Chips are most common snack people buy whether thin potato chips or French fries. You may very easily prepare at home, if you don't know the recipe you will find hundreds of them on internet. These chips can be stored in air tight container for nearly a month.
8. Mostly people purchase packed snacks and keep them at home to offer the same to guests. We may prepare some snacks at home and store them. If time permits one may also prepare some hot snacks like Upma, Poha, Pakodas, halwa etc when guests come.
9. Also it is very common practice to offer cold drinks to visitors, yes indeed one must serve cold drinks in the summer season to the guests. But instead offering bottled squash or carbonated drinks offer them shikanji or fresh fruit juice drinks. One may also consider preparing own squash himself or with the help of food preservation centers.
10. Mostly people buy jams, Jelly for spreading on toasts or bread slice. It would be great if you prepare your own jam or jelly at home or in the food preservation center.

Australia urged to shut coal-fired power plants urgently as analysis reveals huge emissions

Australian Conservation Foundation says US-style regulation should be introduced to force the worst polluting plants to close

By Oliver Milman



The Australian government has been urged to place US-style regulations on coal-fired power plants to ensure they shut down, as a new analysis highlights the vast scale of emissions pumped out by the largest carbon dioxide polluters in the country.

Just 10 companies are responsible for a third of Australia's total greenhouse gas emissions, according to the Australian Conservation Foundation (ACF) study.

"We have got to close down the worst polluting plants in Australia," said Geoff Cousins, ACF's president. "At the moment the government is offering no incentives for companies to get off fossil fuels."

Cousins said he would welcome the kind of direct regulations placed by Barack Obama's US administration on coal-fired plants, effectively making them untenable without expensive carbon capture technology.

"In Australia there are taxpayer subsidies to keep these plants open, whereas in the US, China and parts of Europe, the government is taking actual direct action to close them down," Cousins said.

When direct and indirect emissions, such as energy consumption by a coal power station, are considered, the top 10 polluters emitted 158m tonnes of greenhouse gases in 2013-14. Most of this pollution comes from the production and use of energy.

The list is headed by Energy Australia, responsible for 20.8m tonnes of heat-trapping gas. Macquarie Generation, at 20.3m tonnes, and AGL Energy, at 19.9m tonnes, are in second and third position.

The rest of the top 10 comprises energy and mining giants, including Rio Tinto, Origin Energy and Alcoa.

EnergyAustralia and Origin Energy chalked up the largest rises in emissions from 2012-13 to 2013-14, at 66% and 230% respectively. This was due to the companies buying power stations previously owned by the New South Wales government.

A separate ranking of Australia's most polluting power stations is dominated by ageing power stations burning carbon-intensive brown coal in Victoria's La Trobe valley.

Hazelwood, owned by GDF Suez, emits 15.5m tonnes of greenhouse gases a year, followed in the rankings by Yallourn and Loy Yang B.

The ACF report also notes the political donations made by the large energy and mining companies. For example, EnergyAustralia donated more than \$45,000 to the Labor and Coalition parties, at both state and federal level, in 2013-14.

Victoria has previously considered shutting down its most polluting power stations, only for the plan to be shelved.

The introduction of carbon pricing included a large hand-out to the brown coal polluters, while the federal Coalition's new Direct Action plan, which provides voluntary grants to lower emissions, is aimed at "cleaning up" power plants rather than shutting them down.

The UN's IPCC has said that fossil fuel energy without largely unproven carbon capture technology must be phased out by the end of the century if the world is to avoid highly dangerous climate change.

The ACF said Australia needed to start phasing out fossil fuels, pointing to Energy Supply Association of Australia data that shows wind and solar energy projects already earmarked could provide a quarter of Australia's electricity demand by 2023-24

"These companies should not be paid to shut down," Cousins said. "There should be compensation for redundancies and retraining, but to pay them to shut down is wrong."

But a spokesman for Greg Hunt, the federal environment minister, said: "Labor ran a failed contract-for-closure program. By contrast, we have passed the emissions reduction fund which is about to hold its first auction.

"We are not about to abandon our legislated policy in favour of an utterly failed policy."

Cousins said there was a "real disconnect" between large energy companies acknowledging the risks posed by climate change and their opposition to the renewable energy target, a measure to increase clean energy that the Coalition wants to pare back.

"I think it will be very possible to change the policies of the government on this matter," Cousins said. "There has been a remarkable coming together of events – climate change got on the G20 agenda against the wishes of the government, there was that remarkable speech by Obama at the Queensland University and there was the China-US climate deal.

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Can cleaner cars be profitable? Roadblocks to EV, fuel cell growth

Strategic Sourceror



Shutterstock / LovelaceMedia

Cleaner vehicles, such as this Honda hydrogen fuel cell concept car, are getting closer to market — but economic obstacles remain.

The green car movement is growing, but still at a snail's pace in the context of the broader auto market.

Critics have asserted that, for automotive makers and fuel providers alike, purchasing the resources needed for electric and hydrogen fuel cell vehicles simply isn't feasible.

From a procurement officer's perspective, price is generally the first aspect they look at.

Platinum, a precious metal used as an electrocatalyst in hydrogen fuel cells, is expensive. So most purchasing management professionals advise their superiors to refrain from producing cars and other machines that run on hydrogen.

Looking for affordability

Take Part contributor Padma Nagappan acknowledged the Toyota Mirai, a hydrogen-powered vehicle that is priced at \$57,500 before rebates and tax incentives.

While this is largely a vehicle for the wealthy, Toyota will lose about \$100,000 for every Mirai it sells. This loss is primarily due to the platinum required to make the car's fuel cell.

In response to this challenge, researchers at the University of Delaware are trying to find a feasible alkaline polymer alternative comprising several non-precious metal catalysts, one of them nickel.

As nickel is a thousand times cheaper than platinum, its use in creating a new kind of fuel cell would boost the green automotive economy — that is, if the reaction occurred at a faster rate.

Alkaline polymer-based fuel cells react 100 times more slowly than their platinum-based counterparts. Thankfully, because the project is still in experimentation, the researchers can figure out how the alkaline substance should be adjusted by measuring the rate of reaction.

From these metrics, scientists can intelligently design new catalyst materials.

The price at the pump

Despite that hydrogen gas is incredibly abundant, very few fueling stations are available, Car and Driver has noted.

Furthermore, hydrogen fuel isn't necessarily stored and transported across long distances like oil or natural gas. Many are arguing for on-site capturing and conversion, involving extraction directly from a station's water supply or natural gas.

The equipment required to complete this process may cost anywhere between \$500,000 and \$5 million per installation.

Therefore, in many cases, investing in a hydrogen fuel station is an endeavor that only the super-rich may be interested in — those with a "Why not?" mentality.

As for the price of the fuel itself, the source noted that current prices stand at \$5 per kilogram. As a kilogram is nearly four times larger than a gallon, there's already a price advantage.

Furthermore, Car and Driver maintained that one kilogram of hydrogen provides more range than a gallon of gasoline.

Obviously, the green car industry has some feasibility issues. Further research may prove beneficial, but until new hydrogen reaction methods are discovered, constructing such machines isn't profitable.

This article originally appeared at The Strategic Sourceror.

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Arctic sea ice extent hits record low for winter maximum

Record low ice coverage this winter is caused by climate change and abnormally mild weather, scientists say

By Karl Mathiesen



Melting sea ice off western Alaska. Photograph: MODIS/Aqua/NASA

Arctic sea ice has hit a record low for its maximum extent in winter, which scientists said was a result of climate change and abnormal weather patterns.

The US National Snow and Ice Data Centre (NSIDC) said on Thursday that at its peak the ice covered just over 14.5m sq km of the northern seas. This was 130,000 sq km smaller than the previous lowest

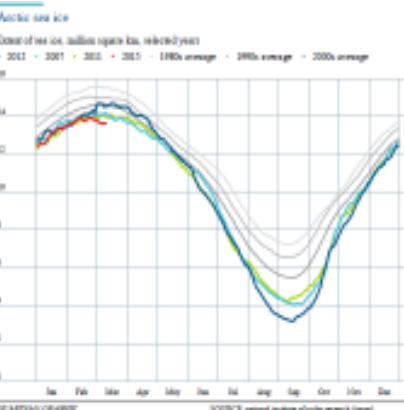
maximum in 2011.

The peak occurred on 25 February, which the NSIDC's senior research scientist Ted Scambos said was "very early but not unprecedented".

Climate change is driving declining ice coverage in the Arctic, with a recent study finding it has also become significantly thinner, down 65% since 1975.

Scambos said northern oceans have progressively warmed because of climate change. This winter, the warmer seas combined with mild weather to create exceptionally poor conditions for the annual freeze.

"[The record low extent] is significant, in that it shows that the Arctic is being seriously impacted by our warming climate," said Scambos. "In general, sea ice retreat has proceeded faster than modelling expects in the Arctic, although models are catching up."



was 100-200km further north than in a normal year.

After March the summer thaw will begin, with the ice retreating towards its summer minimum, which usually occurs in September. The summer ice cover in the Arctic is also on a long-term decline, although Scambos says a low winter maximum does not necessarily indicate a low minimum is on the way.

The loss of ice from the Arctic has raised questions over when the region will experience its first ice-free summer. Scambos said he expects the summer minimum to dip below 1m sq km (386,100 sq miles) within the next 15 years. At this stage, he said, the Arctic will be profoundly changed.

"A less than 1m sq km summer would mean that the north pole would be open water, that a broad seaway would exist north of Siberia and that major ecosystems and fauna would be severely impacted. My own guess is that we will reach this level around 2030."

The absence of sea ice and abnormally mild weather affects communities and wildlife in the Arctic circle, which are adapted to extreme conditions.

In Svalbard, Kim Holmén, the international director of the Norwegian Polar Institute, said the fjords there remained unfrozen and instead of the normal snowfall the island experienced rain which froze when it hit the ground.

"Much of Svalbard is covered with ice on land, which is a fatal state for the reindeer. When the landscape is covered by ice they can't move around and they can't eat."

Too much ice on the land and none in the sea has also made life difficult for the 2,600 people who live on Svalbard.

"This iced landscape is miserable to travel across on your snowmobile and your skis," said Holmén. "We can't ride our snowmobiles across the fjord so there are places where people

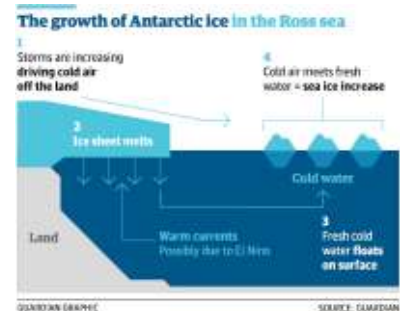
want to go that they can't go. We have had tragic events with avalanches. Living in Svalbard we've always had avalanches but we've had one casualty this winter. Some of the risks are changing because we have more icing events."

He said this type of weather is expected to become normal under a changing climate.

"This winter is an example of what we believe will become more common and has profound influence on the reindeer and the ptarmigan [a species of bird] and other creatures that roam the land," he said.

This week, on the opposite side of the Arctic Ocean, Alaska's Iditarod sled race was forced to shift its start 362km (225 miles) further north due to a lack of snow. This has only happened once before in the race's 43-year history, in 2003.

Meanwhile, the NSIDC said ice floes surrounding Antarctica reached a relatively high summer minimum on 20 February. The extent of ice was 1.38m sq km, the fourth largest on record. Antarctic sea ice has confounded some scientific modelling by growing in recent years. There are several theories why the extent of the ice is growing despite a general warming trend across the southern continent.



<ReadMore>

Georgetown, Texas Runs on 100% Solar & Wind Next Year

SustainableBusiness.com News

Last week we wrote about a small town in Michigan opting for 100% renewable energy, and we touted it as a way to get off fossil fuels from the bottom up.

They hope to provide a model for other towns to follow and already we've heard that Georgetown, Texas will run solely on wind and solar next year.

While Michigan's Leelanau Township has just 2000 residents, Georgetown has 50,000.

How are they doing it? It's simple. Last year, the town contracted for 144 megawatts (MW) of Texas wind for half the electricity and the other half will come from solar. They contracted with SunEdison to build 150 MW of solar - which takes about six months - and they will pay for all the output under a 25-year power purchase agreement.

Both contracts will deliver electricity to Georgetown over the long term at a lower cost than previous wholesale power contracts for natural gas, they say. And there are no upfront costs.



"They're using solar and wind as a hedge against rising fuel costs," Paul Gaynor, Executive Vice President of North America for SunEdison, told *Bloomberg*.

When the project is finished, it will be rolled into SunEdison's Yieldco, TerraForm Power.

"Wind and solar now cost less than building a new coal or natural gas plant and have no risks related to fuel costs or water shortages. We in Texas know the excruciating pain that comes when natural gas prices spike and electricity bills go through the roof," Tom Smith, director of Public Citizen's Texas office, told *Bloomberg*.

"The combination of solar and wind power allows the City to provide energy from complementary renewable sources to meet demand patterns," the city says. Solar produced in West Texas provides a daily afternoon supply peak that matches Georgetown's daily energy demand peak, especially during hot summer months. Wind production in West Texas tends to be highest during off-peak, evening or early-morning hours. This means wind power can most often fill power demand when the sun isn't shining," the city explains.

And while nuclear and fossil fuel power plants consume large amounts of water, turning to solar and wind will eliminate impacts on the water supply, another key goal for the city.

We hope many more towns and cities will take this cue because it could bring a much faster transition off fossil fuels. While most states shoot for 10-20% renewable energy in the coming years, imagine how that can be speeded up by each town converting to 100% during that time.

About 20 towns/ cities in the US are on this path, including: Aspen, CO; Burlington, VT (already there, but too much reliance on big hydro); Greensburg, KS; Ithaca and East Hampton, NY; Lancaster and Palo Alto, CA. You can track them and those around the world at www.go100percent.org

The Natural Gas Gamble

A report by the Union of Concerned Scientists (UCS), *The Natural Gas Gamble*, concludes that as utilities rely increasingly on natural gas, customers are increasingly vulnerable to higher electricity bills. Ramping energy efficiency and renewable energy resources helps to insulate consumers from these risks.

"If renewables made up a much greater share of the US electricity mix and were combined with investments in energy efficiency, electricity prices would stabilize and consumers would ultimately pay less for their energy. With a limit on carbon emissions and strong renewable energy and energy efficiency policies, by 2040 renewables could make up nearly 40% of the electricity mix and consumers would see an annual net savings of \$59 billion (in 2013 dollars)," says UCS.

<Source>

An \$11 billion quagmire: Corporate waste reduction still lags

By Robert Kropp



Flickr / Paul Goyette/

Beverage pouches are very difficult to recycle, yet their production is on the rise.

While an estimated \$11.4 billion in potential recycling revenue is wasted in the U.S. every year, recycling rates in Europe and elsewhere are considerably higher. Waste and Opportunity 2015 (PDF), a new report from As You Sow and the Natural Resources Defense Council, notes that the lack of producer

responsibility laws or equivalent policies is a contributing factor.

"Businesses that place substantial amounts of packaging on the U.S. market ... have used their public policy departments to fight any notion that they should take financial responsibility for recycling materials in the United States," the report stated, "even though they do so in many other countries."

47 study subjects, no winners

The report studies the packaging practices of three of the industry sectors most responsible for plastic packaging, the recycling rate of which is less than 14 percent in the U.S. The focus of the report is on fast food restaurants, beverage companies and the consumer goods/grocery sector, "because of the substantial waste associated with a business model in which food is most often taken off-premises in single-use containers."

Forty-seven companies were analyzed; "none," the report found, "are doing enough to make their packaging more sustainable." An analysis of street litter in four Bay Area cities found that half was from fast food restaurants; Starbucks is the only company in the sector to have committed to front-of-house recycling. In the beverage sector, the use of non-recyclable packaging of children's drinks, such as Capri Sun from Kraft, is on the increase; furthermore, "most brands support neither a container deposit nor an EPR (extended producer responsibility) scheme to boost recycling."

And in the consumer packaged goods and grocery sector, "Use of flexible packaging is growing swiftly, with no apparent strategy by companies that produce it or brands that use it to make it recyclable."

Does the Closed Loop Fund do enough?

An appendix to the 62-page report, containing comments from the companies themselves, proves illuminating. Despite that most of the companies already comply with EPR regulations in Europe and elsewhere — which certainly contribute to markedly higher recycling rates — not a single company quoted in the report declares its support for such regulations in the U.S.

Instead, a consortium of major companies launched the Closed Loop Fund, a program which plans initial investments amounting to \$100 million that will be distributed to municipalities in the form of zero-interest and low-interest loans.

But as Matt Prindiville of Upstream wrote, "The amounts of corporate money in these 'public-private partnerships' are insignificant when compared to the amounts of money that taxpayers and ratepayers pay to clean up after them."

"The QSR, beverage, and consumer packaged goods (CPG) sectors need to increase engagement on the recycling of postconsumer packaging," the report concluded. "They must become actively involved in developing a consensus on new, state-level producer responsibility mandates or equivalent policies that will spread a measure of responsibility fairly among brands placing materials on the market; this will result in significant increases in container and packaging recycling rates."

Also, "A government agency or multilateral stakeholder group with buy-in from the business and environmental communities needs to develop a blueprint for — and credible estimate of the total cost of — boosting U.S. recycling rates to 75 percent or beyond."

"These companies have not sufficiently prioritized packaging source reduction, recyclability, compostability, recycled content and recycling policies" report author Conrad MacKerron of As You Sow said. "Increased attention to these key attributes of packaging sustainability would result in more efficient utilization of postconsumer packaging, higher U.S. recycling rates, reduced ocean plastic pollution and new green recycling jobs."

This article first appeared on SocialFunds.

[<Source>](#)

Water loss: seven things you need to know about an invisible global problem

A staggering 46bn litres of drinking water are lost globally every day. What can consumers, business and governments do?

While concerns over water conservation, access and hygiene feature high on the news agenda, the problem of water loss often gets overlooked. Yet this vital issue affects millions of lives. A recent live discussion hosted by Guardian Sustainable Business looked at the role business and government should play in addressing global water loss and where things are set to go next. Here's what you need to know.

What do we mean when we talk about water loss?

Water loss is often referred to as non-revenue water (NRW) – water that is produced in a network but never reaches the consumer. This might be due to aging networks which haven't been properly managed, metering inaccuracies, theft or unmetered authorised consumption, like water used from fire hydrants.



Iraqis fill drinking water and wash clothes at a broken water pipeline in a Shia district of Sadr City, Baghdad. Photograph: Karim Kadim/AP

It's not a problem restricted only to the developing world either – Montreal, for example, loses 40% of the water it produces (pdf).

But Louise Whiting from WaterAid was keen to make sure the word "lost" is properly defined. "Very often", she said, "water is used but then returned to the system in virtually the same quantity".

So when we speak of water loss in an industrial sense, we're referring to that which is not returned to the system through natural processes like, for example through plant transpiration.

There isn't a one-size fits all reason which explains water loss

Plain, old-fashioned leaky pipes have much to answer for in explaining why NRW costs utilities about \$14bn (£9bn) per year, but Marco Fantozzi, water loss regional representative for south east Europe for the International Water Association, says not all NRW is due to leakage.

Distribution systems in many parts of the world are not efficient enough, he says, and there is a lack of "state of the art technologies, not enough awareness of best practice methodologies and not enough training".

So addressing this global issue means looking at infrastructure, but also at utilities, and if they're embracing new technologies and investing in staff training.

Newer cities might have better rates of loss as well, like in the US where most distribution systems are younger than 100 years. These systems "may have less loss due to improved materials of construction and better construction techniques", said Dale Jacobson, governor of the World Water Council.

Consumers have a part to play in this issue

In the UK, the majority of consumers feel that their utility is not doing enough to reduce leakage - 70% in fact, according to Tony Smith, chief executive of the Consumer Council for Water. This perspective in turn affects consumers' motivation to conserve water themselves.

"Two thirds of water customers feel their efforts to save water make little difference when so much is being lost through leakage", offered Smith. At the end of the day, industrial water loss is a public policy issue which must be addressed by business and government, but consumers can put the pressure on. And they can do their part when it comes to conserving water at home and when on holiday.

Governments should be imposing targets on utilities to reduce losses

In the UK, OfWat, which is responsible for regulating water usage, has targets in place which water companies must meet as regards water loss reductions. Fantozzi mentioned that this was something European governments should be replicating. "UK utilities are in general more efficient than the average European utility," he said.

The very fact that water loss isn't a widely known or understood problem means policymakers and government need to integrate targets into country and international-level agreements, but political will sometimes lags.

Technologies and solutions are available

First of all, you must address the more "low-hanging fruits" - active leakage control and pressure management, said Morten Riis, business development manager at Grundfos. Maintaining stable pressure in pipes within a distribution network "has proven to have a positive and immediate effect on reducing the water loss." And technologies like intelligent water pumps and distributed sensor systems for leak detection offer great opportunities for efficiency improvements.

Jacobson also highlighted water audit programs offered by the American Water Works Association (AWWA) and the International Water Association (IWA). "The IWA/AWWA Water Audit Method features sound, consistent definitions for the major forms of water consumption and water loss encountered in drinking water utilities. It also features a set of rational performance indicators that evaluate utilities on system-specific attributes such as the average pressure in the distribution system and total length of water mains."

The private sector will play an important role in reducing water loss in the developing world

Governments in the developing world don't necessarily have the financial resources to invest in network infrastructure - their efforts would more likely be centred around issues of hygiene or access. Indeed, Leong Ching, senior research fellow at the Institute of Water Policy, University of Singapore says the likelihood of developing countries being able to finance new and improved infrastructure developments is slim. 7% of the world's population was served by private water companies in 2009, whereas that figure is projected as 23% for 2015, she says.

Jacob Tompkins, managing director at WaterWise said: "There is a big role for public-private sector collaboration, but ... the key is appropriate regulation of this process – this is where NGO and community group involvement is essential."

[<ReadMore>](#)

What California's cap-and-trade success means for the low-carbon economy

By Barbara Grady

Tailpipe emissions were included in California's most recent cap and trade carbon allowance auction.



Shutterstock / SSuaPhotos

Despite warnings that adding transportation fuels to California's cap and trade system would wreak havoc on the market and hurt the state's economy, the first auction to include emissions from cars, trucks, ships and the like officially sold out last week.

It's still early, but California's economy does not appear to be any worse for the wear after as many as 449 companies complied with the expanded regulations. Businesses eligible to participate in the auction included Chevron Products, ExxonMobil Oil, Phillips 66 and numerous refineries large and small.

The California Air Resources Board reported (PDF) late last week that all 83 million emission allowances put up for sale in the February auction were purchased — even though that number was double the allowances offered in the previous auction with the addition of transportation fuels.

The sizable participation could be a sign that industry is starting to accept the costs of doing business in a low-carbon economy, analysts said.

"These results indicate that companies are making the necessary investments to comply, which is a strong indication they believe the program is here to stay," Katie Hsia-Kiung, research fellow in the U.S. climate and energy program at the Environmental Defense Fund told GreenBiz, emphasizing that even allowances for future emissions were sold out.

Each allowance gives the holder permission to emit one metric ton of carbon or other greenhouse gas into the air.

Emissions from cars, trucks and other transportation vehicles — which account for 38 percent of the state's emissions — were not brought in until this year, as planned. But even that delay almost was derailed due challenges filed in court by oil and trucking companies and the U.S. Chamber of Commerce.

Opponents of the expanded program claimed that gas prices would soar in California and put the state at an economic disadvantage that eventually would cost jobs and investment. The Western States Petroleum Association called it a hidden tax that would hike gas prices up by 76 cents a gallon and "increase the cost of everything that uses gasoline and diesel to transport products to market, including everyday essentials like food and medicine."

But while gasoline prices in California jumped in the past week in the wake of a fire at a major refinery in Southern California and a work stoppage at a major Northern California refinery, they changed little in January and February compared to late last year. In fact, gas prices actually fell in January because of what was happening in the global crude oil market.

Economist Severin Borenstein from the Energy Institute at U.C. Berkeley's Haas School of Business predicted gas prices at the pump in California this year would show a 10 cents a gallon rise attributable to cap and trade. But he also said that as the typical consumer uses slightly more than a gallon of gas a day, the hardship passed on to individuals at this point is about 12 cents a day and not enough to change behavior or hurt much, especially given how cheap gas is compared to a year ago.

Quick charts: 1 Month | 3 Month | 6 Month | 9 Month | 1 Year | 3 Years | 5 Years | 10 Years | 20 Years | 30 Years | 50 Years | 100 Years



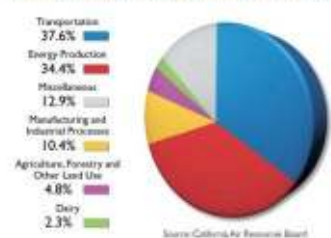
GasBuddy has calculated that California gas prices remain marginally higher than the national average, but that margin didn't change much when the cap and trade system began to cover tail pipe emissions. Only when a fire broke out at an Exxon Mobil refinery and a labor disagreement stopped operations in a Tesoro refinery did prices spike.

The cap and trade program is part of California's landmark Global Warming Solutions Act of 2006, in which the state set a goal to reduce greenhouse gas emissions back to 1990 levels by 2020 and to 80 percent below 1990 levels by 2050.

The cap and trade part of the legislation was launched two years ago. At that point, any industry, refinery or farm emitting more than 25 metric tons of greenhouse gases into the air faced caps on future emissions. But, to preserve some market-driven aspects to compliance, they were given the option to either change operations to lower emissions or buy allowances to continue emitting, but pay for doing so.

The state's Air Resources Board fought these challenges and prevailed. As

Greenhouse Gases in California



2015 arrived, emissions from transportation fuels were included. February was the first auction of allowances to help entities comply this year.

Of the 83 million allowances sold in the February auction, 73 million were allowances for this year, each representing permission to emit one ton of carbon. They fetched a price of \$12.21 per allowance. Another 10 million allowances for future emissions in 2018 also were sold — and all were purchased — at a settlement price of \$12.10.

The Air Resources Board does not disclose what companies offered or purchased allowances or any other specifics other than listing "covered entities" or companies and organizations that are required to register as participants in the cap and trade program because their total emissions exceed a threshold of 25,000 metric tons of GHG.

They include all of the state's utilities, as well as oil refineries, cement makers, food processors, manufacturers, agribusiness conglomerates, gasoline distributors and retailers, cities and even universities. Numerous banks such as Morgan Stanley and Merrill Lynch are also on the list as entities eligible to participate, some trading allowances as a business opportunity or on behalf of large clients.

While the U.S. Chamber of Commerce, the Western States Petroleum Association and others argued that cap and trade would hurt the state's economy, cap and trade's defenders including California Gov. Jerry Brown say there is no evidence of that.

The Environmental Defense Fund in a study points out that California's gross domestic product grew faster than the nation's in the two years since the state's cap and trade system has been in operation. Meanwhile, emissions from this state fell 4 percent during the first year of the program.

In the meantime, California also has become a hub for tech industry activity related to clean energy, receiving more venture capital investment in clean tech — about \$21 billion since 2006 — than all other states combined.

As businesses evaluate the impact of the auction system on pricing and operations, regulators in other locales are also watching with interest.

The province of Quebec liked what it saw early on and joined forces with California's cap and trade system a year ago. Now, the governments of several countries, including Mexico, China and Peru, have entered partnerships with California and Quebec to study its system and be advised by it. The U.S. states of Oregon and Washington and the province of British Columbia also are studying the system.

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Nature's Amazing Resilience, Even in Radioactive Japan

SustainableBusiness.com News

In a testament to nature's resilience, a Japanese photographer is documenting its return to oceans devastated by the nuclear meltdown and tsunami four years ago.

Already, 40-50% of marine life is back, pretty amazing since the government still allows 300 tons of radioactive water a day to be dumped into the Pacific Ocean.

Nagaaki Sato says the ocean lost its color after the event, but it is blue again. "Nature is putting forth great efforts to replenish and regrow. There is a lot of energy being expended in these waters. As one of the humans who survived the disaster, I want to involve myself with the ocean from now on and continue photographing it so that I can show its wonders to as many people as possible," he told *Huffington Post Japan*.

"Scaly worm shells and oysters, hoek, sea pineapples, and other creatures that cling to rock faces are increasing in number," and it has become easy to find many other species, "which might mean their population is expanding at the same rate as before the tsunami again," he says.

That gives us hope that fisheries on the west coast of the US can continue their recovery, even as the water tests positive for radioactivity in currents arriving from Japan.



Tortoises, Sea Turtles Show Signs of Return

On the other side of the world, on a Galapagos island, baby tortoises have been found for the first time in 100 years. "Our discovery indicates that the giant tortoise is once again able to reproduce on its own in the wild," researchers say in *Nature*.

When humans arrived in the 17th and 18th centuries, they brought rats with them that ate all the hatchlings, says the Galapagos Conservancy. After 50 years of effort, the island was declared rat-free in 2012.

And although sea turtles are still extremely endangered, dramatic population increases in some waters demonstrate that recovery is possible everywhere, says *Yale 360*.

Six of the major green turtle nesting populations in the world have been increasing over the past two to three decades following protection from human hazards such as exploitation of eggs and turtles. Under new protections, hawksbill have reappeared off Honduras, El Salvador, and Nicaragua; and nesting is up substantially in places like Brazil, Barbados, and the West Indies. Leatherbacks are doing much better in Costa Rica and Panama. On Florida's monitored beaches leatherback nests have increased from 27 in 1989 to a record 641 in 2014.

[<Source>](#)

Sustainability on the dietary plate: A huge milestone

By Bob Langert



Shutterstock/ Great Divide Photography/

It used to be that nutritionists were in one silo, sustainability experts in another. Never the twain shall meet.

That's all changing in a big first. The technical report from the 2015 Dietary Guidelines Advisory Committee, the group tasked with drafting the federal nutrition guidelines, just came out for public comment. Besides addressing calories, sugars, fats and sodium, Chapter Five covers a whole new territory for the nation's road map for healthy eating, including what it states as a "sustainable diet."

Let's look at the definition, which is closely linked to food security.

- **"Sustainable diets:** Sustainable diets are a pattern of eating that promotes health and well-being and provides food security for the present population while sustaining human and natural resources for future generations"
- **"Food security:** Food security exists when all people now, and in the future, have access to sufficient, safe, and nutritious food to maintain a healthy and active life."

Miriam Nelson, a member of the Dietary Guidelines Advisory Council, explained to me recently how a sustainable diet approach evolved from concerns about food security. Since the dietary guidelines were first developed in 1980, having access to safe, affordable, quality food has been a focus.

"So food security is about tomorrow as well, including sustainable supply chains," said Nelson, associate dean of the Jonathan M. Tisch College of Citizenship and Public Service and professor of nutrition at the Friedman School of Nutrition Science and Policy at Tufts University. "A sustainable diet is essential and a key link to food security."

I first came to know Nelson in the early 2000s, when I recruited her to participate in McDonald's newly created Global Advisory Council, advising on menu choices, portion sizes and educating customers. She was impressive with her inquisitive mind, also her practicality. I remember in the GAC meeting, Nelson asking McDonald's CEO at the time about the supersize option for McDonald's french fries. It stirred much more internal discussion that eventually led to eliminated the supersize option. Now Nelson is advising all Americans how best to eat healthy.

"It was an amazing process," said Nelson. "I'm so happy for the work that we are able to do with the committee members with the Dietary Guideline. It's been quite breath-taking, the reaction."

Lisa Nelson/



Miriam Nelson, a member of the federal Dietary Guidelines Advisory Council and associate dean of the Jonathan M. Tisch College of Citizenship and Public Service and professor of nutrition at the Friedman School of Nutrition Science and Policy at Tufts Un

The controversy

I know there is very significant thought leadership when the reaction on all sides is plentiful and potent. Judging by the opposing dialogues, the sustainable diet evolution is quite a doozy.

The meat industry is wary of this. There are sections calling for eating less meat. Barry Carpenter, president of the North American Meat Institute, also responded by saying that "the Committee's foray into the murky waters of sustainability is well beyond its scope and expertise. It's akin to having a dermatologist provide recommendations about cardiac care."

Are these dietary guidelines going too far? I think not. Just

the opposite. It's about time sustainability is addressed and integrated more officially into the food culture.

The DGAC cites many scientific sources, many from Europe. "We focused squarely on the confluence of a healthy diet and a healthy pattern of eating with sustainability," said Nelson. "We found 15 high-quality studies showing this linkage. Every single study showed that a diet that is health promoting is also more sustainable."

But beside science, the reality is this work is simply catching up to the consumer. The biggest trend we are witnessing in food over the past five to seven years is that consumers deeply care about where their food comes from, how it is sourced, what is in it, and how it is processed. As a whole, the new foodie consumer wants to feel "good" about the food they eat. Good is defined not just by calories, but by its carbon footprint, too.

Consumers, for their part, don't put "nutrition" in one bucket and the sourcing practices in another. Too many organizations and food companies are not recognizing this trend, this new reality, and continue to manage them as delinked initiatives.

When I read the report, I did not see a demonization of beef, and neither did Nelson, although the report does discuss eating less meat. Nelson's a meat eater and raises animals. As she explained to me, meat is still included in the dietary guidelines. "We are not telling people to be vegans. That is not the point. There is a whole wide range of ways people can eat healthy."

This includes eating beef and pork — and most food choices — but not in too large portions.

"I have cows in my back yard," Nelson said. "We have a quarter of a beef in our freezer, as well as a lamb and half a pig. My family has a farm. I was a midwife to a little calf this past fall. We need grazing animals as they are important for the ecosystem. But Americans eat too much meat. We need to cut down. Portions are three times what they should be."

How to respond

Should the meat industry dig in and fight this? I admire the beef and pork ranchers and producers. They have provided Americans an amazingly productive, safe and affordable food system — that also features sustainability advances. My advice to this very proud network of hard working stewards of the land and animals, who largely go unappreciated, is to embrace the concept of a sustainable diet. Don't bunker down.

Continue to show how sustainable beef, pork, chicken and fish can improve food security's linkages to a sustainable supply chain. Less can be more. Let's face it. We'll continue eating meat. Why not make us feel better about the food we eat through environmental and animal welfare stewardship?

The U.S. Department of Agriculture and Department of Health and Human Services will review all the changes to the dietary guidelines, then finalize and release them by the end of 2015. If the input from the DGAC sticks, historians will look back to this year as the year sustainable food went mainstream.

"It is about balance, the science, health promotion and ecosystem promotion, and the fact that can be one in the same," said Nelson. "That's where we should be getting to."

[<Source>](#)

New system to turn wastewater into freshwater

Source Name: Zee News

Researchers have developed a new technology that turns wastewater into freshwater more efficiently than conventional methods. Dr Jianmin Wang, a Missouri University of Science and Technology professor developed multiple wastewater treatment technologies that produce freshwater that is not only cleaner than wastewater treated using traditional methods, but also requires less maintenance and energy.

Wang said 0.8 per cent of America's energy use is spent on wastewater treatment. Much of that energy is used to aerate the tanks where wastewater is treated. The energy is used to feed oxygen to the microorganisms that consume the waste, and traditionally wastewater treatment plants maintain an oxygen concentration of 2 milligrammes per litre to feed the bugs in the tanks, Wang said.

The prevailing thought has been that providing less than 2 milligrammes per litre of oxygen would make the microorganisms "unhappy." But Wang does not believe that is an issue, saying that if you feed them at a lower concentration, such as 0.5 milligramme per litre, it makes them a little less happy, but the microorganisms will live longer and enrich more - plus you use 30 per cent less energy during oxygen infusion to produce the same results.

He has also developed another treatment system called an Alternating Anaerobic-Anoxic-Oxic (A3O) process that "can achieve superior effluent quality since it can remove organic pollutants plus nitrogen and phosphorus nutrients." It does this without chemicals, and its effluent contains only 5 milligrammes per litre of total nitrogen and 0.5 milligramme per litre of total phosphorus.

It also saves more than 10 per cent of energy compared to the conventional pre-anoxic process, which has significantly less total nitrogen and total phosphorus removal. With its high performance, high energy efficiency and low operational costs, on a large scale the technology could help curb global surface water eutrophication.

Eutrophication is the enrichment of an ecosystem with chemical nutrients, typically nitrogen, phosphorus or both. Wang has also developed a self-mixing anaerobic digester, which can effectively convert wastewater sludge and other organic waste to biogas energy.

It improves environmental quality by removing the sludge, and it also recovers a useful resource during the process. Additionally, his high-rate digester operates itself, without an external energy hookup.

Based on his calculations, Wang said a combination of his technologies can produce a net 10 per cent energy gain in contrast to the 27 per cent net energy use the wastewater industry currently operates on.

[<Source>](#)

The way we live now: the rise of the energy-producing home

Design projects across the world are experimenting with new ways to generate energy through the built environment

By Elisabeth Braw



Imagine living in a house that contributed to society: a house that produced energy, while consuming none itself. Well, imagine no more. After perfecting the "passivhaus", which consumes minimal energy, engineers and architects have developed the energy positive house.

Generating energy is one thing, building a

The ZEB house is one example of a new type of property designed to produce surplus energy. Photograph: EVE house is another. But with its plant-decorated walls and enormous double-glazed windows, the ArchiBlox Positive House, introduced in Melbourne's City Square last month, looks elegant and modernist. "The trick is to make the sustainable and performance products visually pleasing while also practical," reports David Martin, construction director of the ArchiBlox Positive House - the world's first pre-fab energy positive house.

Rooftop solar panels and cooling tubes generate energy and regulate the temperature, while double-glazed windows and thick walls conserve energy. The end result: surplus power.



How an energy-producing home works. Photograph: Snøhetta

The ArchiBlox team is not alone in successfully completing the energy positive challenge. The German city of Königsbrunn, working in collaboration with the Augsburg University of Applied Sciences and a local gas and electricity company, is finalising the cube-like Visioneum in the central square, where city officials hope its presence will inspire residents to think about their household energy consumption.

California, Berkeley, students working in collaboration with Honda have developed yet another concept, the Honda Smart Home, which looks more like a typical terraced house, but which generates surplus energy the same way as the ArchiBlox and the Visioneum: by radically conserving it while generating more than it needs through solar panels.

Students at the Delft University of Technology, meanwhile, have invented a highly innovative "skin" that can be attached to existing houses with similar results. And in Norway, architecture firm Futuro Built has managed to turn two ordinary office buildings into energy-generating ones, cutting their energy use by 90% through additional insulation and the use of sensors to control light and heating. Here, too, solar panels on the roof provide energy that can be sold back to the grid.

With cars and homes accounting for 44% of greenhouse gasses in United States (and similar percentages in Europe), it's no surprise that researchers and architects are trying to find ways of making homes more energy-efficient.

"The development of smart technologies, like the Google Nest, is making energy savings more convenient for users by allowing for control over temperatures in the house while you are away from the house, and allowing temperatures to follow your daily routines", notes Esben Alsund-Lanthén, an analyst at the Danish sustainability thinktank Sustainia.



The ZEB house. Photograph: EVE

Kristian Edwards says building a plus-house is technically straightforward. "We calculated how many square meters of solar panels we needed and optimised the angle of the roof to get maximum solar yield," he reports. "But plus-houses are also about minimising energy consumption, so we used as much recycled material as possible, such as whole bricks from a barn nearby." With its box-like wooden top floor slanted over the lower floor for maximum sun exposure, Snøhetta's experiment - the ZEB Multi-Comfort House, located in the Norwegian city of Larvik - boasts a visually striking appearance.

There's just one thing: the cost. "Cost is always a factor when building houses that are taking advantage of the newest technology", notes Alsund-Lanthén. "Plus-houses will likely remain more expensive than conventional houses, but on the other hand the owners will benefit from lower utility bills throughout the lifetime of the house, and in many cases from added benefits such as a better indoor climate due to improved ventilation, more daylight and better insulation."

But Edwards, an architect at the Snøhetta architecture firm in Oslo, argues that plus-houses don't have to be expensive, noting that a ZEB-style house may only cost 25% more to build than a similar, newly-designed home. The dropping cost of photovoltaic cells will also aid the advance of plus-houses.

Either way, utility companies are currently developing new payment models that will allow home owners to pay back the cost of the new technologies through energy savings. Other plus-house owners may opt to sell their surplus energy to the grid. At the ZEB house, in turn, surplus energy will power the electric car that future residents may own.

What's life in a plus-house like? Norwegian families have volunteered to test the ZEB house for three months each and will report their findings to Edwards and his Snøhetta colleagues. And David Martin is about to find out for himself, having signed up to live in his ArchiBlox construction with his young family for the next 24 months.

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Soldiers Get Solar Training As They Transition Back From War

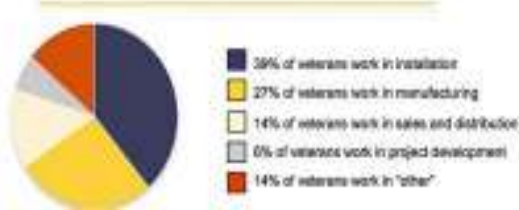
SustainableBusiness.com News

10% of the 174,000 people employed by the US solar industry are veterans, and soon there will be many more.

Three US military bases are participating in a pilot program that trains veterans to enter the industry. Part of the Department of Energy's SunShot Initiative, the first class of Marine trainees just graduated at Camp Pendleton in southern California.

Training begins this spring at Fort Carson in Colorado and Naval Station Norfolk in Virginia. 200 soldiers that are transitioning back from war will get training during the pilot. Service members will be able to size and install solar panels, connect solar systems to the grid, and interpret and comply with local building codes, as well as fulfill other roles, such as marketing.

VETERANS IN SOLAR JOBS BY SECTOR



The program is enabled by the Department of Defense's SkillBridge initiative, which allows exiting military personnel to pursue civilian job training, employment skills training, apprenticeships and internships up to 6 months before they

leave.

Five of our largest solar companies will interview program graduates for jobs - SolarCity, Vivint Solar, Sunrun, SunEdison and SunPower.

The pilot program builds on the success of DOE's SunShot Solar Instructor Training Network, where nine regional centers support credentialled solar training at 400 community colleges in 49 states. Nearly 1100 certified solar instructors have graduated, providing hands-on training to more than 30,000 students nationwide. The goal is to help 50,000 people enter the industry by 2020, under an executive order President Obama issued last year. The program began with \$10 million from the Recovery Act.

[<Source>](#)

French firm makes world's first organic photovoltaic module

Source Name: EET India

French enterprise DisaSolar, a company specialising in custom-made solar modules, demonstrated the world's first polychrome photovoltaic module aimed at developing organic solar modules that can be used for military and civilian applications.

The module is the result of a three-year programme funded by the Directorate General of Armaments, French Army, in collaboration with French academic laboratories CNRS-XLIM-MINACOM and the CEA-INES.

"This is a new step towards custom-made energy," said DisaSolar CEO Stéphane Poughon. Organic photovoltaics (OPV) offers benefits in that it is lightweight, flexible and customisable.

By tailoring the electrical properties, shape and colour of the OPV panel, it will be possible to better meet customer requirements in terms of product specification and integration. The tuning of colour and freedom in design tackle the aesthetic hurdle (unique colour and rectangular shape) that makes conventional solar panels commercially unattractive for many applications.

Work on the solar module design, software development, ink formulations and processes has been undertaken by the three parties. Three different coloured functional inks have been used to make the polychrome module. The result has been possible with the use of inkjet printing processes.

[<Source>](#)

The phantom flush: why high-tech toilets waste so much water

Automatic toilets may be convenient and hygienic, but they also waste billions of gallons of water per year. Why hasn't this issue been fixed yet?

By Autumn Spanne



Automatic flushing toilets, long a fixture in public restrooms, waste billions of gallons of water per year. Photograph: Peter Dazeley/Getty Images

We've all been there. You walk into a public-restroom stall, and the automatic toilet flushes before you come anywhere near it. It flushes again a minute later, then again after that, and perhaps again as you exit the stall.

When they first appeared in the 1990s, automatic-flush toilets were marketed as a more hygienic, no-touch alternative to conventional commodes. They quickly gained popularity in airports, malls, office buildings and other facilities with high-

traffic public restrooms. Today the US Environmental Protection Agency estimates the US has 27m so-called flushometer toilets installed in its restrooms. Many of the older models still in service use 3.5 gallons per flush or more – well beyond the current federal standard of 1.6 gallons. But even newer, more water-efficient models have a reputation for the so-called “phantom flush,” which can waste gallons of water at every restroom visit.

“People now expect the flushes numerous times while they’re in the stall,” says John Koeller, a California-based engineer and water efficiency expert. “It’s pretty obvious to water efficiency people that they’re big water wasters.”

Just as the cumulative effect of a few sprinklers overwatering the sidewalk can add up, a few hyperactive flushomatic toilets can translate into hundreds of gallons of wasted water every day. That might still not make it anywhere near the world’s biggest waster of water, but it’s a frustratingly clear and public example of waste.

As Ed Osann, a senior policy analyst at the Natural Resources Defense Council (NRDC) water program, puts it: “In terms of the absolute amount of water involved, it’s not large, but it’s sort of like a sprinkler in a public park that’s over-spraying the sidewalk and running into the street.”

Measuring a phantom impact

Koeller and Bill Gauley, a colleague in Toronto, Canada, developed what they call the Maximum Performance Testing protocol to independently evaluate toilet water efficiency. Using it, they have conducted one of the only independent studies comparing water use by manual-flush versus automatic-flush toilets.

A 2010 report measuring water consumption in the bathrooms of a Tampa office building – before and after the installation of flushometer devices – concluded that the toilets’ water use increased by more than 50% after automatic flush systems were installed.

The technology needed to fix phantom flushing already exists: Koeller says that sensor technology has improved in the five years since he and Gauley conducted their study.

At least one device, by Wisconsin-based manufacturer Kohler, minimizes the chances of a movement-triggered misfire by locating the sensor above the toilet facing up so that users must wave their hand over it to prompt a flush.

But despite the availability of better technologies, many older models remain in use because of the high price of upgrading. It can easily cost hundreds of dollars to replace a single toilet.

“Modern automatic sensors are pretty reliable, but the problem is there’s so many of these devices from earlier generations still out there,” says Doug Bennett, a conservation manager at the Southern Nevada Water Authority. “At some point they won’t be available in the marketplace any more, but it’s a slow process. Just like it took a long time before you didn’t see Gremlins or Pintos on the road.”

But NRDC’s Osann disagrees with the claim that this problem is restricted to older devices needing to be retired or adjusted. “We’re seeing this in relatively new buildings that were built within last three or four years,” he says.

Mark Malatesta, a product compliance engineer at toilet maker American Standard, thinks another underreported cause of unintended flushing is improper installation and maintenance. “It’s usually building maintenance or plumbers installing them, and a lot of times there’s just a lack of knowledge about how the products work,” he says. “Once installed properly, you should be good to go.”

Labeling falls short

Meanwhile, the EPA is also working to reduce toilets’ water use. In December, its WaterSense program – the water efficiency counterpart to its Energy Star label, which alerts consumers to energy-efficient appliances – drafted new specifications for flushometer toilets.

In order to qualify for the WaterSense label, new toilets would be required to use no more than 1.28 gallons per flush. The EPA estimates that replacing all the old, inefficient commercial flushometer toilets in the US with WaterSense-approved models would save 41bn gallons of water per year.

While the EPA’s proposed specifications could reduce the volume of water in each flush, they don’t do anything to directly address all the water that goes down the drain with every phantom flush.

Because of this, the NRDC’s Osann opposes EPA’s decision to include flushomatic toilets in the WaterSense program. “We would not want to see the label attached to devices subject to phantom flush episodes that are clearly wasteful,” he said.

Meanwhile, Koeller dismisses claims by some manufacturers that flushomatic products actually save water, and caution consumers to be wary of greenwashing.

“I know of no green building code or standard that rewards sensor-activated flush valves,” he said. “The absolute best sensor will only duplicate the one manual flush. It can do no better. But it certainly can – and does – do worse.”

[<Source>](#)

We Could Be Turning the Corner on Climate Change

SustainableBusiness.com News

By Rona Fried

I’m seeing signs that efforts to reduce carbon emissions are beginning to work and that the link between economic growth and energy consumption is breaking.

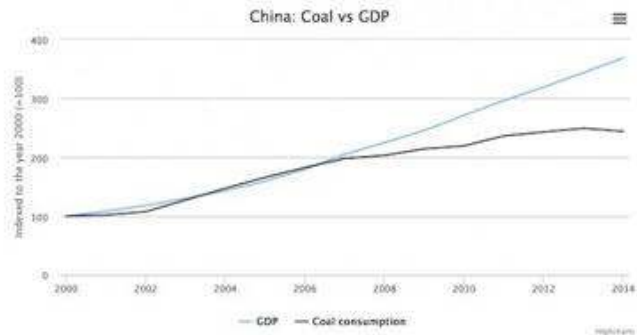
Let’s take a look at China, the UK and US as examples of this trend.

Coal Use Drops in China!

Last year, coal consumption fell for the first time in China - by 2.9% from 2013, according to Chinese government data. Domestic coal production fell 2.5%, and that means emissions are coming down.

There couldn’t be much bigger news than this, since China has been the main source of growing world emissions for years.

It’s not that energy consumption is going down - it rose 2.2% last year and the economy grew 7.4%.



Even though China used 5.9% more oil in 2014, that’s still well below the 7.4% GDP growth rate. Wind capacity grew 26%, solar 67%, and nuclear 36%.

The government has promised that coal use will peak in 2020 and energy-related emissions in 2030, but if this trend continues, China could reach these goals earlier.

China also has goals of low-carbon energy supplying 15% of total energy by 2020 and 20% by 2030.

Indeed, instead of building another coal plant every week, as has been the case for 20 years, they will be building the equivalent of carbon-free power every week for the coming decades, says Joe Romm at *ThinkProgress*.

“That means adding some 800-1000 gigawatts of zero-carbon power in the next 16 years, which is “more than all the coal-fired power plants that exist in China today and close to total current electricity generation capacity in the US,” he explains.

Similar Situation in US, UK

In the US, GDP grew 3.9% in the third quarter of 2014 - the strongest growth in over a decade - but oil consumption fell 0.3%. This year, oil demand is expected to rise 0.7%, but the economy will grow four times faster.

The UK did better. In the fourth quarter, GDP grew 2.6% while energy consumption dropped 7%, according to the Department of Energy & Climate Change. Efficiency has been improving 3% a year since 2000, they say.

Renewable energy and nuclear supplied 36%, gas 30% and coal 33.6%, down from 40.6% in 2013.

Meanwhile, the UK held its first renewable energy auction this week and awarded contracts for 2 gigawatts (GW) of projects, enough to power 1.4 million homes. Projects include five solar farms, 15 onshore wind farms and a 714 MW offshore wind farm.

Separately, the UK approved the world’s largest offshore wind farm by far. The **2.4 GW project** will rival the country’s largest power plants, supplying energy to 2.5% of citizens. Dogger Bank Creyke Beck will be 80 miles from shore, the furthest offshore than any before and occupying about 430 square miles.

Energy efficiency and wind energy are replacing gas and coal, according to Eurostat, which compiles official statistics.

The UK is firmly on track to get 15% of **all energy** from renewables by 2020 (30% of electricity) and could well decarbonize its power system within 15 years. And the EU as a whole will get 20% of all energy from renewables by 2020.

[<Source>](#)

UK's Emissions Drop by a Record 9.2%, Renewables Rise

SustainableBusiness.com News

While the UK lags the rest of the European Union on use of renewable energy, carbon emissions dropped by a record 9.2% last year, as GDP rose 2.6%, reports *Carbon Brief*.

How did that happen? Coal use declined 20%, energy consumption 7%, and thanks to climate change, the country experienced record warm temperatures in 2014, which meant less use of gas for heat.

This is largest year-over-year emissions drop ever for the UK, with a growing economy, says *Carbon Brief*, which analyzed data from the Department for Energy and Climate Change.

The UK's emissions are now 28% below 1990 levels, in contrast to the US, which is shooting for 17% below 2005 levels by 2020. The UK's goal is a 50% cut by 2025, and 80% by 2050 from 1990 levels.

Energy demand peaked in 2005 and has been falling ever since, and coal use in 2014 was the lowest since the 1850s, says *Carbon Brief*. The country is switching from coal to natural gas, as prices have moved to favor that, but even gas use is down because of the warm winter.

Even without the warm weather, emissions would be down 4.9% for the year, they say.



Progress is similar for the European Union, where energy use is back to 1990 levels, despite a 6% population increase and 45% economic growth since then. Efficiency in buildings, manufacturing, fuel economy in vehicles are all playing important roles.

As of 2013, renewable energy supplied 15% of **all energy** consumed by the European Union, says Eurostat, and it is on track for 20% by 2020.

2014 was also a great year for growth of renewables in the UK, increasing its share from 15% to 19.2% of electricity. It still lags the EU at around 5% renewables when heating and transportation fuels are included.

The EU recently announced targets for 2030: cut emissions 40% below 1990 levels, 27% of all energy from renewables, and increase efficiency 30%.

[<Source>](#)

We need regenerative farming, not geoengineering

By Charles Eisenstein

The quick fix mindset behind geoengineering must be transformed to one that seeks a humble partnership with nature if we are to address climate change



Intensive agricultural systems overlook the ecological benefits of regenerative farming. Photograph: blickwinkel/Alamy

that leaves the economic and industrial system causing climate change untouched.

The mindset behind geoengineering stands in sharp contrast to an emerging ecological, systems approach taking shape in the form of regenerative agriculture. More than a mere alternative strategy, regenerative agriculture represents a fundamental shift in our culture's relationship to nature.

Regenerative agriculture comprises an array of techniques that rebuild soil and, in the process, sequester carbon. Typically, it uses cover crops and perennials so that bare soil is never exposed, and grazes animals in ways that mimic animals in nature. It also offers ecological benefits far beyond carbon storage: it stops soil erosion, remineralises soil, protects the purity of groundwater and reduces damaging pesticide and fertiliser runoff.

But these methods are slow, expensive and impractical in feeding a growing population, right?

Wrong. While comprehensive statistics are hard to come by, yields from regenerative methods often exceed conventional yields (see here and here for scientific research, and here and here for anecdotal examples). Likewise, since these methods build soil, crowd out weeds and retain moisture, fertiliser and herbicide inputs can be reduced or eliminated entirely, resulting in higher profits for farmers. No-till methods can sequester as much as a ton of carbon per acre annually (2.5 tons/hectare). In the US alone, that could amount to nearly a quarter of current emissions.

Estimates of the total potential impact vary. Rattan Lal of Ohio State University argues that desertified and otherwise degraded soils could sequester up to 3bn tons of carbon per year (equal to 11bn tons of CO₂, or nearly one third of current emissions). Other experts foresee even greater potential. According to research at the Rodale Institute, if instituted universally, organic regenerative techniques practiced on cultivated land could offset over 40% of global emissions, while practicing them on pasture land could offset 71%.

That adds up to land-based CO₂ reduction of over 100% of current emissions – and that doesn't even include reforestation and afforestation, which could offset another 10-15%, according to the Intergovernmental Panel on Climate Change. Of course, none of this is license to perpetuate a fossil fuel infrastructure, since there is an eventual limit to the amount of carbon that soil and biomass can store.

Working with nature

Given that they are better even from purely commercial considerations, why haven't regenerative practices spread more quickly? An answer commonly offered by farmers themselves is that "people are slow to change." Maybe so, but in this case there is more to it than that. Regenerative agriculture represents more than a shift of practices. It is also a shift in paradigm and in our basic relationship to nature – as a comparison with geoengineering highlights.

First, regenerative agriculture seeks to mimic nature, not dominate it. As Ray Archuleta, a soil-health specialist at the USDA, puts it, "We want to go away from control and command agriculture. We should farm in nature's image." In contrast, geoengineering seeks to take our centuries-long domination of nature to a new extreme, making the entire planet an object of manipulation.

Second, regenerative agriculture is a departure from linear thinking and its control of variables through mechanical and chemical means. It values the diversity of polycultures, in which animals and plants form a complex, symbiotic, robust system. Geoengineering, on the other hand, ignores the law of unintended consequences that plagues any attempt to engineer a highly nonlinear system. It exemplifies linear thinking: if the atmosphere is too warm, add a cooling factor. But who knows what will happen?

Third, regenerative agriculture seeks to address the deep basis of ecological health: the soil. It sees low fertility, runoff and other problems as symptoms, not the root problem. Geoengineering, on the other hand, addresses the symptom – global warming – while leaving the cause untouched.

There is no quick fix

Unlike geoengineering's quick fix, regenerative agriculture cannot be implemented at scale without deep cultural changes. We must turn away from an attitude of nature-as-engineering-object to one of humble partnership. Whereas geoengineering is a global solution that feeds the logic of centralisation and the economics of globalism, regeneration of soil and forests is fundamentally local: forest by forest, farm by farm. These are not generic solutions, because the requirements of the land are unique to each place. Unsurprisingly, they are typically more labour-intensive than conventional practices, because they require a direct, intimate relationship to the land.

Ultimately, climate change challenges us to rethink our long-standing separation from nature in which we think we can endlessly engineer our way out of the damage we have caused.

[<ReadMore>](#)

Costa Rica has used only renewable energy in '15

Source Name: *Times of India*

Costa Rica has achieved a clean energy milestone by using 100% renewable energy for a record 75 days in a row. The feat was achieved thanks to heavy rainfall, which powered four hydroelectric plants in the first three months of the year, the state-run Costa Rican Electricity Institute said. No fossil fuels have been burnt to generate electricity since December 2014, in the state which is renowned for its clean energy policies.

While Costa Rica is a small country, with a population of about 4.8 million people, it has made great strides in its use of renewable energy. Last year 80% of the energy used came from hydropower, while geothermal energy made up about 10% of the mix in the volcano-strewn nation. Currently 94% of Costa Rica's energy needs are met by renewables. New geothermal projects are already in the planning stages, to ensure that the Central American state does not have to rely on fossil fuels in the future.

The government approved a US \$958 million geothermal project in mid-2014. The first plant, when completed, is expected to produce 55 megawatts of electricity, enough to power 55,000 homes. A further two 50 megawatt plants will be built nearby. Jake Richardson, of Clean Technica, said it was important the country did not become too dependent on hydropower.

"It's good news that more geothermal will be coming on board, as there are obvious downsides of being too reliant on hydropower, especially run-of-the-river systems, which can be hindered by seasonal changes in water flow," he told Science Alert.

"Droughts can also severely impact power supplies. And there are also some environmental downsides to hydroelectric dams more generally, namely the impact on riparian ecosystems and passing fish."

It helps that Costa Rica, which aims to be carbon-neutral by 2021, has excellent infrastructure. The World Economic Forum ranked the country second in Latin America, behind Uruguay, for its electricity and telecommunications infrastructure in its 2014 Global Competitiveness Index.

In a sign of how committed Costa Rica is to renewables the government has decided not to exploit rich oil deposits — discovered along the country's Caribbean coast — for environmental reasons.

[<Source>](#)

3 maps explain India's growing water risks

By Tien Shiao, Andrew Maddocks, Chris Carson and Emma Loizeaux



Courtesy of WRI

This detail from an India Water Tool 2.0 map shows baseline water stress in India.

India is one of the most water-challenged countries in the world, from its deepest aquifers to its largest rivers.

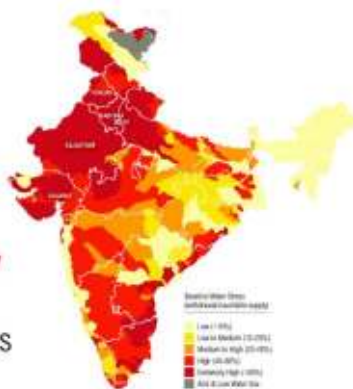
Groundwater levels are falling as India's farmers, city residents and industries drain wells and aquifers. What water is available is often severely polluted. And the future may be only worse, with the national supply predicted to fall 50 percent below demand by 2030 (PDF).

Enter the India Water Tool 2.0. The new web platform is the most comprehensive, publicly available online tool evaluating India's water risks. Created by a group of companies, research organizations and industry associations — including WRI and coordinated by the World Business Council for Sustainable Development — the tool can help companies, government agencies and other water users identify their most pressing challenges and carefully target water-risk management efforts.

The tool illustrates the depth and breadth of India's water-related challenges. A few trends emerge.

54 percent of India faces high to extremely high water stress

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Faces
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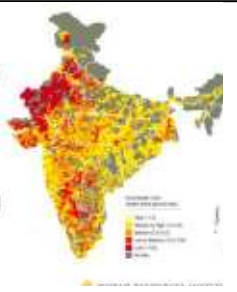
The map below illustrates competition between companies, farms and people for surface water in rivers, lakes, streams and shallow groundwater. Red and dark-red areas are highly or extremely highly stressed, meaning that more than 40 percent of the annually available surface water is used every year.

With 54 percent of India's total area facing high to extremely high stress, almost 600 million people are at higher risk of surface-water supply disruptions.

Note, in particular, the extremely high stress area blanketing Northwest India. The region is India's breadbasket. The states of Punjab and Haryana alone produce 50 percent of the national government's rice supply and 85 percent of its wheat stocks. Both crops are highly water intensive.

54 percent of India's groundwater wells are decreasing

54%
of India's
Ground-
water
Wells Are
Decreasing



Groundwater levels are declining across India. Of the 4,000 wells captured in the IWT 2.0 showing statistically significant trends, 54 percent dropped over the past seven years, with 16 percent declining by more than 1 meter (3.2 feet) per year.

Farmers in arid areas, or areas with irregular rainfall, depend heavily on groundwater for irrigation. The Indian government subsidizes the farmers' electric pumps and places no limits on the volumes of groundwater they extract, creating a widespread pattern of excessive water use and strained electrical grids.

Northwestern India again stands out as highly vulnerable. Of the 550 wells studied in the region, 58 percent have declining groundwater levels.

More than 100 million people live in areas of poor water quality

The IWT 2.0 measures water quality with an Indian-government standard called Bureau of Indian Standards (BIS) limits. Surface and groundwater are both below par in many areas.

Among the IWT's 632 groundwater quality districts, only 59 are above BIS limits. Whenever a particular pollutant concentration exceeds BIS limits, drinking water is considered unsafe. The yellow and red areas below indicate places where chlorine, fluoride, iron, arsenic, nitrate and/or electrical conductivity exceed national standards.

These districts also are extremely populous. 130,600,000 people live in districts where at least one pollutant exceeded national safety standards in 2011. And more than 20 million people lived in the eight districts where at least three pollutants exceeded safety limits. Bagalkot, Karnataka, is the most polluted, with five of six groundwater quality indicators at unsafe levels. Only arsenic falls below the government-recommended concentration level.

Proactive, innovative management is critical

The India Water Tool specifically was designed to help companies, government agencies, civil society organizations and other stakeholders assess water risks, a critical first step toward reversing the damage already done to India's water supplies and protecting against chronic struggles.

Users can upload or enter hundreds of GPS-based locations into the easy-to-use interface. For each location, the tool will produce values quantifying water stress, groundwater depletion, current and projected groundwater availability, water quality, rainfall and more.

The tool also can create a map showing all the uploaded locations, which either can be kept private if the information is sensitive or exported as a communications product or as a visual for a corporate disclosure initiative. For example, India's state and national governments could use the tool to understand threats to surface and groundwater water security, and therefore support long-term development planning and conservation planning.

Tools such as the India Water Tool may be only a first step in a long process of risk reduction and mitigation, but they are an essential one. Only with ongoing efforts to improve data transparency and accessibility may India advance toward a sustainable water future.

<Source>

Government discontinues subsidy scheme for green energy

Source Name: Economic Times

The Narendra Modi government may be quite vocal when it comes to its commitment towards clean energy, but when reality bites, it is seen as taking a back seat. The tight finances have forced the government to silently discontinue one of its key subsidy schemes promoting renewable energy.

The share of solar power within the renewable energy space was 8% in FY14 and experts feel that the withdrawal of the subsidy may hamper the desired growth in capacity addition in FY16. The scheme was discontinued with effect from March 1.

The Ministry of New and Renewable Energy (MNRE) wanted commercial banks to stop giving loans for installing solar home lighting system under the subsidy scheme since it is burdened with pending subsidy claims. This bank loan cum capital subsidy scheme was part of the Jawaharlal Nehru National Solar Mission (JNNSM). "It's a temporary withdrawal till the clearing of the pending subsidy," a senior official with the ministry told ET. "The finance department has not released the fund," he said. ET has learnt that the size of pending claims is Rs 130 crore, which is just about 5% of the annual plan of Rs 2,500 crore to promote renewable energy.

"The Ministry is in the process to clear dues for the loan already extended by the banks," the ministry said in a note to National Bank for Agriculture and Rural Development and advised it to instruct banks to stop lending till further notice.

"JNNSM Phase aims to give a major thrust to off-grid solar power in areas where grid has not reached and many parts of the country where electricity supply situation is very poor. If this news is true, it would be negating this objective," said Debasish Mishra, senior director with Deloitte Touche Tohmatsu India Pvt. Ltd.

Banks provide Rs 25,000 to Rs 1 lakh loan for installing solar photovoltaic lighting systems in both urban and rural areas and the borrowers get back 30-40% of it as capital subsidy. But as the government fails to foot the subsidy bill, the borrowers are forced to pay interest for the entire project cost. The ministry may review its decision again in June after examining its financial position.

India Ratings and Research had said in a report in January that capacity additions in the renewable energy sector in FY16 was expected to be driven by the solar segment given the policy thrust towards setting up solar installations. It had expected the share of solar capacity in the renewable energy sector to increase to 11% in FY16. "Government is determined to achieve target 175 MW of renewable energy capacity by 2022. Clean energy cess collected from thermal coal users should be effectively used to promote renewable energy," Deloitte's Mishra said.

<Source>

60-70% of Indian Govt E-Mobility Fund to Incentivise EV Buyers

Source Name: Auto Car Pro

Buyers of electric vehicles will be the biggest beneficiaries of the government's Faster Adoption and Manufacturing of Electric Vehicles (FAME) scheme that was announced in the Union Budget on Saturday. The second biggest beneficiary will be technology and component providers for electric vehicles (EVs). This is aimed to help Indian companies localise products, which will in turn help reduce cost of EVs.

The new scheme will kick in on April 1, 2015. In an exclusive interview with Autocar Professional, Ambuj Sharma, additional secretary, Ministry of Heavy Industries and Public Enterprises, government of India, said, "About 60-70 percent share will go for incentives. About 20-25 percent share will go for a technology road map because you want to indigenise and localise a number of electric drivetrain parts which are presently being imported. Even battery management systems are very strong in IT but we do not have adequate local capacity at present. And then, pilot projects and charging infrastructure will take about 10 percent each."

The National Electric Mobility Mission Plan 2020 (NEMMP), which was announced in January 2013, envisaged an investment of Rs 13,000-14,000 crore towards helping India 'to emerge as a leader in the xEV two-wheeler and four-wheeler market in the world, with total xEV sales of 6-7 million units'. Though the developments on ground are far behind schedule, the release of the first tranche of funds is a significant boon to EV makers and suppliers who were struggling financially due to lack of government support.

Though the government has earmarked only Rs 75 crore in the Budget 2015-16 to promote electric mobility, more funds will be released after the first instalment is exhausted. By that time the fiscal health of the economy is expected to be better than it is now. Overall, the investment to be made by the government till 2017 is Rs 1,000 crore. "Rs 800 crore is from the planned fund for the 12th plan, which is undergoing now, till the period 2017.

Over and above that, there is an automotive cess fund. So under that we will be getting about Rs 200 crore over the period of the next two years. So adding both will come to Rs 1,000 crore, if not more," Sharma told Autocar Professional.

[<Source>](#)

Rooftop solar power units to get boost in Maharashtra

Source Name: Times of India

The Maharashtra Electricity Regulatory Commission (MERC) has finally come out with a draft notification for allowing grid connectivity to rooftop solar power generation sets. The notification published on March 9 has cited recommendations of the working committee which was formed on MERC's directives. The committee had submitted its report seven months ago.

Now, MERC has called for objections, if any, by March 31 to the draft notification which has opened avenues for common man's participation in promoting green energy in a big way. If these provisions get final approval, one can install solar PV units to generate power at home, offices and even factories and get net metering so as to connect with the grid.

The credits earned can be adjusted against electricity bills of the individual or organization by the distribution company. The credits will be calculated annually. If there is any surplus generation, 10% of it will be bought by the distribution company.

"This is a big positive," said an elated city businessman Sudhir Budhay. He has been fighting for last two years seeking policy regulations to enable grid connectivity for rooftop solar generators. "While there is policy for solar power connectivity for units generating 1MW or more, there is no such clarity for smaller sets with less than 1MW or 33KV," explained Budhay.

His public interest litigation (case 86 of 2013) was given final hearing on July 2013 by MERC which issued an order on November 25, 2013, forming a committee to frame technical guidelines. The 17-member committee included Budhay and representatives of all power distribution companies as well as couple of expert consultants.

In absence of the policy, rooftop units were not considered worth investment as they were not linked to the grid. At least 13 states, including Tamil Nadu, Andhra Pradesh, Karnataka, Kerala, Uttar Pradesh, Gujarat, Punjab, Delhi, Uttarakhand, Rajasthan, Goa and Orissa, and all Union territories have laid down norms to provide grid connectivity to rooftop solar power sets that are being accepted as a non-conventional energy source.

The net metering of smaller units is in line with the state's new renewable energy policy that is expected to be unveiled during the ongoing session of state legislature. The state has set a target of 11,110MW of renewable power by 2019, of which 7,500MW will be solar and rest through cogeneration, hydel and biomass. The MERC has also made it obligatory for distribution companies to meet a portion of the requirement through renewable sources. "So, despite their reservations, discoms will have no choice but to promote non-conventional power," said Budhay.

[<Source>](#)

37,000 million litres of sewage flows into rivers daily: Report

Source Name: Times of India

Events around World Water Day, which is marked every year on March 22, may remind everyone about the implications of dwindling water reserves due to population pressure and pollution but the message is, somehow, lost in absence of adequate action on the ground by stakeholders, including the government.

The water pollution scenario in India can be mapped by the findings of the country's key pollution watchdog - Central Pollution Control Board (CPCB) - which in its recent report noted that nearly 37,000 million liters per day (MLD) of 'untreated' sewage water flows into rivers across the country.

The report, submitted to the environment ministry last month, said that though the sewage treatment capacity in the country was augmented over the years, the wide gap between sewage generation (57,000 MLD) and treatment capacity (20,358 MLD) kept polluting water resources - be it river water or groundwater.

While municipal waste water is the prime cause of increasing water pollution, flow of untreated industrial waste water into rivers is not far behind.

As many as 302 river stretches on 275 rivers across the country have got polluted due to discharge of both municipal and industrial waste water over the years.

At a time when the government is focusing more on Ganga and Yamuna, the issue of polluted river stretches on other rivers appear to have been pushed to the backburner. Though the government has time and again said that it was equally serious about pollution in other rivers, nothing much has been done on the ground beyond the two northern rivers.

Prime Minister Narendra Modi is expected to focus on this 'gap' when he chairs a meeting of the National Ganga River Basin Authority (NGRBA) on March 26. Though the agenda of the meeting will revolve around Modi's pet project of 'Namami Gange' that is aimed to rejuvenate the Ganga in a time-bound manner, he may ask officials of water resources and environment ministries to focus on other rivers as well in a coordinated manner.

"Obviously, the model of Ganga rejuvenation will be replicated elsewhere in due course, keeping in mind the topographical factors. The Ganga has caught attention of policymakers because 45% of the country's population depends on this river for livelihood and well-being", said an official, defending the current focus.

It is noted that more than two-third of the sewage generated in 118 towns, located along Ganga, get discharged into the river untreated. The CPCB report pointed out that these towns collectively generate over 3,636 MLD of sewage as against the treatment capacity of approximately 1,027 MLD of the existing 55 sewage treatment plants (STPs) in these towns/cities spread over five states.

[<ReadMore>](#)

Human activity main culprit in Ganga pollution: IIT report

Source Name: DNA India

The management of solid and liquid waste generated from domestic and industrial sources, preparation of water resources plan for Ganga river basin with wetlands, distributed ground and surface water storage and management of polluted agricultural runoff were the suggestions of the IIT consortium to Centre for its projects to clean the holy river.

In its report for Ganga River Basin Management Plan (GRBMP), which dna has access to, it was observed that over-draw of fresh water from surface and ground water sources for domestic and public activities, discharge of urban waste, dumping of industrial wastes and leakage of industrial pollutants are the human activities "affecting" the aquatic environment.

Filing a copy of report, which was submitted to the water resources ministry in January this year, before the Supreme Court, the government has said that the consortium of IITs suggested actions in eight missions -- for Aviral Dhara (continuous flow), Nirmal Dhara (unpolluted flow) of the river water, ecological restoration, sustainable agriculture, geological safeguarding, basin protection against disasters, river hazards management and environmental knowledge building and sensitisation.

As per the report, preparation of water resources plan for Ganga river basin with emphasis on wetlands, forests and distributed ground water and surface water storages rather than large reservoirs storage, reuse and recycling of water, control of water withdrawals in water-depleting regions are some recommended actions for Aviral Dhara (mission 1).

Riverfront development, floodplain management and rejuvenation of water bodies, management of solid and liquid waste generated from industrial sources are the actions recommended by the consortium for Nirmal Dhara (mission 2).

For ecological restoration, restrictions on river bed farming and gravel and sand mining, restoration of unpolluted river flows, control of alien species invasions, over fishing and fishing during spawning seasons are suggested by the IITs.

Promotion of organic farming where essential and economically feasible and adoption of conservation of agriculture especially in degrading lands, to enhance long-term soil fertility are the action suggested for sustainable agriculture.

Similarly, improving drainage congestion caused by unplanned rail/road network by providing additional culverts and pathways in some parts of UP and Bihar, designing canals to drain water from permanently waterlogged areas, initiation of flood awareness programme and educating people to move away from flood prone areas are suggested for river hazards management.

The Supreme Court, which has pulled up the Central government for delays in cleaning Ganga earlier, is to take up the PIL next week.

[<Source>](#)

IIT developing bio-hydrogen fuel from waste

Source Name: *Jagran*

As part of a project funded by the Ministry of New and Renewable Energy, Professor Debabrata Das of IIT-Kgp's department of biotechnology is leading a group of Indian scientists from six institutes to produce bio-hydrogen (hydrogen gas) using waste.

"Our pilot plant of 10 m3 capacity would be ready within 3-4 months for which we are constructing a building inside the campus. Hopefully the pilot plan study would be done within a year and after that we can go for commercialisation of the technology," Das who has been working on hydrogen production for about 16 years said.

He said oil major ONGC has already shown interest for higher scale studies of 100 m3 biohydrogen plants.

With fossil fuel reserves depleting, hydrogen holds the promise to provide clean and eco-friendly energy supply to meet the growing energy needs for transportation and power generation in the coming years.

Large-scale production of hydrogen gas for commercial use is now at R & D stage in India. According to experts, storage would be another challenge as hydrogen has a very low volumetric energy density and requires large space to store.

The National Hydrogen Energy Road Map has projected that one million hydrogen-fuelled vehicles would be on Indian roads and 1000 MW aggregate hydrogen-based power generating capacity be set up in the country, both by 2020.

Although hydrogen can be produced from fossil fuels and biomass, IIT scientists are trying to generate the gas from distillery wastewater with a vision of 'waste to energy'.

[<Source>](#)

iGrenEnergi working on 'energy packetization' technology to boost productivity of solar panels

Source Name: *Economic Times*

A startup headquartered between San Diego and Mumbai has invented a technology that is giving solar energy a whole new ray of hope.

Two-year old iGrenEnergi's eight-panel DC Optimizer (DCO) works on 'energy packetization' technology to boost productivity of solar panels to maximum capacity through its life cycle. It addresses a pertinent problem—blockages to sunlight such as shading or any particle like dust, bird droppings or leaves that inhibit energy from falling on a panel. With present day solar technology, only 19-22% of light hitting a panel gets converted into electricity, the balance to heat.

"One shaded panel kills production of all panels. So, if 90% of one panel is not blocked, each panel loses 10% in the string and one guy can impact 20 panels. Our DCO addresses this," said Sunil Tyagi, co-founder, iGrenEnergi.

The patented technology sits next to a solar panel and can save energy from 10% to 40%. The innovative technology takes the problem of mismatched power and treats packets of energy separately or simply out cuts energy flowing in into little bits, on the back of an algorithm working behind the scenes. After sucking energy of all panels it is flowed to an inverter. "Our device tells panels to work at what capacity," said Tyagi.

The potential of the product rests on three strategic pillars—reusable hardware platform, which implements the energy packetization architecture, a cloud-based application software to analyse data and produce actionable intelligence, and finally product-specific embedded software to control energy packets flowing through the hardware.

"iGrenEnergi's method for power management and conversion, which they refer to as 'energy packetization', is unique to the best of my knowledge. I am not aware of other companies in India or internationally incorporating this technology in power products. Other existing module level power electronics (MLPE) products for solar industry such as DC Optimizers and micro inverters are based on conventional methods," said Milind Atray, professor-in-charge of SINE (Society for Innovation and Entrepreneurship), IIT-Bombay, where it is being currently incubated along with research scientists.

The device is in pilot stage and has been installed at two installations—a residential rooftop and at a small manufacturing company. Ajit Deshmukh installed DCO on his 2 Kilowatt solar installation at his two-storey house in Mumbai and has seen a 10-12% increase in energy efficiency. "I get 8-10 units of power a day that takes care of half the energy consumption of my home. This has also brought my electricity bills down by Rs 2,000 a month," he said.

Mercom, a consulting firm for clean technology, forecasts solar installations to more than double in 2015, reaching approximately 1,800 megawatts.

"This product seems promising but it's a matter of time to see how many people will go for a solar installation just because of the DCO. At urban level, installations are going up but the pace is slow. The basic opportunity for this depends on how fast solar installations go up. However, since it's a startup, if they can sell to existing installations, it can be a good revenue earner in initial few years," said Pami Deka, consultant, Regin Paradise Consulting that runs New Ventures, a clean technology innovative centre supporting sustainable energy development.

The company has secured angel investment from high-net worth individuals from Europe and the US to the tune of \$0.5 million and is about to close another round of \$0.5 million.

Presently the DCO is at pre-revenue stage, the company earns revenue another product - 'solar emulator' that's an electronic box that behaves like a solar panel, purchased by people doing laboratory experiments related to solar energy.

"We're selling to engineering colleges and labs. Last year, we sold Rs 50 lakh worth of the product," said Jiten Apte, co-founder, iGrenEnergi.

"Our emphasis, as a company, is to show benefits of our technology approach to make solar energy better applicable in many areas -storage, dealing with battery, electric vehicle storage, or even for grid stabilization," Tyagi said, adding that their next product to follow will be solar invertors.

[<Source>](#)

Green solution for bio-waste

Source Name: *The Hindu*

Away from the public gaze, South India's first plant producing Compressed Natural Gas (CNG) from hotel and poultry farm waste has completed its first year of operations. The plant is supplying 600 kg of CNG to the city's restaurants every day.

Tucked away in Huskur village, 14 km west of Doddaballapur, the plant named Maltose Agri Products Private Limited (MAPPL) not merely takes away some amount of the city's waste, but also turns it into energy and averts release of hazardous methane into the atmosphere. Currently operating with three waste digesters, it will have ten of them on completion of its expansion plans.

The innovative plant was envisioned and set up by T. Ananda, an agriculturist, two years ago even while the city was in the throes of an agitation at Mandur against landfills. It is currently taking 25 to 30 tonnes of waste.

The waste from poultry farms which abound in the area is either piped to the plant in the form of slurry or arrives by tractors. The waste from a hundred and odd hotels and restaurants, mainly around Hebbal and R.T. Nagar, is carted to the plant by BBMP lorries in drums, while the cattle dung is picked by workers from mainly the Cantonment area and brought in lorries.

Paying for poultry waste

Three BBMP lorries bring 10 tonnes of hotel waste a day. Twenty five tonnes of dung is collected by another four lorries. The poultry farms are paid for the 5 to 7 tonnes of poultry waste at 30 paise a kg.

The process

Upon arrival, the dry waste is first crushed. Non-organic waste such as plastics or silica is removed and sent to a collector tank where slurry is prepared. It is then pumped into large digester chambers. Anaerobic digestion takes 21 days for production of methane at the start of the process.

Daily feeding of waste ensures continuous generation. The chambers have churners that isolate sediments, which are separated mechanically and left to dry in pits for the purpose of manure, a by-product.

The methane is then brought to balloon rooms where it is stored under large rubber domes. At this stage it has merely 60% methane while the rest of it contains carbon dioxide, hydrogen sulphide gas and vapour. It then undergoes a purification process and carbon dioxide, sulphur dioxide and vapour are removed. At this stage, it is 92% methane which is passed through compressor to be filled at high pressure as CNG into cylinders of 5 kg, 10 kg and 12 kg for supply to the restaurants. The company is running its supply trucks on the same CNG and has fitted them with 38 kg cylinders.

Currently, the Maltose plant is producing 600 kg of CNG a day and supplies them to six large hotels and restaurants in the city in collaboration with the marketing company Carbon Masters. While the LPG cylinder gas comes at a rate of Rs. 60 per kg, Maltose's CNG is being supplied at Rs. 40 a kg.

Ananda, who has studied only upto Plus Two and maintains a poultry farm with 50,000 birds, says that against the initial investment of Rs. 2 crore by him, the Ministry of Renewable Energy extended a sum of Rs. 68 lakh by way of assistance. His plea to exempt the product from Sales Tax is under active consideration by the State Government.

Ananda expects the plant to generate 4,000 to 5,000 kg of CNG by taking 250 tonnes of waste once all the ten digesters begin to operate around the middle of 2016. By then his investment would go up to Rs. 20 crore. Besides, he has set aside five acres of his land for putting up the plant.

The plant has come as a boon for the poultry farmers in the area as the waste is immediately collected by it. Says K.S. Ashok Kumar, who owns several poultry farms and a dairy in the area (he is M.Sc in Agriculture), Ananda must be encouraged for his innovativeness and enterprise.

Ashok says poultry and animals waste is a major pollutant which, if not collected and treated, leads to not merely atmospheric pollution but also to clogging of drainage in the city. He says the impact of non-treatment can be gauged by the fact that a tonne of methane released in the atmosphere leads to production of 24 tonnes of carbon dioxide.

Ashok says a huge amount of biomass is consumed by cattle in the city as well as suburbs. Unless their waste is systematically treated, it either remains on the scene or flows into the gutters, resulting in blockages in the flow.

He says plants like Maltose restore the energy cycle which gets ruptured due to production of and diffusion of methane into the environment. The manure from the plant returns the much needed humus to the soil and can cut down the fertilizer import bill if adopted on a wider scale.

According to Nadeem Fairoz, professor at the Department of Livestock Product Technology, Bengaluru has 1.6 lakh heads of cattle and three lakh other animals (mainly pet dogs, cats, cage birds, horses and donkeys).

Due to inefficient collection, much of the waste they generate flows into either the sewerage system or the drains.

[<ReadMore>](#)

Organic Recycling Systems develops green mode of generating electricity from solid waste

Source Name: Economic Times

Waste management and waste-to-energy are the catchphrases in vogue with the government's emphasis on renewable energy and its Swachh Bharat initiative. Then, what's better than using waste to produce electricity?

A Maharashtra-based company has developed and commercialised a green and safe method to not only generate electricity from municipal solid waste, but also reduce its disposal cost, burden on landfilling and environmental pollution.

The method that Organic Recycling Systems has developed uses biogas generated from waste to produce electricity. While there are similar systems already available, Suhas Bhand, founder-chairman of the company, said its system uses less water and generates gas about half the time compared with traditional plants. Moreover, its plants can take unsegregated waste and the system will segregate organic and inorganic material. The company is seeking patent for the technology.

According to Bhand, Indians generate about 68.8 million tonnes of waste a year. Disposal of this is a major environmental and health hazard. "There are around 5,500 municipal corporations which are striving hard to look for some solution or some kind of processing technology," he said.

Organic Recycling Systems uses dry anaerobic digestion technology to break down biodegradable material. The company claims its method to be India's first indigenous technology that uses anaerobic digestion to convert municipal solid waste into power and compost without burning the mass.

It currently operates a plant at Maharashtra's Sholapur and is considering setting up two more, in Pune and Bengaluru, at an investment of Rs 140-160 crore each.

The Sholapur plant is designed to treat 146,000 tonnes of municipal solid waste annually to generate 24.94 million units of electricity, which is supplied to the grid. From the plant, the company also sells around 20,000 tonnes of residual organic compost annually to fertiliser companies Zuari and Deepak Fertilisers, Bhand said.

Upon completion, the Pune plant will have a capacity to treat 273,750 tonnes of waste each year and generate 44.55 million units of electricity, the company said.

The Phase I of the Bengaluru project will have a capacity to handle 219,000 tonnes of waste and generate 35.64 million units of electricity and 39,600 tonnes of organic compost.

The Bengaluru plant is likely to be commissioned by April 2016. It is in the process of financial closure for the Pune plant.

The land for setting up these plants and raw material for generation are provided by municipal corporations, Bhand said. The company gets about Rs 12 crore a year selling electricity and Rs 3.50 crore from organic compost.

[<Source>](#)

Dual-rotor turbines boost wind energy harvests

Source Name: EET India

By modifying aerodynamic design using a dual-rotor turbine, aerospace engineers Hui Hu and Anupam Sharma from the Iowa State University were able to boost wind energy generation, which addresses two problems of typical wind turbine models.

Hu, an aerospace engineering professor, stated two problems with the wind turbines' blades. First, the base of the blades, which are big, round structural pieces, are not shaped like an airfoil and thus do not harvest any wind. Therefore, this reduces a turbine's energy harvest by about 5 per cent.

Second, the wake created by the big blades when they disturb the wind reduces the energy harvest of any downwind turbines. Hu said a turbine sitting in the slipstream of another can lose 8 to 40 per cent of its energy production, depending on conditions.

To address these losses, Hu together with Sharma, assistant professor in aerospace engineering, put a small rotor on the turbine. One model had three big blades and three mini-blades sprouting from the same hub. The other had a small, secondary rotor mounted in front of the big rotor, the two sets of blades separated by the nacelle that houses the generating machinery on top of the tower. Apparently, two rotors on the same tower can generate more energy, Hu said.

In fact, using lab tests and computer simulations, Hu and Sharma have found those extra blades can increase a wind farm's energy harvest by 18 per cent.

"These are fairly mature technologies we're talking about—a 10- to 20-per cent increase is a large change," Sharma said.

Large eddy simulation of air going through a dual-rotor wind turbine

This large eddy simulation shows air going through a dual-rotor wind turbine. By tailoring the rotation and turbulence behind the turbine, the dual rotors can boost wind load recharge and improve wind farms' energy harvest. (Source: Sharma)

To extend the study, Hu is using experiments in Iowa State's Aerodynamic/Atmospheric Boundary Layer Wind and Gust Tunnel to study the dual-rotor idea. He measures power outputs and wind loads, and also uses technologies such as particle image velocimetry to measure and understand the flow physics of air as it passes through and behind a rotating turbine. On the other hand, Sharma is using advanced computer simulations, including high-fidelity computational fluid dynamics analysis and large eddy simulations, to find the best aerodynamic design for a dual-rotor turbine.

Hu said Sharma's computer modelling will drive the design of the next generation of experimental models he'll take back to the wind tunnel. "We hope to get even better performance," Hu said.

[<ReadMore>](#)

Bengaluru airport to get its first perishable cargo facility

Source Name: Business Standard

Air India SATS Airport Services, a joint venture between Air India and Singapore Airport Terminal Services, will have a 40,000-tonne per annum capacity perishable cargo handling centre 'AISATS Coolport' up and running at the Kempegowda International Airport (KIA) in the next 12 months. The joint venture between Air India and the Singapore Airport Terminal Services (SATS), broke ground for Bengaluru's first fully-dedicated perishable cargo handling centre, spread over 60,000 square feet, the 'AISATS Coolport', at the KIA on Monday.

"The facility will help enhance the status of Karnataka as the pharmaceutical, biotechnology and perishables hub of India," said Kaushik Mukherjee, chief secretary, Karnataka government.

The facility, with a provision of about 135 kilo Volt Ampere (KVA) power supply for its operations through solar energy, a first for an air freight terminal in India. The AISATS Coolport will cater to a wide range of commodities such as pharmaceutical products, fruits, vegetables and flowers. The facility will be equipped with a drug controller lab testing facility, separate ripening zone, land-side truck-docks, warehousing and re-distribution centres, cold room facilities with different temperature zones and a testing facility according to the plant quarantine requirements for European Union and US-bound shipments.

In addition, the modern AISATS Coolport will also have humidity-control and temperature monitoring facilities.

In recent years there has been a substantial increase in perishable cargo handling volume. Since 2010, AISATS Bengaluru has witnessed a compound annual growth rate of 37.9 per cent. This facility is expected to create more jobs for the local community in the process, according to AISATS. AISATS also aims to develop a training facility for vocational courses to handle pharmaceutical, biotechnology and perishable products according to specific requirements for its employees.

On the importance of such a facility, Ratna Prabha, additional chief secretary, Karnataka government, said that during an earlier tenure of hers, in the undivided Andhra Pradesh, many export-oriented units (EOUs) relating to fisheries and other perishable products went bust as they did not access to such a facility.

The upcoming AISATS Coolport will provide the required infrastructure to boost the movements of goods and enhance efficient handling of perishable products, including in agricultural and pharma sector by creating sufficient storage capacity, minimising wastage and operational cost efficiencies through innovative solutions using modern and environment-friendly equipments.

AISATS' Bengaluru Airfreight Terminal has also received its Good Distribution Practices (GDP) certification for handling pharmaceutical products. With the GDP certification and the AISATS Coolport, AISATS aims to provide world-class and best in-class industry-recognised quality standards in every aspect of its facilities and services and for the environment.

[<Source>](#)

Bengaluru's Chinnaswamy stadium: World's first solar-powered cricket ground

Source Name: Economic Times

This year's edition of the Indian Premier League in Bengaluru will be played on what the state cricket association claims is the world's only solar-powered cricket ground.

The Karnataka State Cricket Association (KSCA) has commissioned a 400-KW solar plant to power the entire M Chinnaswamy stadium, except for the high-intensity floodlights, before the IPL season commences next month. The company executing the project has proposed powering the floodlights too using solar energy as the next step in KSCA's 'go green' mission.

"We are aiming to make this a green stadium," said KSCA honorary secretary Brijesh Patel, a former India cricketer. "It makes economic sense for us to do this, and the additional power we generate will be offloaded to the grid."

The Rs 4.5 crore project, commissioned in February and inspired by Germany's fully solar-powered Freiburg football stadium, is expected to reduce KSCA's power consumption drastically. The state cricket body is headquartered in the Chinnaswamy stadium.

At present, KSCA consumes about 18 lakh units per year. After the solar power project is implemented, it is expected to use about 6 lakh units a year through solar and sell any additional power to the Bangalore Electricity Supply Co grid.

"In a matter of four years, the KSCA will get its returns," said H Nandi, founder of city-based technology solutions firm MRO-TEK that's implementing the project. "It would also be able to generate Rs 70-80 lakh revenue with the power it generates."

MRO-TEK's next target is the floodlights at the stadium. "Each floodlight consumes about 1 MW power, with each bulb carrying 1,000 watts of power. It can be replaced with 200 watt LED bulbs, which we plan to do experimentally without disturbing other floodlights. With this, power consumption would drastically reduce," Nandi said.

[<Source>](#)

Solar Express: Can India's rail network hit its clean energy target?

Source Name: RTCC

India's rail network is a significant growth engine for the economy. But it's not very green. An estimated 60% of its 65,000 kilometres of railway tracks are still powered by diesel. This makes it India's largest consumer of diesel at 2.6 billion litres last year.

It is also the largest consumer of electricity at 13.8 billion kWh and its energy consumption is rising by 5% every year. Electric power in India is largely generated in thermal [coal, gas, nuclear] plants. When the cost of electricity rose by over 45% in the new decade, the government made a decision to source 5% of fuel for the railways from biodiesel.

However, the supply chain did not take off as the government had hoped. The electrification of tracks has also been slow because of the huge investment needed. A solution that works is badly needed, and solar power could well be the answer.

Huge opportunity

Last month the Indian minister for railways, Suresh Prabhu, presented a well-balanced and realistic railway budget in the parliament. His ministry aims to deploy one gigawatt of solar photo voltaic (PV) installations on railway properties across India through subsidies or what he termed 'Viability Gap Funding'.

The first megawatt-scale solar PV installation on a railway platform shelter will be commissioned soon at Katra, in Jammu & Kashmir. The solar industry certainly sees an opportunity here.

Sunil Reddy of Gansun Global solutions, who is setting up the Katra solar project, said that "even at a conservative estimate of 30% feasibility, the Indian Railways has a mammoth five Gigawatt solar PV potential on its platform shelters alone."

Grid parity

Solar power, currently at INR 6–7 per kWh, is already cheaper than, or equivalent to, the cost of grid power in most parts of India.[2] Even for the projects allocated under the second phase of the government mission, known as the Jawaharlal Nehru National Solar Mission, the cost hovered at about INR 6 per kWh. This trend heralds very good news. It translates into a huge potential for direct financial savings on sectors with electrified tracks. So much so, that the viability gap funding with which government intends to support these projects might not be needed at all.

Logistics

Solar power is best utilised when it is generated at the point of consumption, so that transmission and distribution losses are minimal. Solar power critics often discount rooftop solar power, which cannot be properly scaled up because rooftops are often small, and generate just 1-3% of energy requirements.

Rooftops are also often located on leased premises where infrastructure investments are risky. Indian Railways, however, control an enormous network of potential solar power supply points – platform shelters, roofs and even open land. Their consumption points such as trains, stations and other infrastructure are also close at hand.

Excess power can easily be fed into the traction power grid. The logistical hurdles that arise in regular commercial buildings, thus, cease to exist.

Economic benefits

Scaling up dependence on solar power fulfils two of India's pressing objectives: economic development and climate change mitigation. Deploying rooftop Solar PV on Indian railway stations will save money and create thousands of jobs. It will also help in climate change mitigation by avoiding millions of tons of carbon emissions.

Switching to solar power can save valuable millions of dollars of foreign exchange reserves, by avoiding diesel imports. Scaling up its supply will result in economies of scale, and reduce transaction costs. Savings can be used for electrification of new tracks.

The benefits of these savings will trickle down to the millions of people who are dependent on railways.

Market forces

An interesting phenomenon in the Indian energy field is that a number of oil and oil marketing companies are looking at off-grid renewable energy projects through a consortium led by the ministries of renewable energy and petroleum and natural gas. They are probably aware that as more and more tracks get electrified, they will lose their largest customer.

On the other hand, equity requirements for the proposed one Gigawatt of solar PV installations on railway properties will be INR 2,000 crores – 10% of what the oil companies intend to spend on expansion this year.

Hence there is a strong case for these oil companies to enter the market and do more solar projects for the railways.

If India can access cheap developmental financing for these projects – an idea that the government should explore – then the market can expand in leaps and bounds.

The total solar PV installations in India are only about 2.5 Gigawatts. The new government in India is targeting 100 gigawatts of solar power by 2020 and 60 Gigawatts of wind power by 2022, across sectors.

This is a big and bold step in the right direction that has already been hailed positively by environmentalists around the world.

Given this excellent policy environment, the time has come for the Indian Railways to seize the day, and scale up its investment in solar power.

[<Source>](#)

India: Transport, domestic sectors ahead in greenhouse gas emissions

Source Name: IB Times

Transport and domestic sectors were found to be the biggest emitters of greenhouse gases in a study done in seven of India's major cities.

The study, done for the period 2009-2010, shows that while high rise buildings with glass façades, inefficient heating systems and waste mismanagement pushed up emissions from the domestic sector in Kolkata, poor public transport systems in Bangalore and Hyderabad sent vehicular emissions soaring in those cities.

Published in the journal Renewable And Sustainable Energy Reviews, the study puts Delhi on top as the biggest emitter at over 38 billion kg (38 million tonnes) of carbon dioxide equivalent overall emissions, followed by Greater Mumbai at 22.7 billion kg and Chennai at 22.1 billion kg.

Kolkata at 14.8, Bangalore at 19.8, Hyderabad at 13.7 and Ahmedabad at nine billion kg were the other cities whose emissions for the year were calculated sector-wise. Chennai topped the list for emissions per capita as well as for the per GDP figures of CO2 equivalent.

Buildings' consumption up

As more and more high-rises come up in these cities, poor selection of architecture has seen consumption of electricity rising.

"The study shows the zone with glass façade buildings consume electricity of 14000-15500 units per person per year compared to other zones where it is 1300-1500 units per person per year," TV Ramachandra, from the Indian Institute of Science's Centre for Ecological Sciences told IBTimes UK. "This illustrates the damage of bad architecture on the environment - higher electricity means higher GHG," he said.

India has a green building code devised by the Bureau of Energy Efficiency but the code introduced in 2007 is of a voluntary nature. However, the government plans to enforce minimum energy standards for commercial buildings by 2017.

Residential apartments would not fall in its purview. The transport sector accounted for only 13% of Kolkata's total emissions due to an efficient public transport. For Bangalore with a poor public transport network, emissions stood at 43% and for Hyderabad at 56% of overall emissions.

In terms of figures for transport sector, Delhi topped at 12.4 billion kg and Bangalore at 8.6 billion kg of CO2 equivalent.

Transport emissions

Delhi leads the transport emissions chart owing to the large number of vehicles, says the study. As per the statistics of Transport Department in Delhi, the total number of vehicles in Delhi is more than the combined total vehicles in Mumbai, Chennai and Kolkata. Delhi has 85 private cars per 1000 population against the national average of eight private cars per 1000 population.

A shift from car-centric transport to one based on public transport, walking and cycling can reduce carbon dioxide emissions by as much as 1542 megatonnes by 2050, said a report from the Institute for Transportation and Development Policy (ITDP) and University of California, Davis last year.

Transportation is the fastest growing source of carbon emissions globally and accounted for over 2,000 megatonnes of CO2 in 2010. In 1991, there were 20 million vehicles in India. The number had skyrocketed to 140 million in 2011, and by 2030, vehicle population is expected to reach a staggering 400 million.

Waste mismanagement

The study is the first to assess emissions from city wastes in terms of methane released from landfills where waste is heaped without being segregated. Waste-related emissions ranged from 3% of Chennai's GHG footprint to about 8% of Greater Mumbai's GHG footprint.

While seeming insignificant, the figures have to be seen in the context of methane having a 21-fold stronger greenhouse effect than carbon dioxide, as Ramachandra notes. Ramachandra believes there is a need for constant monitoring of greenhouse gases and that controlled growth can be achieved using alternative energy sources like wind and solar in many of the energy consuming sectors.

The study gives the latest emission figures as 2009 is the latest year for which pooled emissions data is available. Ramachandra and colleagues Bharath H Aithal and K Sreejith linked the GHG emissions data with population and economic growth, two factors closely associated with fuel consumption. Aggregation of CO2, methane and nitrous oxide emissions gave the GHG footprint for each city.

India's rank in emissions

In the year 2004, India had last submitted its Initial National Communication to the UNFCCC Secretariat on efforts to assess the greenhouse gas emissions of anthropogenic origin and removal by sinks for 1994 base level. Currently, India is preparing its second national communication to the UNFCCC for the base year 2000.

The IISc study gives the latest figures on emissions from selected cities. India's per capita emissions were still low at 1.9 tonnes in 2013, but its total emissions are next only to China and the US and likely to overtake those of the EU by 2019.

Countries are aiming to reach agreement in Paris later this year on a deal to limit emissions that will come into force from 2020. Unless the global surface temperature rise is restricted to no more than 2C compared with pre-industrial levels, the IPCC has warned that the world will see irreversible catastrophic climate change.

[<Source>](#)

Air Pollution 2015

1 - 3 June, 2015

València, Spain

Air Pollution 2015 is the 23rd Annual Meeting in the successful series of international conferences organised by the Wessex Institute dealing with Modelling, Monitoring and Management of Air Pollution. The conference is being hosted at TRYP València Oceanic Hotel, València, Spain between 1st and 3rd June 2015. The conference topics include Air pollution modeling, Monitoring and measuring, Air quality management, Indoor air pollution, Emission studies, Exposure and health effects and Innovative technologies.

This important conference brings together contributions from scientists from around the world to present recent work on various aspects of air pollution phenomena. The conference shall provide opportunity to foster scientific exchange between participants. This shall also provide platform for new collaborations amongst scientists, and between scientists and policy makers or regulators.

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The Inaugural World Resource Forum Asia-Pacific, is being organized from 1st to 3rd June 2015 along with the Institute for Sustainable Futures at the University of Technology, Sydney and by SMaRT@UNSW. The forum is scheduled to be held at the Aerial UTS Function Centre, Sydney.

The World Resources Forum (WRF) is the global science-based platform for sharing knowledge about the economic, political, social and environmental implications of global resource use. WRF promotes innovation for resource productivity by building bridges between policymakers, researchers, business leaders, entrepreneurs, NGOs and civil society.

The event will be of interest particularly for Researchers, manufacturing and waste industries, policy makers, Government, NGO's, and Consultants etc. It is expected that speakers from various countries like Japan, US, India, Switzerland will give their deliberations at this forum.

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3rd International Conference on Sustainable Development 2015

5 - 6 June, 2015

Piazza della Pilotta, Rome, Italy

The International Conference on Sustainable Development 2015 (ICSD 2015) will be held at the Gregorian University of Rome, Piazza della Pilotta, 4 Rome, Italy organized by the European Center of Sustainable Development.

ICSD 2015 will provide an excellent opportunity to present projects and discuss the latest results in the field of Sustainability Science. The general aim of the conference is to promote international collaboration in Sustainability Science and related disciplines. The attendance of more than 100 delegates from 20 different countries is expected. The Conference theme is creating a unified foundation for the Sustainable Development: research, practice and education. This theme emphasizes the strong foundation that is provided by using research to inform our everyday practices, policies, and research approaches. The theme of the conference is Economic Sustainability, Environmental Sustainability and Socio-Cultural Sustainability.

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The Fifth Asian Conference on Sustainability, Energy and the Environment 2015 (ACSEE2015)

June 11 - 14, 2015

Kobe, Japan

The Fifth Asian Conference on Sustainability, Energy and the Environment (ACSEE2015) is scheduled to be held between June 11th and 14th 2015 at Kobe, Japan. This international and interdisciplinary conference will again bring together a range of academics and practitioners to discuss new directions of research and discovery in sustainability, energy and the environment.

The topics of interest are classified in to various streams viz. Environment Sustainability & Human Consumption, Environment Sustainability & Environmental Management, Cultural Sustainability, Economic Sustainability, Social Sustainability and Social Science, Social Sustainability & Social Justice, Social Sustainability, War and Peace, Social Sustainability & Sustainable Living, and Energy.

Chair person of the conference is Professor Stuart Picken, Chairman of the IAFOR IAB and Key note speakers are: Mr. Lowell Sheppard, Asia Pacific Director, HOPE International Development Agency, Professor Yozo Yokota, Director of the Center for Human Rights Affairs, Japan among other spotlight speakers appear Dr. Alexandru I. Petrisor, Professor Vasile Meita and Dr Craig Mark.

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International Seminar on Renewable Energy and Sustainable Development, 2015 (RES2015)

15 – 17, June 2015

Thimphu, Bhutan

The World Energy and Environment Technology (WEENTECH), is organizing the International Seminar on Renewable Energy and Sustainable Development, 2015 (RES2015). The conference is being organized during 15th June and 17th June 2015. The conference is jointly organized with College of Science and Technology, Royal University of Bhutan and WEENTECH.

This conference will provide platform for researchers and specialists across the globe to disseminate and network on the vital research field of Renewable Energy. The conference will cover various topics but not limited to; • Renewable energy resources • Energy system analysis • Energy planning • Thermal power plants • Energy Efficiency • Renewable heat systems • Life cycle assessment, Environmental impact assessment and Eco-design • Carbon capture and storage/sequestration • Advanced sustainable energy conversion • Biofuels and bio-refineries • Hydrogen production technologies • Waste to energy • Recycling waste • Heat and mass transfer modeling • Energy Storage • Energy efficient appliance • Zero energy and smart buildings • Sustainability methodologies and Sustainable development for innovation • Energy and environmental policy • Transport policy • Water policy and management • Agricultural policy and management.

Speakers from many countries are expected to participate in the conference. Expected speakers at the conference include Adjunct Professor Bob Van Der Zwaan, Dr Tim Sharpe, Dr. Andrew Wright, Prof. Dr. Sümer ŞAHİN, Dr. Sarda Prasad Mohapatra, Dr. Anil Kumar and Prof. Rakesh K Trivedi.

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2015 International Conference on Renewable Energy and Bioenergy (ICREB 2015)

27th to 30th June 2015

Bucharest, Romania

2015 International Conference on Renewable Energy and Bioenergy (ICREB 2015) will be held in Romania during June 27th-30th, 2015. The main objective of this conference is to provide a platform for engineers, academicians, scientists, industrial professionals and researchers from over the world to present the result of their research activities in the field of Renewable Energy and Bioenergy. ICREB 2015 shall provide opportunities for the delegates to share the knowledge, ideas, innovations and problem solving techniques.

The topics of conference include topics related to non-conventional energy, renewable energy, hybrid energy systems, storage technology, energy efficiency, waste and innovations in renewable energy. Keynote Speaker Jean Yves Leveau shall give deliberation on "Filtration and disinfection as tools for controlling air contamination risks".

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The Times of India, Delhi dated February 26, 2015

AIR POLLUTION CONCERNS RISE

Delhi's Air Show Sees a Flurry of Foreign Exits!

US, Japan & Germany may reduce diplomats' tenure to two years

DipanjanRoy.Chaudhury
@timesgroup.com

New Delhi: Embassies of the United States, Japan and Germany are actively contemplating a reduction in the three-year standard tenure for their diplomatic staff posted in Delhi to two years because of concerns over poor air quality in the national capital.

Such a step, officials at these missions hope, will reduce diplomats' and their families' exposure to air pollution levels that have, in the past couple of years, acquired a dubious distinction of being among the highest in the world. But this move could prove to be embarrassing for the Indian gov-

ernment especially at a time it is trying to position itself as a major world power and an attractive investment destination for business. Delhi's steadily deteriorating air quality has been an issue of discussion among several foreign missions for some time now and diplo-

mats have been complaining in closed circles about the ill-effects on their health because of rising pollution, diplomatic sources told ET. A recent meeting of administrators of various missions discussed this issue and it was here that the possibility of the three countries contemplating a cut in diplomats' tenure first came up, said one source familiar with the matter. Spokespersons of the three embassies declined comment.

Diplomatic sources said if these three countries went ahead with their plan of curtailing diplomats' tenure, some other European countries could follow their lead and resort to similar action.



CHOKED UP IN POLLUTED DELHI: Is the Aam Aadmi CM's persistent cough symptomatic of the Capital's worsening air quality?

Missions Taking Unusual Steps >> 12

Missions Taking Unusual Steps

>> From Page 1

Delhi has the world's highest levels of PM2.5 - tiny, toxic particles that lead to respiratory diseases, lung cancer and heart attacks. The Indian capital averaged 153 micrograms per cubic metre in 2013, the World Health Organization said last May, citing government data. That's 15 times more than the average annual exposure recommended by the WHO. The country as a whole is home to 11 of the top 20 cities on the planet with the worst air quality, WHO data shows.



For instance, the UK, a close ally of the USA, has a different approach to rising pollution levels.

"All British diplomats make an informed choice about which postings to apply for: They all are given information on local living conditions, including air quality. Delhi remains a popular posting and UK has no difficulty attracting the best talent despite the air quality," a senior UK government source told ET. This source pointed out that Delhi's air pollution is not a new challenge and diplomats who have been posted in Beijing too face the same test. The Indian government too declined to comment, with the ministry of external affairs not firming up a view on a hypothetical scenario. "It is the call of some embassies if they want to curtail tenures of the diplomats. Tenures depend on individual countries and individual diplomats. There are diplomats in Delhi who have spent several years at a go. There are also instances when diplomats of some countries are back at regular intervals. There are also examples when a diplomat has been posted in Delhi twice or thrice in his or her career," one MEA official pointed out on condition of anonymity.

Delhi's worsening air quality already has many missions resorting to unusual steps to mitigate its impact on the health of their staff. Japanese diplomats are given longer annual breaks on Delhi postings - India joined the ranks of China and some African countries where breaks are longer to recoup from high pollution levels. The US embassy in Delhi imported hundreds of air purifiers during President Barack Obama's visit to the Indian capital last month. The European Union's mission in Delhi has also installed air purifiers in the offices and residences of its diplomats. Last week the US announced it was expanding an air quality monitoring program it started in Beijing years ago to other cities around the world, starting with India. Under this program called AirNow, US missions will monitor air quality in host cities and countries to help personnel take better care of themselves.

A DIFFERENT APPROACH

While these three missions contemplate tough steps, others view the issue differently.

'20kl free water is nothing but a waste of resource'

Times News Network

New Delhi: The AAP government's decision of providing 20,000 litres of free water to each household per month will result in a gross waste of this precious resource, claim experts. This will mean each person in a family of four will be entitled to about 166 litres of free water per day. Since the per capita need is not so high, 80-70 litres per day is sufficient, they say.

They also raise concerns as to where will the government source water from and how it will manage the excess water that will be generated.

The water distribution pattern in Delhi is already quite skewed. "Our study has shown that parts of Lutyens' Delhi get about 500 litres per capita per day (LPCD) while places like Mehrauli get only 22 LPCD. You can see people washing their SUVs with DJB water. But the real per capita need is obviously much lower than 500 LPCD. A more realistic LPCD figure needs to be worked out," said Sushmita Sengupta of Centre for Science and Environment's (CSE) water programme unit.

COST TO ENVIRONMENT

- > 50% of Delhi-NCR has no sewerage
- > Untreated sewage flows into Yamuna
- > Free water to colonies without sewerage will further pollute Yamuna
- > Further, 50% treatment plants underutilized: sewage simply doesn't reach the plants
- > Govt may have to extract more groundwater to keep promise
- > This'll cause both depletion & pollution as no scope for dilution of pollutants.



The other issue Sengupta is worried about is how AAP will fulfil its promise when there is already a demand-supply gap. "It may be done through groundwater extraction, but this is also not sustainable," she added. CSE recommends implementing rainwater harvesting on a large scale. According to its analysis, volume of rainwater that can be generated from the city is approximately 56 billion cubic metres annually.

Some environmental groups said they didn't expect such an "unsustainable promise" from the AAP government. "While there is certainly a case for highly subsidized water supply for the

poor, it is nothing short of a social crime to supply free water to those who can pay," said a statement from Yamuna Jiye Abhiyan (YJA). In 2013, critics had ripped apart AAP's claim of providing 700 litres of free water per household per day. They had urged the CM to revise the amount to 50 LPCD.

Vikram Soni of Jamia Millia University said the government's move will add to the city's air and water pollution. "Such policies will further aggravate air and water pollution. For instance, will they deliver so much water in tankers to those who don't have supply? Will that not add to air pollution?"

Delhi Most Polluted Among 16 NCR Cities: CPCB Study

Urmi.Goswami@timesgroup.com

New Delhi: India's top pollution monitoring body, the Central Pollution Control Board, has said in a report that Delhi has the most polluted air among 16 cities in the National Capital Region. However, all cities in the NCR exceed the national permissible standards for the crucial pollutant, particulate matter, according to the CPCB.

Delhi has the dubious distinction of topping the charts with the highest levels of nitrogen dioxide, sulphur dioxide, benzene and carbon monoxide. As far as particulate matter (PM) or tiny particles of various sizes suspended in air are concerned, the CPCB measured the levels of PM10 and PM2.5.

The board provided data for 16 of the 19 cities that make up the NCR.

PM are very small particles made up of different organic and inorganic components - the major constituents include acids (sulphate and nitrates), ammonia, sodium chloride, black carbon, water and mineral dust - which originate from various sources that pollute ambient air. The measurement of PM is done as it is widespread and affects more people than any other air pollutant. It affects the cardiovascular and respiratory systems and has consistently been shown to be dangerous to human health.

The CPCB report revealed that levels of PM10 or particulate matter of the size of 10 micrometres in all 16 cities exceed the



daily permissible levels set in National Ambient Air Quality Standard, which is set at 100 micrograms per cubic metre. PM2.5 is currently monitored in four of the 16 cities - Delhi, Faridabad, Gurgaon and Rohtak. In all four, the levels exceeded safe levels of 60 micrograms per cubic metre (in a 24-hour average) set in the NAAQS. The World Health Organisation's safe level is 10 micrograms per cubic metre.

These findings are in line with a study by environmental economists of University of Chicago, Harvard and Yale published last week in the Economic and Political Weekly. The study by the

team led by Michael Greenstone of the University of Chicago submitted that 54.5% of the population, live in areas where the level of pollution exceeds the limits set out in NAAQS and that almost every Indian (1,204 million or 99.5% of the population) breathes air which has pollutants way above than the levels considered to be safe by the World Health Organisation.

Meanwhile, on Thursday, the Delhi Transport Corporation was reprimanded by the National Green Tribunal for failing to submit a compliance report on inspection of its buses by a joint team of CPCB and Delhi Pollution Control Committee.

"Give us one bus that has been inspected pursuant to our directions. Provide us at least one report complying with our order. Who checks these buses? If the bumper of a DTC bus is loose, it remains so for months. Let us not deceive ourselves. Even CNG emissions have to be within permissible limits," a bench headed by the green tribunals' chairperson Justice Swatanter Kumar said.

Ozone and carbon monoxide levels were monitored in Delhi, Faridabad, Gurgaon and Rohtak. While ozone levels in Delhi exceed national standards, all four cities had higher than permissible carbon monoxide levels.

The CPCB submitted its analysis of ambient air quality in the NCR and surrounding areas as part of the hearing on a petition by Vardhaman Kaushik before the National Green Tribunal.

Green Steps Find Place in Survey



The Economic Survey acknowledges the significant "green" steps the government has taken, moving away from a regime of carbon subsidy to one that puts a price on carbon emissions. Through policy interventions - increasing the cess on coal, cutting subsidies and increasing taxes on fossil fuels (petrol and diesel) - and re-emerging the renewable energy sector, the government has been able to take steps that reduces the carbon footprint of the economy. But this, the Survey points out is only the beginnings, as there are potentially large gains that can still be achieved by reforming coal pricing and further reforming of petroleum pricing policies.

These efforts would help the government to play an active role in international climate negotiations, especially as the world works towards the new global climate pact due to be signed in Paris this year. The Survey says that India should address the developing nations' needs, including access to financial resources and clean technologies.

The Survey describes 2015 as likely to be momentous with the world set to witness a new climate agreement, "As we put our acts together towards a

post-2015 agreement on climate change, it is absolutely critical to ensure that the new agreement is comprehensive, balanced, equitable and pragmatic." The agreement should address the genuine requirements of developing countries like India by providing them equitable carbon and development space to achieve sustainable development and eradicate poverty, it said.

To achieve this, the Survey said that adherence to the principles and provisions of the

UN Framework Convention on Climate Change is critical. "Importantly, global climate action rests heavily on the means of implementation, especially finance and technology, and the agreement should adequately address this," it said.

The survey states that political awareness on the issue of climate change and sustainable development both in the international arena and on the domestic front has risen considerably. "Many developing countries including India have made considerable progress in tackling climate change issues." Noting that India is one of the early adopters of a national climate change plan (NAPCC), the Survey said the country is now revisiting the National Missions under the NAPCC in the light of new scientific information and technological advances.

A green goal, but can't give up coal

Team TOI

India will move on a low-carbon growth path by imposing "significantly higher tax" on petrol and diesel and re-emerging the renewable energy sector.

But the country expects the world to devote more resources to coal technology research so that this resource

"The move for a substantial carbon taxation combined with the ambitious solar power programme suggests that India can make substantial contributions to the forthcoming Paris negotiations on climate change," the Survey said.

Referring to a possible climate deal later this year, it emphasized that the agreement should address the genuine requirements of developing countries by providing them "equitable carbon and development space to achieve sustainable development and eradicate poverty".

"If India is to focus on becoming green, correspondingly, the world must devote more resources to coal technology research. That means greater international public investment in R&D for improving coal technologies," the Survey said. It pointed out that India has increased coal cess from Rs 50 per tonne to Rs 100 per tonne - equivalent to a carbon tax of \$1 per tonne.

DID YOU KNOW?

There is an incremental need for 120 million skilled people in the non-farm sector between 2013-2022, says India's skilling agency NSDC

can be used in a cleaner way. India will push for solar power but will continue to use coal, albeit in cleaner ways.

The government gave a clear indication of this in the Economic Survey 2014-15, which enlists measures taken to cut carbon emission and move on a clean energy path.

The Economic Times, Delhi dated February 27, 2015

The Economic Times, Delhi dated February 28, 2015

The Times of India, Delhi dated February 28, 2015

The Times of India, Delhi dated March 01, 2015

Power of five will light up energy sector

TEAM TOI

It's plug-and-play time on a green turf for the power sector. Five showcase projects, higher pollution tax on coal and a big push to renewable energy sources mark the government's formula for powering economic growth.

The formula fits with the government's promise to guarantee 24x7 power supply in the next few years. The five new ultra-mega power projects — with all clearances and fuel allocations ready before being bid out — create a captive market for a billion-tonne coal production in the next few years. And the target

of 1,75,000MW renewable energy capacity by 2022 would help India shine at the Paris climate talks, scheduled for December, on the roadmap to cut its carbon footprint.

The proposed doubling of green cess on coal from Rs 100 per tonne to Rs 200 for funding investment in renewable sources and clean coal technology for power plants bolsters India's claim that it is serious about reducing greenhouse gas emissions, but at its own pace. However, some unanswered questions remain.

KPMG's Manish Agarwal doubts whether the power sector has the financial capacity to invest in the



HERE COMES THE SUN

five new showcase projects totalling 20,000MW.

This doubt is natural, given that the financial sector is

stressed over 16,000MW gas-fired generation capacity idling for want of fuel. The mode of drawdown of coal

cess so far accumulated and expected to be mopped up has not been described.

Solar power is to have the lion's share of the renewable energy target at 1,00,000MW, followed by 60,000MW of wind energy, 10,000MW biomass and 5,000MW of small hydro projects of up to 25MW each. Solar power generation capacity right now stands at 3,000MW, accounting for 6.5% of the electricity mix.

Power minister Piyush Goyal has said that India's renewable energy sector plans to attract \$200 billion in investments as many domestic and international firms have shown interest in tapping the potential of green power.

The Times of India, Delhi dated March 01, 2015

China rolls out world's first hydrogen-powered tramcar

Beijing: The world's first hydrogen-powered tramcar has rolled off the assembly line in China's eastern Shandong Province.

Liang Jianying, chief engineer of Sifang Co, a wholly-owned subsidiary of China South Rail Corporation, said on Thursday the new tram is the only hydrogen powered vehicle in the field and makes China the only country to have mastered the technology.

Hydrogen fuel cells are a new clean energy source, widely used in the automobile industry, but lagging behind in the field of rail transit. "It took two years for Sifang to solve key technological problems, with the help of research institutions," state-run Xinhua news agency quoted Liang as saying without mentioning when the tram would be operational.

The tram can be refilled with hydrogen in three minutes and can then run for 100km at speeds as high as 70 kmph. "The average distance of tramcar lines in China is about 15km, which means one refill for our tram is



© John Harper/Corbis

The tram can be refilled with hydrogen in three minutes and can then run for 100km at speeds as high as 70 kmph

enough for three round trips," Liang said, adding the overall running costs will be greatly reduced. Each tram has over 60 seats and can carry 380 passengers. 71

The Times of India, Delhi dated March 02, 2015

'Budget mum on air pollution curbing'

Could Have Allocated Funds To Upgrade Air Quality Monitoring Infra: Experts

TIMES NEWS NETWORK

New Delhi: The Union Budget on Saturday failed to make any allocations or fiscal measures to control air pollution. After the World Health Organization's (WHO) urban air quality database last year showed Delhi and 12 other Indian cities to be among 20 most polluted in the world, a number of other publications also raised concerns about extremely poor air quality in India.

Experts said the least this budget could have done was to give excise duty on petrol and diesel to fund implementation of superior quality fuel (Euro IV and Euro V) instead of allocating it for developing roads. They added that the budget could have allocated funds to upgrade air quality monitoring infrastructure and public transport in cities. Some felt taxing SUVs could have helped reduce dependence on private vehicles and create a fund for public transport instead.

"I am disappointed with the budget. Under the Green India head, it has nothing about air pollution. The excise duty on petrol and diesel could



TOXIC AIR: WHO urban air quality database showed Delhi to be among 20 most polluted cities in the world

have gone to the refinery sector so that Euro IV could be implemented immediately. It's a lost opportunity. Taxing SUVs could have helped deal with pollution. Diesel is deregulated but continues to be cheaper than petrol contributing to air pollution," said Sunita Narain, head of Centre for Science and Environment.

The clean energy cess has

been increased from Rs 100 to Rs 200 per metric tonne of coal to "finance clean environment initiatives," but experts are not sure how the fund will be used. "Increasing the clean energy cess is a good idea. But the cess funds are sitting with the finance ministry for the last 6-7 years. Our proposal is that they use the fund to clean coal and upgrade thermal plants,"

said Chandra Bhushan, deputy director general, CSE.

Another area where India is lagging behind is monitoring air quality. Only 16 cities have automatic air quality monitors. In NCR, other than nine automatic stations in Delhi and three in Haryana, all stations in UP and Rajasthan use "obsolete" manual technology. Each automatic moni-

“There is nothing in the budget to counter air pollution in cities like Delhi. No step such as taxation on big vehicles, or promoting public transport and pollution control technologies in vehicles has been taken

CHANDRA BHUSHAN | CSE

toring station costs Rs 1 crore. "It is important to immediately install real-time air quality monitors so that solutions to bring levels within safe standards can be developed," said a scientist working for an air quality monitoring agency Sarath Guttikunda, director of urbanemissions.info, also felt a part of the duty on petrol and diesel can be used for "air quality monitoring and dissemination" in cities. The only allocation for clean transport was extending concession on custom and excise duty on electrically-operated and hybrid vehicles till 2016.

The Times of India, Delhi dated March 03, 2015

Air so clean, Obama would have liked it

TIMES NEWS NETWORK

New Delhi: It's probably the best time to be outdoors in the city. After inhaling highly-polluted air for months, Delhiites seem to be breathing easy with PM 2.5 (fine, respirable particles) levels remaining within the safe limits. The sudden spell of showers on Sunday and Monday washed out the suspended particles from the air, a rare phenomenon in Delhi.

The rain, however, has no impact on other polluting gases such as sulphur dioxide (SO₂), oxides of nitrogen and others. "For the first time in the past five months, all particulate matter levels have come down to the green category. There will be good air quality on Tuesday and Wednesday too, according to our forecast model. Even ozone levels are low due to the overcast sky as production of ozone is dependent on sunlight," said Gufran Beig, project director, Systems of Air Quality Weather Forecasting and Research (SAFAR).

The pollution had been at the "severe" level—four to five times higher than the standard—in recent months.



BREATHE DEEP NOW! And not just at the end of the rainbow



An analysis of Delhi's real-time air quality data by the Centre for Science and Environment showed that 65% of days in December had recorded "severe" or "hazardous" level of pollution. Last year, a report by the World Health Organization found Delhi to have the most polluted air among 1,600 cities.

According to Delhi Pollution Control Committee's real-time air quality monitoring levels at Panchsheel Bagh, PM 2.5 levels ranged from 17 microgram per cubic metre to 25 microgram per cubic metre from 10.30am to 3.30am on Monday but levels rose again during peak traffic hours after 5pm when levels rose to 135 microgram per cubic metre.

At Mandir Marg too, PM

2.5 levels ranged from 25 to 60 microgram per cubic metre between 10.30am and 4.30pm. Delhi's 24-hour average PM 2.5 level on Monday was about 45 microgram per cubic metre, according to monitoring by SAFAR under the ministry of earth sciences.

Higher PM 2.5 levels are linked to several respiratory and cardiac conditions, including acute bronchitis, asthma complications, chronic obstructive pulmonary disease (COPD) and others. It can also cause arrhythmias and ischaemic heart disease. Arrhythmias is a disorder characterized by irregular heart beat or abnormal heart rhythm while ischaemic heart disease is associated with reduced blood supply to the heart.

The Economic Times, Delhi dated March 03, 2015

AIR POLLUTION Behaviour Change as Important as Technology

Advanced technology can clean up the air, but only when coupled with change in people's behaviour

Delhi tops the charts in the world in terms of air pollution, but the city has good company. Out of the 20 most polluted cities in the world, 13 are in North India, many of them not far from Delhi. Vehicular traffic is considered the main reason behind air pollution in Delhi, but are there other equally important factors as well?

Look at a completely different set of data: Cancer rates in Punjab. At 90 patients for every 1 lakh people, this state has higher cancer rates than the national average. Pesticide exposure is often blamed as the primary cause, but there are other hidden factors as well. For example, in the past few decades, Punjab farmers have been burning crop residue like never before. This increases the amount of particles and carcinogens in the atmosphere, and they travel long distances. "We have found high concentrations of carcinogens like benzene," says Vinayak Sinha, assistant professor of earth sciences at the Indian Institute of Science Education and Research in Mohali.

Vehicular pollution is high enough in Indian cities, but burning of waste — crop residue as well as municipal solid waste — is another important factor behind the high levels of pollution in Delhi and other nearby cities. And neither shows any signs of abating. Emission norms for vehicles are im-

Vehicular pollution is high in Indian cities. Burning of crop residue as well as municipal solid waste is another factor behind the high levels of pollution

proving rapidly, and Bharat V norms are quite stringent even by developed country standards. And yet, they would do little to reduce pollution unless other factors improve simultaneously: phasing out of old vehicles, improving traffic flow, and stopping of burning waste.

Burning of waste is a national problem. As the accompanying article shows, there are no easy solutions to solid waste accumu-

lation. Poor traffic flow contributes to pollution in cities. In a study at the Indian Institute of Technology in Guwahati, professor of Civil Engineering

Sharad Gokhale found significant improvements in pollution during free flowing traffic, and also significant differences depending on the proportion of petrol and diesel vehicles. "We can reduce 15-20% of pollution in cities by mere traffic flow management," says Gokhale.

As far as emissions from cars are concerned, improving fuel and vehicle emission standards will reduce pollution significantly. There is a big leap technologically from Bharat IV to Bharat V, and vehicles are improving their performance not just through engine improvements. It may take some time for Bharat V norms to be implemented, but they are a considerable advance over Bharat IV, which itself has not been implemented throughout the country. For example, Bharat V norms demand the use of diesel particulate matter filters and require the use of direct injection of diesel.

Cars are in any case becoming lighter and thus more fuel efficient. The current Budget has some measures encouraging electric vehicles, but the country's electric grid may not be able to handle a large population of electric cars. Fuel cell cars might come one day, but not in the foreseeable future. "Unless there is a breakthrough soon, the internal combustion engine will be predominant for another 15 years," says CV Raman, executive director of engineering and R&D for Maruti Suzuki.

Air pollution

Some facts

13 of the world's most 20 polluted world cities are in India

Delhi is the world's most polluted city

Every Indian loses at least 3 years due to pollution

Air pollution is the fifth leading cause of death in India

Pollution cuts crop yields by 50% in some places

TECHNOLOGY NOT THE KEY FACTOR

Reducing diesel vehicles can cut particulate matter emissions

Phasing out older vehicles can reduce emissions significantly

Bharat V emission norms mandate particulate matter filters that will cut pollution further

Burning of plant and plastic waste can have an immediate benefit

Sources: Government of India, World Bank, IIT Guwahati, a study in Economic and Political Weekly, Ranjith Annepu

The Economic Times, Delhi dated March 03, 2015

Clean water

Some facts

Urban population in India now
400 million

Urban population in 2030
600 million

Clean water requirement for urban India
135-150 litres per person per day, according to current usage patterns

WATER IS CONTAMINATED:

Less than 20% of waste water in the country treated
Untreated waste water flows freely into rivers
60% of the country dependent on septic tanks that can pollute ground water
Major cities do not have enough sewage treatment, with the partial exception of Mumbai and Delhi
India has the capacity to treat only 30% of urban sewage

GOOD TECHNOLOGY CAN SOLVE THE PROBLEM

The Moving Bed Membrane Bioreactor (MBBR): Gaining popularity as an advanced water treatment technology, MBBR uses biological techniques to treat waste water. It consists of a tank with a submerged plastic plate where bacteria grows and cleans up the waste water. It is supposed to be a durable and low-cost option, and is spurring further research into biological techniques

TOILETS

One-third of the world population does not have access to toilets.

Constructing toilets for everybody in India is not an easy problem to solve, as the technology has to be affordable, aligned to local culture and work well for long periods. Many technologies exist and several others are emerging, and here are a few low-tech and high tech options

Biodegradable bags: Known as Peepoo bags, these are among the simplest options imaginable. This single-use bag contains urea that will sanitise waste in four weeks. The degrading bag then releases the waste into the soil. Popular in developing countries but not in India, probably due to cultural reasons

Pit latrines and septic tanks: A good choice in remote areas where the water table is very low. Not a good

option when the water table is high or keeps fluctuating. Three-fourths of wells in Kerala – considered a state with high standards of hygiene – are contaminated because of proximity to septic tanks

Zero discharge toilet: Developed by IIT Kanpur some time ago, and being used in some places including the railways, this separates and reuses the solids and liquid parts of the waste. Requires no power or sewerage lines and can be used as standalone facility

Off-grid treatment: IIT Madras is developing an off-grid sewage treatment plant that uses solar power when available. This is in pilot trials

Centralised sewage treatment: A good option in large apartment complexes or congested areas. Many new technologies are emerging, some of them high tech but expensive

SHARAD GOKHALE
PROFESSOR OF CIVIL ENGINEERING AT INDIAN INSTITUTE OF TECHNOLOGY, GUWAHATI

We can reduce 15-20% of pollution in cities by mere traffic flow management

RANJITH ANNEPU
SOLID WASTE MANAGEMENT CONSULTANT

Waste-to-energy plants can be considered a good medium-term solution. Its main goal is to destroy waste and not to sell power



SOLID WASTE

No Technology for Peculiar Indian Conditions

Uniqueness of Indian waste means that technology is yet to be developed

A large metropolis is a good place to study the magnitude of the problems of solid waste management in Indian cities. In Bengaluru, now often called the garbage city, lorries collect and carry solid waste far out from the city and dump or bury them in open grounds. These malodorous landfills and dump yards emit toxic gases and pollute the ground water. The city is still looking for good places to dump wastes. Sometimes, for no apparent reason, garbage dumps sprout by the side of the streets.

Experts cite many reasons why Bengaluru has such a crisis of waste accumulation. For example, lorry owners have process contracts but are just transporting the waste. Sound regulations and management could reduce the crisis in the city a bit, but the big problem would remain and not go away: there is no technology that can handle such a heterogeneous collection of wastes. "India needs extensive R&D with high investment to solve the solid waste problem," says Absar Ah-

mad Kazmi, professor of civil engineering at the Indian Institute of Technology in Roorkee.

Kazmi has been researching on solid waste management, and is convinced that it is a most difficult problem to solve. Indian waste differs in composition from place to place, and no one in the world has found a technology appropriate to handle any kind of waste. No expert considers landfills a solution. Recycling is hard, as sorting is not done at source and mechanised sorting is inadequate and expensive. "The only way out is decentralised handling of waste with segregation at source," says Kumar Suba Rao, founder of Aruna Green Ventures, a company that makes products to recycle organic waste.

Kumar, who had worked in the waste management industry in Canada for over two decades, feels segregation at source has to be implemented through legislation. About half of Indian waste is organic, and hence can be used for composting and as manure. Plastics, although a small part of the

waste, do present a problem as they do not degrade. Scientists have found bacteria that can degrade plastics, but no such plant exists even on a small scale. One day, synthetic biologists could engineer an organism capable of converting plastic into harmless constituents, but at the moment there are only two ways to handle them: recycling or incineration.

In recent times, incineration in a Waste to Energy (WTE) plant is being touted around the world as a solution to handling waste. Many environmentalists criticise this procedure; that it creates too many nanoparticles or that it

gives an incentive to produce more waste. However, WTE has its champions too, who say that good pollution control measures can reduce the nanoparticle levels to well below that of coal plants. "Waste-to-energy plants can be considered a good medium-term solution," says Ranjith Annepu, a solid waste management consultant. "Its main goal is to destroy waste and not to sell power."

In the Indian context, however, the process is not easy to implement. Pollution control devices are expensive. The plant may not recover enough money through selling power as Indian waste does burn well and produce high amounts of energy. And yet, since there is no good alternative at the moment, large cities have no option but to use them at a high cost. Reduce the waste we generate, and the plant becomes more expensive to run. Increase the amount of waste, and we spend more money on pollution control. No wonder solid waste is a hard problem to solve.

Some facts:

70 million tonnes per year
Solid waste generated in urban India

920 tonnes
Waste generation in the next ten years

820 million tonnes
Waste dumped in landfills in business-as-usual scenario

COMPOSITION OF INDIA'S SOLID WASTE:

51% organic matter (food waste, vegetable and fruits)

17.5% recyclables (plastic, paper, metal)

31% inert (stone, silt, ash)

CONVERTING RESOURCE INTO POISON:

Landfills generate toxic fumes and carbon dioxide
Composting of mixed waste introduces toxic metals into the food chain
Burning plastics and other waste exposes people directly to dioxins and furans, among toxic compounds on earth
Burning also produces particulate matter and other pollutants
Millions of tonnes of plastic enter the oceans and degrade, coming back to human food chain through fish

TECHNOLOGY STILL IMPERFECT BUT IMPROVING

Landfills can be mined and metals and minerals recovered
Gas from landfills can be burned for energy
Sorting technology improving with optical recognition and RFID tags
Waste-to-energy plants can tackle non-recyclable waste in the short term, but require good pollution control devices
In the future, engineered microorganisms will take over from WTE plants

WASTE-TO-ENERGY PLANT:

Environmentalists are divided about the benefits of waste-to-energy (WTE) plants. They say the plants create dangerous nanoparticles, provide an incentive to produce more waste, and make people produce things that should not have been made in the first place. Other environmental engineers say nanoparticle emission can be controlled to below that of coal plants, and that it's better than dumping waste in landfills. Good WTE plants are not cheap either

The Times of India, Delhi dated
March 04, 2015

First round-the-world solar flight to stop at Ahmedabad, Varanasi



Starting From Abu Dhabi, Solar Impulse 2 Will Chart 35,000-Km Route Without A Drop Of Fuel

Raja.Bose@timesgroup.com

2,300kg
Largest aircraft with such a low weight

27,000ft
Maximum cruising altitude

140km/hr
Maximum speed at max altitude

25 flight days
spread over five months

72m
Wing span wider than Boeing 747



Will halt in Ahmedabad for four days; an 8-10 hour pit stop in Varanasi

- Sexy #SolarTeam keeping #SI2 secure while batteries are being #sun charged
- During the reassembly, #batteries were loaded into gondolas, #motors mounted directly in front
- Tracking power generated by #solar cells; mission engineers on-site in #AbuDhabi ...

If @SolarImpulse is buzzing with tweets, it has a reason. The handle belongs to an aircraft that is all set to make a unique round-the-world journey: totally powered by solar energy. Solar Impulse 2, which weighs as much as a car at 2,300kg, will begin its trip in a few days, making stopovers at Ahmedabad and Varanasi in India, after taking off from Abu Dhabi. The probable launch is on March 8, but will depend on weather conditions. From Varanasi, it will fly to Mandalay in Myanmar and Chongqing in China before reaching the US.

Adventurer Bertrand Piccard, one of the first balloonists to circle the earth, and MIT graduate Andre Borschberg — the

Swiss co-founders and pilots of Solar Impulse 2 — will fly 35,000km day and night across the world, with stopovers at just 12 locations, without using a drop of fuel.

"We want to demonstrate that clean technology and renewable energy can achieve the impossible. We want youth, leaders, organizations and policy-makers to understand that what Solar Impulse 2 can achieve in the air, everyone can accomplish on ground in their everyday lives. Renewable energy can become an integral part of our lives," said Piccard.

The \$150m project took 12 years of feasibility studies, design and construction. While the Solar Impulse 2 was put together in Payerne in Switzerland, its crew comprising 80 technicians and engineers are camping in Abu Dhabi since January.

"Our first goal is not to transport passengers. The Wright brothers too did not have the technology to fly passengers. The idea is to use modern technology to reduce

the energy lost by use of old technologies," Piccard told TOI in Payerne, at the Solar Impulse Centre, in October last year.

He was categorical there was no politics in the flight's stopovers — Ahmedabad in Gujarat, where Prime Minister Narendra Modi belongs to and Varanasi, the constituency he represents in Lok Sabha — in India. It was tailwind rather than politics, he joked. "I had met Modi twice in Ahmedabad. However, it was purely meteorological reasons why these cities were chosen," Piccard had told TOI.

"It is not the first solar airplane. It is the first that is able to cross oceans and continents, remaining in air for several days and nights without landing. Solar Impulse 2 will do what no other plane in aviation history has achieved — flying without fuel for five consecutive days and nights with only one pilot in the unpressurized cockpit," said Borschberg.

"We know how to take risks and like to think nothing is impossible. We will spread this message throughout the aircraft's voyage," said Christophe Navarre, chairman and CEO of Moët-Hennessy, another Solar Impulse partner.

Till now, Solar Impulse has made a number of test flights including a 26-hour flight in July 2010 with nine hours of night flying, an inter-continental 19-hour flight from Madrid to Pabst in Morocco and a cross-US flight from California to Arizona.

The Times of India, Delhi dated
March 04, 2015

'Climate change helped trigger Syrian uprising'

Severe Drought Led To Mass Migration From Rural To Urban Areas, Adding To Social Stress: Study

Henry Hoerling

Drawing one of the strongest links yet between global warming and human conflict, researchers said on Monday that an extreme drought in Syria between 2006 and 2009 was most likely due to climate change, and that it was a factor in the violent uprising that began there in 2011.

The drought was the worst in the country in modern times, and a study published on Monday in The Proceedings of the National Academy of Sciences, the scientists laid the blame for it on a century-long trend toward warmer and drier conditions in the eastern Mediterranean, rather than on natural climate variability.

The researchers said this



FROM WARMING TO WAR: What began as a civil war has since escalated into a multifaceted conflict, with at least 200,000 deaths

trend matched computer simulations of how the region responds to increases in greenhouse-gas emissions, and appeared to be

due to two factors — a weakening of winds that bring moisture-laden air from the Mediterranean and hotter temperatures that

cause more evaporation.

Colin P. Kelley, the lead author of the study, said it found that while Syria and the rest of the region known as the 'Fertile Crescent' were normally subject to periodic dry periods, "a drought this severe was two to three times more likely" because of the increasing aridity. Kelley, who researched while at Lamont-Doherty Earth Observatory and is now at the University of California, said there was no apparent natural cause for the warming and drying trend, which developed over the last 100 years, when humans' effect on climate has been greatest.

Martin P. Hoerling, a meteorologist at the National Oceanic and Atmospheric Administration whose earlier work showed a link between climate change

and aridity in the eastern Mediterranean, said the researchers' study was "quite compelling."

"The paper makes a strong case for the first link in their causal chain," Hoerling said in an e-mail, "namely the human interference with the climate so as to increase drought likelihood in Syria." Some social scientists, policy makers and others have previously suggested that the drought played a role in the Syrian unrest, and the researchers addressed this as well, saying the drought "had a catalytic effect."

They cited studies that showed that the extreme dryness, combined with other factors, including misguided agricultural and water use policies of the Syrian government, caused crop failures that led to the migration of as many as 1.5

million people from rural to urban areas. This added to social stresses that eventually resulted in the uprising against Bashar al-Assad in March 2011.

What began as a civil war has since escalated into a multi-faceted conflict, with at least 200,000 deaths. The UN estimates that half of the country's 22 million people have been affected, with more than six million having been internally displaced.

The researchers said that there were many factors that contributed to the chaos, including the influx of 1.5 million refugees from Iraq, and that it was impossible to quantify the effect of one event like a drought. The US military has described climate change as a "threat multiplier" that may lead to greater instability. www.foxnews.com

The Times of India, Delhi dated
March 08, 2015

In fight for clean air, Beijing outguns Delhi

TIMES NEWS NETWORK

New Delhi: Delhi may draw favourable comparisons with smog-hit Beijing every now and then but the latter has beaten Delhi in addressing air pollution, a Greenpeace analysis released on Saturday said.

While Delhi's total number of "bad air" days in 2014

have far outnumbered Beijing's, it has no concerted plan to combat the problem. Beijing has put in place a time-bound action plan to meet the safe air quality standard by 2030 and a stringent short-term response plan with health advisories and a four-level alarm system which includes closing of schools, fac-

tories and cutting down the number of cars on roads, depending on pollution levels.

Beijing is also working towards bringing down its average PM 2.5 (fine, respirable pollution particles) levels to 60 micrograms per cubic metre from the current level of 89 microgram by 2017.

Greenpeace campaigners

also found that Delhiites faced a higher health risk compared to residents of Beijing: a 20-25% increased risk of lung cancer; 10% to 15% increased risk of chronic respiratory diseases and a 5% increased risk of ischaemic heart disease.

► 5-yr action plan, P 5

Beijing has 5-year action plan but Delhi yet to accept crisis

► Continued from P1

The increased health risk was thrown up by Greenpeace's health impact modelling exercise based on a methodology developed by the Global Burden of Disease study 2010.

Unlike Delhi, Beijing's continuous monitoring stations have live, downloadable data for all days. The monitoring stations run by Delhi Pollution Control Committee (DPCC) had no data for 56 days in 2014.

The Central Pollution Control Board reported Delhi's average PM2.5 level in 2013 to be 153 microgram per cubic metre, based on hourly measurements at six stations. This is 15 times the World Health Organization (WHO) guideline and 3.8 times the national safe standard. "Delhi's average is also 80% higher than the average in Beijing, where pollution regularly makes national and international headlines and has led to exceptionally strong action to limit use of cars, industrial emissions and emissions from coal in particular," a statement released by Greenpeace India on Saturday said.

"Beijing, unlike Delhi, has a five-year action plan in place to protect its citizens from harmful air. It is appalling to see the union minister for environment, Prakash Javadekar, recently dismiss any need for precautionary measures such as masks or school closures on heavy pollution days," it said.

The Greenpeace India statement further stated, "the government needs to show that it cares for its citi-

BEIJING & DELHI DO IT DIFFERENTLY

PARAMETERS	BEIJING	DELHI
PM 2.5 average 2013	89.5mpcm	153mpcm
National air quality	35mpcm	40mpcm
Bad air days in 2014	45	102
Good air quality days	111	7
Days with data missing	0	56
Monitoring stations (with accessible data)	all	3
Pollution levels last week	90 to 100mpcm	130 to 160mpcm
Near-term target	60mpcm by 2017	none
Deadline to meet safe standard	2030	none
Emergency action on high pollution days	Stringent action, along with health advisory & 4-level alarm system	none
National action plan	yes	none



HEALTH RISKS IN NCR

YEAR	2008	2010
Total mortality	11,394	18,229
Cardiovascular mortality	3,912	6,374
Respiratory mortality	1,697	2,701
Hospital admission due to COPD*	16,253	16,253

POLICIES ON TRANSPORT AND INDUSTRIAL EMISSIONS

Beijing | Limits on car registration and usage of pvt. cars. Car emission standard in line with EU

5-yr plans with emission reduction targets, stringent emission standards for power plants and industry.



Delhi | CNG for buses and rickshaws, no limits on car registration, emission standards lag behind EU

No standards for thermal power plants, **emission standards allow four to 20 times higher emission** from industries

Source: Greenpeace/ Atmospheric Pollution Research Journal *COPD: Chronic obstructive pulmonary disease

zens - children, the sick and elderly are at most risk from Delhi's toxic air".

Greenpeace campaigners also demanded stringent targets for industrial emissions. "We need an action plan similar to that of Beijing. It should include an emergency alert system that issues health advisories to public on heavy pollution days along with instructions for industries to cut down emissions. We have no emission standards

Central Pollution Control Board reported Delhi's average PM2.5 level in 2013 to be 153 microgram per cubic metre, based on hourly measurements at six stations. This is 15 times the World Health Organization guideline and 3.8 times the national safe standard

for coal-fired power plants in India, a sector responsible for emitting 7500 tons of PM2.5 into the city"

They quoted a study published last year by scientists from Indian Institute of Technology, Roorkee, Humphrey School of Public Affairs, University of Minnesota and University of Colorado at Denver which found a massive rise in mortality and morbidity associated with high air pollution levels in Delhi since 2000.

The Times of India, Delhi dated
March 09, 2015

A generator that uses 'pee power' to produce electricity

London: An inexpensive power generator that converts human urine into electricity is being tested in the UK. It is hoped that the pee-power technology will light cubicles in refugee camps, which are often dark and dangerous places particularly for women, researchers said.

A prototype urinal situated near the Student Union Bar at the University of the West of England, is the result of a partnership between researchers at UWE and Oxfam. Students and staff are being asked to use the urinal to donate pee to fuel microbial fuel cell (MFC) stacks that generate electricity to power indoor lighting.

"We have already proved that this way of generating electricity works," professor Ioannis Ieropoulos, director of the Bristol BioEnergy Centre at UWE, said. "The MFCs work by employing live microbes which feed on urine



'URINE-TRICITY'

(fuel) for their own growth and maintenance," said Ieropoulos, who led the research team. "The MFC is, in effect, a system which taps a portion of that biochemical energy used for microbial growth and converts that directly into electricity — what we are calling urine-tricity or pee power," said Ieropoulos. #71

The Economic Times, Delhi dated March 09, 2015

Here is a Ray of Hope for Our Solar Energy Future

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Bengaluru: A startup, headquartered between San Diego and Mumbai, has invented a technology that is giving solar energy a whole new ray of hope. Two-year old iGrenEnergi's eight-panel DC Optimizer (DCO) works on 'energy packetization' technology to boost productivity of solar panels to maximum capacity through its life cycle.

It addresses a pertinent problem — blockages to sunlight such as shading or any particle like dust, bird droppings or leaves that inhibit energy from falling on a panel.

With present day solar technology, only 19-22% of light hitting a panel gets converted into electricity, the balance to heat. "One shaded panel kills production of all panels. So, if 90% of one panel is not blocked, each panel loses 10% in the string and one guy can impact 20 panels. Our DCO addresses this," said Sunit Tyagi, co-founder, iGrenEnergi. The patented technology sits next to a solar panel and can save energy from 10% to 40%.

The innovative technology takes the problem of mismatched power and treats packets of energy separately or simply out cuts energy flowing in into little bits, on the back of an algorithm working behind the scenes. After sucking energy of all panels it is flowed to an inverter. "Our device tells panels to work at what capacity," said



Tyagi. The potential of the product rests on three strategic pillars — reusable hardware platform, which implements the energy packetization architecture, a cloud-based application software to analyse data and produce actionable intelligence, and product-specific embedded software to control energy packets flowing through the hardware. "iGrenEnergi's method for power management and conversion, which they refer to as 'energy packetization', is unique to the best of my knowledge. I am not aware of other firms in India or internationally incorporating this technology in power products. Other existing module level power electronics products for solar industry such as DC Optimizers and micro inverters are based on conventional methods," said Milind Atrey, professor-in-charge of SINE (Society for Innovation and Entrepreneurship), IIT-Bombay, where it is currently being incubated. The device is in pilot stage

and has been installed at two locations — a residential rooftop and at a small manufacturing company.

Ajit Deshmukh installed DCO on his 2 Kilowatt solar installation at his two-storey house in Mumbai and has seen a 10-12% increase in energy efficiency. "I get 8-10 units of power a day that takes care of half the energy consumption of my home. This has also brought my electricity bills down by Rs 2,000 a month," he said.

Mercom, a consulting firm for clean technology, forecasts solar installations to more than double in 2015, reaching approximately 1,800 megawatts.

"This product seems promising, but it's a matter of time to see how many people will go for a solar installation just because of the DCO. At urban level, installations are going up but the pace is slow. The basic opportunity for this depends on how fast solar installations go up. However, since it's a startup, if they can sell to existing installations, it can be a good revenue earner in initial few years," said Pamli Deka, consultant, Regin Paradise Consulting that runs New Ventures, a clean technology innovative centre supporting sustainable energy development.

The company has secured angel investment from high-net worth individuals from Europe and the US to the tune of \$0.5 million and is about to close another round of \$0.5 million.

The Economic Times, Delhi dated March 09, 2015

Mission for Green India, MGNREGA to Unite for Extending Forest Cover

Convergence of the UPA scheme with Green Mission will provide livelihood to 3 m households through afforestation

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New Delhi: The Centre has decided to extend its flagship rural jobs scheme to include afforestation as part of a move to create more durable assets through the programme that Prime Minister Narendra Modi recently derided as a living monument to the previous UPA government's failures and promised to overhaul.

Officials said the National Mission for a Green India (GIM) and the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) will now converge to facilitate afforestation on 10 million hectares of land over the next decade. This would, in turn, help provide forest-based livelihood income to three million households.

Budget 2015-16 has made an initial allocation of ₹34,699 crore for MGNREGA, with a possibility of an increase of ₹5,000 crore if buoyancy in tax collection allows, making it the highest allocation to the schemes since it was launched in 2006.

"Convergence of GIM with MGNREGS will help bring about better coordination in developing forests and their fringe areas, ensuring economic security to the

On Green Mission

- **Jobs scheme** to include afforestation as part of Centre's move to create durable assets via MGNREGA
- **Govt feels** convergence of GIM with MGNREGS will ensure better coordination in developing forests
- **It will ensure** economic security to backward sections in rural sector
- **Provide forest-based** livelihood income to 3 m households
- **Combined mission** targets 10 m hectares of forest & non-forest land in 10 years



WHICH LANDS WILL BE DEVELOPED

Village common lands, community lands, revenue wastelands, shifting cultivation areas, wetlands & private agricultural lands

KEEPING A TRACK

- Progress of plantation to be periodically monitored
- Remote sensing data & photographs to be used for that on a monthly basis

backward sections in the rural sector," a senior government official told ET.

According to the official, the ministry of environment, forests and climate change and the rural development ministry have jointly agreed to converge the two schemes with a combined mission to increase the forest cover in the country by five million hectares while improving the quality of another five million hectares of forest land and increasing the

forest-based livelihood income of about three million households.

"The progress of plantation under this convergence would be periodically monitored, using the remote sensing data, and photographic evidence shall be captured on a monthly basis," said the official, requesting not to be named.

The mission targets 10 million hectares of forest/non-forest land in 10 years, starting from 2015, and funds for the mis-

sion will be shared by the two central ministries.

All wages under MGNREGA will be met as a 100% central grant while the material component will be shared in 75:25 ratio between the Centre and state governments. Funds from Mission for a Green India will flow in 90:10 ratio for the Northeast and special category states, and in 75:25 ratio for the rest of India.

All lands including village common lands, community lands, revenue wastelands, shifting cultivation areas, wetlands and private agricultural lands will be eligible for afforestation under convergence.

The National Mission for a Green India is one of the eight missions under the National Action Plan on Climate Change envisaging a holistic view of greening and focuses on multiple ecosystem services, especially biodiversity, water, biomass, preserving mangroves, wetlands and critical habitats.

The Cabinet Committee on Economic Affairs had approved GIM as a centrally sponsored scheme in February 2014 with an aim to increase and improve the quality of forest cover and contribute to enhance ecosystem services along with reduction of carbon footprint as a co-benefit. Employment scheme MGNREGA, introduced by the previous UPA regime, promises 100 days of work in a year to every rural household.

The Times of India, Delhi dated
March 10, 2015

Solar plane on 1st world journey lands in Ahd today

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New Delhi: Solar Impulse, the world's most advanced solar-powered aircraft that took off from Abu Dhabi for a round-the-world journey on Monday, is expected to reach Ahmedabad on Tuesday evening after making its first stopover in Muscat, Oman.

The exact time of the landing at Sardar Vallabhbhai Patel International Airport will depend on weather conditions. The aircraft, which is on its first round-the-world trip without using a drop of fossil fuel,



LANDMARK JOURNEY: Solar Impulse that took off from Abu Dhabi on March 9 is on its first round-the-world trip without using a drop of fossil fuel

will remain in Ahmedabad for the next four days where it will showcase the power of clean technologies and demonstrate how the world can move on low-carbon growth path by effectively harnessing solar energy. The aircraft will make a stop in Varanasi before flying out to Myanmar.

"While in Ahmedabad, several events are planned on the theme of renewable energy and sustainable development," Swiss ambassador Linus von Castelmur said. Solar Impulse is being supported by the Swiss government.

Solar Impulse will travel 35,000 km around the world in 25 days over the course of roughly five months. It will pass over the Arabian Sea, India, Myanmar, China and the Pacific Ocean. Its stopovers include Hawaii, Phoenix in Arizona, and New York's JFK International Airport.

For the full report, log on to www.timesofindia.com

The Times of India,
Delhi dated
March 10, 2015

As air pollution level soars, attempt to 'dress up' city's data?

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New Delhi: Under watch around the world over the alarming quality of air in its national capital, are Indian authorities trying to shoot the messenger?

The Delhi Pollution Control Committee, which runs a real-time air pollution monitoring system, has been rapped for releasing "raw" or "unedited" air quality data on its website. In a meeting last week, the Union environment ministry decided that DPCC's data will be "validated" by the Central Pollution Control Board (CPCB) and "quality control" put in place before it is released.

The decision appears strange because automatic air quality monitoring usually doesn't require any editing. While it defeats the purpose of a real-time system because any vetting would delay the process, experts also fear the edited data may be "dressed up" and not give the true picture.

DPCC releases real-time data from six stations: R K Puram, Civil Lines, Punjabi Bagh, Mandir Marg, Anand Vihar and IGI. It's the only state agency in India to provide real-time feed from so many stations and for a wide range of pollutants such as PM10, PM2.5, SO2, NO2, CO, ozone and benzene.

The portal stopped updating data at 11.40am on Monday. While there are of-



ten technical glitches because of which data is not available, this time the reason appeared to be more serious. Sources in DPCC told TOI that the agency was under "pressure" after NGOs, research organizations and international bodies such as World Health Organization highlighted how air pollution in Delhi had reached alarming proportions.

Some also pointed out that DPCC's data was unavailable on several days while Beijing's monitoring system was more regular.

► New system soon, P 3

The Times of India,
Lucknow
dated March 11, 2015

Solar plane lands in Ahmedabad

Ahmedabad: The Solar Impulse 2 landed in Ahmedabad late on Tuesday, completing the first major sea leg of its epic bid to become the first solar-powered plane to fly around the world.

The aircraft touched down in Ahmedabad at 11:25 pm local time to finish its second leg in a little less than 16 hours after taking off from the Omani capital Muscat. After a 4-day stay the aircraft will fly to Varanasi on way to Myanmar. Members in the control room applauded as Pilot Bertrand Piccard, who was at the controls on the 1,465 kilometre journey over the Arabian Sea, landed at Sardar Vallabhbhai Patel International Airport.

"Congratulations to @bertrandpiccard from Mission Control. Landing 11.25pm," the Solar Impulse team tweeted. AFP

► Varanasi next, P 5

New system by March 20

► Continued from P 1

The data has been stopped because there is too much scrutiny of what's being released online. We are pulled up for it," said an official. "The data may not even be available anymore as it will soon have to be validated before release."

Another official from Central Pollution Control Board (CPCB) confirmed that a meeting was held on March 4, in which the environment ministry decided that a protocol will be put in place for releasing the data.

"Unedited data will not be released. The figures will be validated either by us or a team of scientists. There will be quality control. We have to

CPCB doesn't have a real-time air quality monitoring system and only a few of its stations monitor PM2.5, a notorious pollutant in Delhi

work out a new system by March 20," the official said.

Strangely, CPCB itself doesn't have a real time air quality monitoring system and only a few of its stations monitor PM2.5 (fine, respirable pollution particles) which is a notorious pollutant in Delhi. PM2.5 is considered dangerous because it is tiny enough to enter the blood stream and get lodged in people's lungs.

Anumita Roy Chowdhury, head of Centre for Science and Environment (CSE)'s clean air programme, said the agencies should focus on providing "accessible, transparent and relevant data". "We need a real time data reporting system for the entire country," she asserted.

The WHO in its urban air quality database had ranked Delhi as the world's most polluted city. Delhi's average PM2.5 level in 2013 was 153 microgram per cubic metres, based on hourly measurements at six different stations. This is 15 times the safe limit according to the WHO guideline and 3.8 times the national standard.

Solar Impulse to stop next in Varanasi

► Continued from P 1

The Solar Impulse will be in Ahmedabad for four days during which "several events are planned on the theme of renewable energy and sustainable development", according to the Swiss embassy.

The aircraft will embark on its fourth leg to Myanmar on March 16 after making a short stop at the Hindu holy city of Varanasi. The sealegs pose the greatest challenge for the Solar Impulse team as any loss of power over the water would leave the pilot



Pilot Bertrand Piccard lands in Ahmedabad

no alternative but to bail out and await rescue by boat.

Much bigger crossings lie ahead as Piccard and fellow Swiss aviator Andre Borschberg, who alternate at the controls of the single-seat aircraft, traverse the great oceans.

The Times of India, Lucknow dated March 11, 2015

Jain promises clean air campaign

Focus On Harmful Effects Of Pollutants On Kids' Health

Times News Network

New Delhi: Greenpeace campaigners and Centre for Occupational And Environmental Health (COEH) on Tuesday submitted a blueprint of a health advisory to counter the impact of air pollution in Delhi to health minister Satyendar Jain. Promising to look into the advisory Jain said the government will soon launch an air pollution campaign.

The proposal highlights various aspects of air pollution, its effects on health and daily precautions for schools and the general public. Dr T K Joshi, director, COEH and adviser to the government, said, "Children are our future, their health is our priority and we should give them a safe and healthy environment otherwise their growth and development will be impacted heavily." He added that schools should know which students have asthma or respiratory conditions and what staff can do to prevent emergencies. The recommendations include community involvement and support, asthma education for students and staff, healthy school environment and safe physical activities for students with asthma.

Greenpeace campaigner Aishwarya Madineni said, "It was heartening to get an assurance from the health minister that he will look into the matter. He also said the government will launch a campaign on air pollution. As research by USEPA and WHO suggests, children are the most vulnerable and exposure to air pollution will mean decreased lung function and development. Hopefully, we will see some action on this front from Delhi government soon."

Greenpeace's recent air quality monitoring survey inside five prominent schools across Delhi showed PM2.5 (fine, respirable particles) lev-

Your search to find someone to blame for Delhi's pollution stops at YOU



POLLUTION HORROR		
AIR QUALITY INDEX PM2.5		
Delhi	183	Moderate
Tomorrow	190	Moderate
Pune	87	Good
Tomorrow	90	Good
Source: SAFAR/MAES-OTM-IMD (12 stations)		
Hyderabad	122	Moderate
Chennai	78	Good
Kolkata	259	Poor
US Embassy data calculated as per Indian standards by SAFAR/MAES-OTM-IMD		
Based on 1 Station Data Per City of Apr		

Greenpeace's recent survey inside 5 prominent schools showed PM2.5 levels were three to four times the safe standard

els were three to four times the Indian safe standard and close to 10 times the World Health Organization guidelines. As there are no safe standards for instant values, Greenpeace campaigners compared the readings in schools with the 24-hour safe standard.

Dr Joshi recommended that parents and teachers monitor Delhi Pollution Control Committee's real-time air quality data and limit children's outdoor exercise when pollutant levels are high. "Schools should have plans for high air pollution episodes, including alerting teachers, curtailing sports programmes and providing alternative activities," the advisory said.

Centre to 'censor' real-time data

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New Delhi: The Centre on Tuesday announced that all air quality data generated from monitoring systems run by Delhi Pollution Control Committee (DPCC) and India Meteorological Department (IMD) will have to be sent to CPCB for "validation". The move has evoked sharp reactions from experts, who say real-time air quality data doesn't require any editing.

TOI has already reported about the government's attempt to "dress up" air pollution data, saying DPCC has drawn flak for releasing "raw" or "unedited" air quality data on its website.

In a statement released on Tuesday, the Union government said the data "will be seamlessly sent to CPCB for analysis and authenticated air quality information will be communicated to DPCC on a daily basis for further dissemination to the public".

It is not clear if the ministry will do away with the current process of releasing real-time data by DPCC and IMD but experts fear such a process may delay information dissemination and leave scope for manipulation of data. In order to provide authentic air quality information to



ANGRY VOICES: Experts say real-time air quality data does not require any editing

people of Delhi, a joint meeting of MoES, MoEF, CPCB, DPCC and IMD was held on March 10, the release said.

"All monitoring systems will follow a uniform scientific calibration protocol and validation process. A joint team with members from each organization will be formed to evolve standard operating procedures and implement them. This unified system, expected to be in place in two weeks' time, will ensure authentic air quality information of Delhi to public," the statement said.

Experts, however, claim air quality monitoring systems

are usually auto-calibrated or calibrated by scientists at the monitoring station. "What is important is that data comes out on time, people have the data in real-time and equipment is properly calibrated. The data goes online automatically re-

validating is not required," said Sarath Guttikunda, director, Urbanemissions.info.

In the US too, real-time data is issued instantly while backend quality checks continue. "In the US, monitoring agencies typically release provisional data on a real-time basis to keep the public informed. Official data are is-

leased after technical staff are able to certify the raw measurements. This approach allows for sensitive members of the public like asthmatics, children and the elderly to protect themselves against air pollution," said Joshua Apte, a postdoctoral fellow at Lawrence-Berkeley National Laboratory. Apte has been tracking pollution levels at traffic heavy locations in Delhi as part of his research.

"There is certainly no need for any additional validation by CPCB. Monitoring agencies—both state and others are already on the job. Moreover most of these equipments are highly sophisticated and auto-calibrated. Validating by another agency will only delay data release," added a government scientist. DPCC had stopped updating air quality data on its website on Monday but started releasing data on Tuesday after there were several enquiries on why the system wasn't functioning.

"It's important for DPCC to see that their equipment is calibrated, data is available on a daily basis for all stations. What does CPCB mean by editing data? Their objective is not clear. It's worrying and confusing at the same time," said Aishwarya Madineni, campaigner, Greenpeace.

TOI AGAINST POLLUTION

The Times of India, Lucknow dated March 12, 2015

Next: Solar Impulse 3.0, a drone that can fly non-stop for 6 mths

Team To Work On It For The Next 5 Years

Chethan.Kumar@timesgroup.com

Ahmedabad: "Don't go to the moon again. We've done that already. The challenges for innovators are to do things we've not done before," Bertrand Piccard, the Solar Impulse founder says. That's the flight path for the Solar Impulse team in the near future. Piccard's co-pilot Andre Borschberg said the team will work on building an unmanned version of the aircraft.

"In the next five years, we see a potential for an unmanned vehicle which can go very high and communicate with ground stations for six months continuously," Borschberg said. He added that the craft can do what sat-



TECHNOLOGICAL MARVEL: The solar-powered Swiss aircraft Solar Impulse 2 approaches Ahmedabad on Tuesday

ellites do now. "It will be cheaper," he added.

Borschberg's optimism stems from the fact that Solar Impulse, in theory, can keep flying for a long, long time. "Once we complete the round-the-world tour, we'll be sure of this," Piccard said.

Most experimental aircraft fly over deserts so that they can land quickly in emergencies without causing damage to human life and property. That Solar Impulse will fly over two oceans and

fly continuously for five days and nights while crossing the Pacific reflects its reliability.

Tough turbulence

Piccard hovered for a while above the Ahmedabad International Airport before landing late Tuesday. He said that just before reaching Ahmedabad, he experienced one of the worst turbulence ever and communicated it to the control centre.

For the full report, log on to www.timesofindia.com

Foul city air may be driving people to suicide

Studies Hint At Pollution-Depression Link

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New Delhi: The link between air pollution and respiratory diseases is well known, but foul air may be causing cases of depression too. Michael Brauer, professor at School of Population and Public Health at University of British Columbia who specializes in air pollution studies, told TOI that scientists are increasingly seeing links between air pollution and the mind.

Studies have found that suicides and attempted suicides increase as levels of air pollution rise. This is because of the inflammatory effects of air pollution on body and mind. Brauer, who spoke at Anil Agarwal Dialogue 2015 organized by Centre for Science and Environment (CSE), told TOI in an interview that masks and air purifiers may not be very effective in addressing the scale of the problem, and the strategy should be to bring down air pollution in cities. "Masks work only when they are fixed professionally. It also depends on the kind of mask being used. N95 (a type of mask) may be effective if it's worn properly without any gaps," he said.

Prolonged exposure to high levels of pollutants can cause lung cancer and heart disease, but short-term exposure, for instance at traffic junctions, can trigger stroke or chronic asthma. "Air pollution is affect-

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



POLLUTION TERROR

AIR QUALITY INDEX		PM2.5
Delhi	169	Moderate
Tomorrow	211	Poor
Pune	62	Good
Tomorrow	64	Good
Source: SAFAR@MoES-ITM-IMD (10 stations)		
Hyderabad	109	Moderate
Chennai	88	Good
Kolkata	218	Poor
US Embassy data calculated as per Indian standards by SAFAR@MoES-ITM-IMD		
Based on 1 Station Data Per City at 4pm		



ing or leading to almost all the major conditions. It can be responsible for developing heart

disease and triggering a heart attack, chronic bronchitis, emphysema, lung cancer... We are also seeing a very strong link between infections and air pollution. It is more difficult for our bodies to fight infection. Ear infections are very common, especially among young children; they start as respiratory infection and move to the ears," he said.

Brauer said scientists are seeing links between air pollution and diabetes, premature births and anxiety. "These are all part of inflammation caused by air pollution. There are studies showing that when air pollution peaks, the incidence of suicide rises. The problem is, pollution particles are not living things like bacteria that can be killed." He added that pollution particles may be carriers of proteins that trigger allergies.

"I think the most effective thing is, reducing pollution in total. Only the higher income groups can buy small air filters. The emphasis should be on general health—diet and physical activity, and reducing other risk factors such as smoking and alcohol."

Brauer said curbing air pollution has immediate positive effects. After fuel quality improved in Hong Kong, morbidity reduced. "They got an extra year of life. In Ireland, after burning coal was made illegal, there was a 15% drop in deaths caused by cardiovascular and respiratory issues."



The Times of India,
Lucknow
dated March 12, 2015



'Euro VI can filter out problem'

Times News Network

New Delhi: Environmental and transportation experts on Wednesday discussed ways and means to mitigate black carbon (BC) emissions that can help reduce health impacts from air pollution as well as to address the climate change issue. Diesel vehicles are the major contributors to BC.

Transportation experts said moving to superior fuel standards at the earliest should be a priority for India to deal with both the problems. They also said leaping to Euro VI can also give relief to Delhi which is reeling under severe air pollution. The discussion was part of the Anil Agarwal Dialogue 2015, organized by Centre for Science and Environment (CSE).

BC is a component of particulate matter (PM), which is formed by the incomplete combustion of fossil fuels, bio-fuels and biomass. Globally, BC from diesel accounts for 20% of total emissions. It also has a very strong "radiative forcing effect" that contributes to global warming.

Michael P Walsh, founding chairman of the board of directors, International Council on Clean Transportation, said his organization had recommended to the Indian government to skip Euro V and move directly to Euro VI norms by

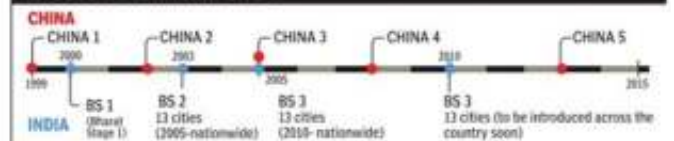
HOW INDIA SHOULD GO GREEN

RECOMMENDATIONS OF INTERNATIONAL COUNCIL OF CLEAN TRANSPORTATION FOR INDIA

- Improve on recommendations from committee on auto fuel vision and policy
- Skip Euro 5 and go directly to Euro 6 because of its tight standards as well as gasoline particle filters
- Add systems such as onboard refuelling vapour recovery and zero evaporative emissions
- Petroleum and natural gas ministry should establish national in-use vehicle testing



FUEL STANDARD: CHINA AND INDIA



WHAT'S HAPPENING IN BEIJING

Average concentration of PM2.5 in 2014 was 85.9 microgram per cubic metre—a drop of 4% from 2013 | Beijing has (Euro 5 or China 5) 10ppm low sulphur fuel (petrol and diesel) since 2012

2020. It can also focus on diesel purifier filters to be able to meet emission standards as soon as possible, he said.

China is ahead of India when it comes to tackling vehicular emissions. According to Likunsheng, director (vehicle emission management), Beijing Municipal Environmental Protection, the Chi-

nese capital is going to implement Euro VI norms this year. Beijing has phased out more than 10-year-old vehicles and started acquiring buses that run on Euro V LNG.

"We want the government to implement Euro IV this year, Euro V by 2017 and Euro VI by 2020, come what may. There should be a clean fuel

fund to support refineries on delivering this target. We are already 10 to 15 years behind Europe," said Anumita Roychowdhury of CSE's clean air programme.

CSE, along with other international experts, will submit a detailed roadmap to the Centre on how India can achieve these targets.

The Times of India, Delhi dated
March 13, 2015

PM10 level unsafe in city: Centre

TIMES NEWS NETWORK

New Delhi: The level of particulate matter (PM10), which can cause serious health problems, has exceeded prescribed limits over Delhi and five neighbouring cities, including Faridabad, Ghaziabad, Noida, Meerut and Alwar, environment minister Prakash Javadekar admitted in Rajya Sabha on Thursday.

As several members raised concern over worsening air pollution in the capital and other cities across the country, Javadekar said "fresh air is a birthright" and added that the Centre was in regular touch with the Delhi government on measures to deal with the problem.

He listed stricter pollution control norms for all vehicles, mechanical sweeping of roads to deal with dust, stress on battery-operated vehicles, curb-



EYE ON DELHI: Prakash Javadekar

ing illegal burning of garbage and long-term public transportation plans as measures to check air pollution.

"We have asked the Delhi government to come up with an action implementation plan by March 31. We have fixed timelines for these programmes. We want to take up all the 66 cities, state capitals and million-plus cities for

maintaining air quality. This is very important," the minister said. Acknowledging that dangerous air pollution in Delhi was "a serious problem", irrespective of whether it was three or four times above globally-accepted standards, Java-



dekar, however, said no foreign help was needed to monitor air quality in the national capital or other cities.

Responding to a parliamentary question, the minister in his written response told the upper House that the levels of sulphur dioxide and nitrogen dioxide were in control during 2011-13, but PM10 had shot up

in the same period.

"As per the analysis of data for last three years (2011-13), the levels of sulphur dioxide (annual averages of 50µg/m³) and nitrogen dioxide (annual averages of 40 µg/m³) were within norms. However, PM10 has exceeded the prescribed norms in all six cities (Delhi, Faridabad, Ghaziabad, Noida, Meerut and Alwar)," Javadekar said.

PM10 particles are less than 10 micrometres in diameter and they can get deposited into the lungs, potentially causing serious health problems. The minister said provisions of Air (Prevention and Control of Pollution) Act 1981 to prevent and control air pollution was implemented by DPCC. "Laboratories of DPCC and CPCB are adequately equipped to monitor emissions from industries," Javadekar said.

The Economic Times, Delhi dated March 17, 2015

Centre's Solar Power Plan in Slow Lane

Govt depts have not devised policies needed to scale up solar capacity to 100 gw by 2022

Anindya.Upadhyay
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New Delhi: The government's ambitious plan to install solar plants with 1 lakh megawatt capacity looks set to be a non-starter in 2015-16. This is because the departments that need to contribute with supportive policies on issues such as rooftop solar panels, tax breaks and subsidies, have not made the necessary commitments so far.

As a result, the clean energy ministry has kept the solar installation target for 2015-16 the same as last year at 1,100 mw, instead of accelerating it significantly to achieve the ₹6 lakh crore target of scaling up solar capacity from the current 3,000 mw, or 3 gigawatt, to 100 gw by 2022. The target, which was announced in November last year, was reiterated in the Budget recently.

According to the officials, none of the government departments, including finance, urban development, revenue, power and agriculture, were ready to make the commitments required to meet this target in an interministerial meeting held two weeks ago.

"Now that it has been announced in the budget, there is no running away from it. However, requirements to facilitate it, like tax breaks, policy for rooftop solar and subsidies have all

been struck down for now. It requires too many commitments," a senior government official familiar with the discussion in the meeting told ET. Distribution companies are still reluctant to adopt solar power, he added.

The budget allocated ₹2,700 crore to the ministry of new and renewable energy (MNRE) for 2015-16. "The minimum requirement for every year is ₹6,000-7,000 crore from the government, in order to reach 100 gw in the next seven years. There's no way we're getting this much," said a senior official, who did not want to be identified. MNRE had prepared a cabinet note, breaking up installation of 100 gw into yearly targets till 2022 and circulated it among other ministries in mid-January.

This included targets on projects ranging from ultra mega solar parks

(above 500 mw) to microgrids and rooftop installations.

The cabinet note requested for transmission and distribution infrastructure from power ministry to enable solar installations, for tax breaks from the revenue department on manufacturing and making rooftop installation compulsory at certain locations from the urban development ministry, according to an MNRE official. MNRE is now looking for less expensive ways to kick-start solar energy projects such as microgrids that supply electricity to a small number of houses in villages.

"We'll have to look for a cheaper way of doing things. We have tied up with UNDP, World Bank and some US government departments to seek funding in order to run small microgrid programmes," the official added.

Deccan Chronicle, Hyderabad
dated March 17, 2015

GROUNDWATER LEVELS DOWN, TS FAILS TO ACT

SUDHEER GOWTHAM | DC
HYDERABAD, MARCH 16

AP, TS NEGLECT WARNING SIGNS

Though the Central Groundwater Board has identified Hyderabad as one of the top 64 places where groundwater is over exploited, the state government has not yet taken any constructive action.

With temperatures rising and the groundwater table falling, illegal drilling of borewells is going unchecked in different parts of the city.

This continues despite complaints lodged by locals with the revenue department. While locals decry the commercial pumping of water resulting in drying up of domestic borewells, authorities fail to stick to norms before issuing permissions.

Residents of Bapunagar in Chintal (Quthubullapur mandal) are fed up with the officials' inaction in spite of complaining against a commercial water plant in their colony.

"In the last one year, more than 20 domestic borewells in our colony, which were 200-400 feet deep, have gone dry. Most of us have to go for re-boring or sink a new borewell by spending nearly ₹3 lakh each. On the other hand some people have established water plants and are pumping out water and selling it using tankers," said M. Praveen, a member of the Bapunagar Welfare Association.

Thakur Rajkumar Singh, president of Human Rights and Consumers Protection Cell, said, "The cases are taken up by the officials only when we lodge complaints. Is it not the job of the concerned officials to go around their areas? Otherwise, how is it possible for borewells to come up near Ameenpur Lake, Patancheru, Gangaram Cheruvu near Aparna Venture, Devunu Kunta in Gopannapally village on the city's outskirts and Saroornagar Lake?"

Though revenue officials have stopped issuing drilling permits, over 150

THE CENTRAL GROUNDWATER BOARD HAS IDENTIFIED HYDERABAD AS ONE OF THE 64 PLACES WHERE GROUNDWATER IS OVER EXPLOITED.

■ At present, both the AP and Telangana governments do not have an exclusive body to implement the Groundwater Regulation Act.

■ The Model Groundwater Regulation Act formulated by the Union ministry of water resources provides for the enforcement of measures to prevent the abnormal exploitation of groundwater and recharging.

■ Section 3 (2) of the AP Walta Act, 2002 empowers the government to nominate non-officials to its agencies for conservation of natural resources. But this is pending since a long time.

■ Revenue officials at the district level are empowered to implement the AP Walta Act but they are busy with many other things.

THOUGH REVENUE OFFICIALS HAVE STOPPED ISSUING DRILLING PERMITS, 150 ILLEGAL BOREWELLS HAVE COME UP IN HITEC CITY AND NEARBY AREAS IN LAST 6 MONTHS.

illegal borewells have come up in Hitec City and adjoining areas in the last six months.

Residential areas falling within Serilingampally mandal, Madhapur, Kondapur, Gachibowli, Miyapur and so on are filled with illegal borewells. Despite being drilled on government land, officials have not taken any action.

This has resulted in rapid depletion of groundwater leading to the drying up of domestic borewells. These groups supply water to industries, mineral water plants and also apartments at exorbitant rates.

"We have stopped issuing permissions for drilling borewells. Those operating them are doing so by breaking the law," an official working at the Serilingampally revenue office said.

No records of permits, cases

DC CORRESPONDENT
HYDERABAD, MARCH 16

Though the Telangana government has proposed a Budget of ₹25,000 crore for restoration of lakes through "Mission Kakatiya", the apathy of the revenue department tasked with the monitoring of borewells stands exposed in the way it maintains records.

Despite groundwater levels touching record lows, the authorities are yet to maintain records on cases booked, permission issued and so on. When asked about the total number of permits issued last year, the number of illegal

borewells and rigging machines seized, officials did not have figures.

"We are seizing illegal borewells and also penalising the owners of illegal drilling machines under the Walta Act. However, records would be available at the mandal level. At present we are not maintaining any data at headquarters," said an official from the Hyderabad collector's office.

● Officials had no figures when asked about the number of permits issued or illegal borewells and rigging machines seized.



The Economic Times, Delhi dated March 18, 2015

The Economic Times, Delhi dated March 20, 2015

Green Panel Raps Delhi Govt for Not Acting to Check Air Pollution

Our Bureau



ON POLLUTION

The scientific data indicates the problem is severe and its result can be drastic if permitted to persist.

Swatanter Kumar
NGT CHAIRPERSON

New Delhi: The National Green Tribunal has hit out at the Delhi government for failing to take steps to implement the measures the tribunal had set out to improve the capital's poor air quality.

The tribunal also directed the Arvind Kejriwal government to submit a report on the proposal to ban diesel vehicles, which are more than 10 years old, and the exact number of diesel vehicles plying in the capital and their impact on air quality by April 7.

"The scientific data indicates the problem is severe and its result can be drastic if permitted to persist," NGT chairperson Swatanter Kumar said.

"The response of authorities is lacking will, bona fide and shifting of responsibilities from one department to another and finding faults with different departments has been the defence before us," it said.

The bench said it was "pained" to note that the administration had not taken note of its repeated persuasive and mandatory order.

The green tribunal said that the presence of pollutants in ambient air is a matter of serious concern.

Human health, it said, is right to life and must take precedence over commercial and infrastructural projects. "Principle of intergenerational equity demands that all institutions, including legislature-executive, must make all possible endeavours to ensure proper air quality."

As ordered by the court, the Delhi Transport Corporation informed the bench that a team comprising of Central Pollution

Control Board and Delhi Pollution Control Committee had inspected 15 old and 12 new low-floor buses of DTC that are plying on the roads of Delhi. Out of these, six old vehicles were found to be non-compliant to the prescribed standards.

The tribunal also rapped street vendors for encroaching space in Lajpat Nagar market.

Justice Swatanter Kumar said that although the Supreme Court has allowed the right of the hawkers, they cannot be allowed to encroach roads in an unscrupulous manner.

"Supreme Court order says that authorities were directed to carry out identification of sites for their (hawkers) shifting and not allow them to stand on metalled roads. There is something called Constitution and environment as well. Nobody is opposed to rickshawalas and street hawkers but there has to be a balance. If corporate social responsibility requires companies and firms to spend millions, then the hawkers also have to contribute in one or the other way. Article 19 is subject to restrictions. If you will jump down on roads, we will throw you out," the bench said.

Green Bonds' Value May Double to \$100 B in 2015

KPMG says such bonds give access to broader investor range

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New Delhi: Global consultancy firm KPMG has forecast value of green bonds issued will reach \$100 billion by end of 2015 from \$53 billion last year, in line with the trend that has seen market grow three times since 2013.

The key difference between a 'green' or regular bond, as defined by KPMG, is that the issuer publicly states it is raising capital to fund green projects, assets or business activities with an environmental benefit, such as renewable energy, low carbon transport or forestry projects. "The green bond market is growing rapidly with \$100 billion of issuances predicted for 2015. Perhaps inevitably in a new and fast-growing market,



GETTYIMAGES

standards and ideas of best practice are still evolving," Adrian King, global head of sustainability services at KPMG said in a paper 'Gearing up for green bonds' published on March 19.

King added, "Challenges and confusion can arise as organisations assess whether issuing a green bond is the right course of action for them and seek to understand the process involved."

The paper says historically, supranational organisations such as the European Investment Bank and the World Bank, along with governments, have been the most prolific issuers of green bonds, accounting for all labelled issues between 2007 and 2012. However, in 2014, bonds issued by corporations in the energy and utilities, consumer goods and real estate sectors accounted for one-third of the market.

According to the paper, green bonds can give issuers access to a broader range of investors than regular bonds or other asset classes. They can attract new investors focused on environmental, social and governance (ESG) performance.

The reason for this is that in case of green 'use of proceeds' bond, proceeds are raised for specific green projects, but repayment is tied to the issuer; not the success of the projects. This means the risk of the project not performing stays with the issuer, rather than investor, the paper explains.

The Economic Times, Delhi dated March 20, 2015

National Air Quality Index to Debut in April

The simple index will measure eight major pollutants that impact our health

Our Bureau

New Delhi: The environment ministry will be launching the National Air Quality Index, a simple, composite, and easy to understand measure of air quality, on April 6.

The index will measure the eight major pollutants that impact health - particulate matter (PM 10 and PM2.5), nitrogen dioxide, sulphur dioxide, ozone, carbon monoxide, ammonia and lead - and disseminate information on associated health risks through a colour-coded easy to identify format. Each colour will indicate a level of the index. There are six levels: Good, Satisfactory, Moderately polluted, Poor, Very Poor and Severe.

Acknowledging that the level of pollutants in the capital's air ex-

ceed the limits set by the World Health Organization, Environment Minister Prakash Javadekar said the launch of the index would be an important step towards creating

Pollution monitoring stations would be set up on 66 cities having population of 10 lakh or more, says Javadekar

Javadekar said he and officials of the ministry and pollution control boards have held three meetings with counterparts in the Delhi government to draw up an action plan

to improve the city's air quality. As a first step, the Delhi government will prepare short-term and long-term plans by March 31 to address the issue. Javadekar said the state government will provide targeted timelines for implementing the various measures.

Pollution monitoring stations would be set up on 66 cities having population of 10 lakh or more, Javadekar said. At present there are 46 stations with continuous monitoring capabilities in 16 cities.

The minister said that the government would continue to take measures to contain air pollution, including though supply of cleaner fuels, stringent source-specific emission standards for air polluting industries and implementation of revised emission rules for gen-sets and cement plants.



ARINDAM

Deccan Chronicle, Hyderabad
dated March 21, 2015

Climate change hits forests

■ AP, Telangana forests among worst affected in country

V. NILESH | DC
HYDERABAD, MARCH 19

As the world celebrates International Day of Forests on March 21, forests in Telangana and Andhra Pradesh continue to reel under anthropogenic stress and degradation.

The Reducing Emissions from Deforestation and Forest Degradation+ (REDD+) initiative of the United Nations says, "Deforestation and forest degradation, through agricultural expansion, conversion to pastureland, infrastructure development, destructive logging, fires etc. account for nearly 20 per cent of global greenhouse gas emissions, more than the entire global transportation sector and second only to the energy sector."

Greenhouse gas emissions are a major reason behind climate change.

Prof. N.H. Ravindranath of the Centre for Ecological Studies in IISc, Bengaluru, an expert in climate change and forestry said, "Climate change has three major impacts: It results in an increase in the number of pests; it causes drought, which when combined with high temperatures, causes forest fire; and it also results in the slow death of plant species which are susceptible to temperature variation, in turn affecting the animal as well as plant biodiversity of the region."

A research titled "Impact of climate change on Indian forests: a dynamic vegetation modeling approach" states that forests in Andhra Pradesh (and Telangana) will be one of the most affected in the country due to climate change and will undergo 62 per cent change. It also mentions that forests of Eastern Ghats will be one of the most affected regions along with the Western Ghats.



■ Drought, coupled with rising temperature, results in forest fires.

■ There has been a dramatic increase in the number of forest fires with 33 in 2004 to 2,021 in '13.

■ TS and AP both lagging behind in afforestation.

AFFORESTATION FUNDS NOT FULLY USED

DC CORRESPONDENT
HYDERABAD, MARCH 20

Telangana and Andhra Pradesh have both been lagging behind in afforestation works. It is globally accepted that to counter climate change, one of the most effective measures is to increase forest cover.

However, under the Compensatory Afforestation and Management Planning Authority (CAMPA) programme, both the states have failed to completely utilise the funds allocated to them.

The situation was similar before the bifurcation of the state as well. In 2010-11, of ₹12,074 lakh allotted, only ₹930.5 lakh were spent; in 2011-12, of ₹11,857 lakh, only ₹2,076 lakh were used; in 2012-13, only ₹1540.5 lakh of the allocated ₹11,960 lakh were utilised; and in 2013-14, of the ₹9,200 lakh only ₹2,118 lakh were utilised.

After bifurcation, the AP Forest Department managed to utilise about ₹12 crore of the allocated sum of ₹135 crore, whereas TS spent about ₹10 crore of the allocated ₹35 crore.

Butterflies vanish from Seshachalam

DC CORRESPONDENT
HYDERABAD, MARCH 20

Researchers from Yogi Vemana University in Kadapa have come out with a study that can serve as an indicator of effects of climate change.

Three researchers from the university recently published a paper titled *Impact of climate change on butterfly diversity in Seshachalam bio reserve forest of Southern Andhra Pradesh*, in which, they report a dramatic decline in the sightings of butterflies in the reserve.

S.P. Venkata Ramana, one of the researchers, said, "Butterflies are ectothermic organisms and

react very rapidly to temperature variations in their habitat. In lab tests, it has been found that if temperature is properly maintained then there is a smooth transition of a butterfly from the larval stage to an adult. However, due to increasing temperature, the life cycle gets affected."

He added, "In northern AP the sightings of species diversity has decreased from 80-100 to 65-70 whereas in southern AP the numbers have gone down from 45-50 to 22. In Seshachalam, 150 butterfly species were sighted in an earlier research but between 2013 and 2014 only 75 could be sighted."

Deforestation and degradation of forests and forest fires, both are prolific in AP and TS. Since 2012, more than 100 sq. km of forests have been encroached and more than 300 sq. km of forests have been degraded.

Deforestation threat due to forest fires also looms large as climate change becomes more realistic. Forest fires have been on the rise over the years, from a mere 33 in 2004 to 2,021 in 2013.

The Times of India, Delhi
dated March 22, 2015

Smog-choked Paris forces half of its cars off roads



Paris: French authorities will on Monday put in place emergency traffic-limiting measures in Paris, as the City of Light and much of northern France suffers from a choking smog.

City mayor Anne Hidalgo had asked authorities to prevent one in every two cars from taking to the capital's streets and make all public transport temporarily free in a bid to drive down pollution.

"I am delighted the state has agreed to put in place a partial driving ban on Monday, which I have been requesting for several days," Hidalgo wrote on Saturday on Twitter. Only vehicles with number plates ending in an odd num-

POLLUTION WAR

ber will be allowed to drive, though exceptions exist for vehicles like taxis, electric cars and ambulances. Public transportation is to be free until at least Monday in Paris and its surrounding towns in an effort to force pollution down by coaxing drivers to give up their cars for a few days.

Similar emergency measures were last implemented almost exactly a year ago — on March 17 — during a particularly bad spike in the pollution levels. In Paris, authorities measure the concentration of particulates with a diameter of less than 10 microns — so-called PM10 — in the air to determine pollution levels.

These particulates are created by vehicles, heating and heavy industry, and include the most dangerous particles measuring less than 2.5 microns in diameter, which can penetrate deep into the lungs and can cause cancer. The safe limit for PM10 is set at 80mcg/m³. AFP

Airline flies on cooking oil fuel

A Chinese airline on Saturday completed the country's first commercial flight using biofuel, made from waste cooking oil, as the government seeks to promote greater environmental sustainability.

A Hainan Airlines flight from commercial hub Shanghai to Beijing used biofuel supplied by China National Aviation Fuel company and energy giant Sinopec, according to a statement from US aircraft giant Boeing. The Boeing 737 plane used a 50-50 mix of conventional jet fuel and biofuel made from "waste cooking oil collected from restaurants in China," the statement said.

Used cooking oil, called "gutter oil" in Chinese, has been the target of media exposes about how the waste product is sometimes illegally reused for human consumption.

Sinopec, which was criticised in the Chinese environmental documen-

tary *Under the Dome*, said waste oil could be put to better use. "This fully represents an earnest commitment from Sinopec to continuously advance scientific and technological innovation, and promote green and low-emission development," Sinopec said.

The world's first flight powered entirely by biofuel took place in 2012 when a plane took off from the Canadian capital Ottawa, but several commercial aircraft have used biofuels mixed with traditional petroleum-based jet fuel.



GOING GREEN: A Chinese airline used a 50-50 mix of conventional jet fuel and biofuel made from 'waste cooking oil collected from restaurants

Australia's Qantas and Air Canada have both tested biofuel on commercial flights. Last year, Boeing announced it would cooperate with the Commercial Aircraft Corp. of China to develop aviation biofuel. China is a key market for Boeing, which estimates the country will need 6,020 planes worth \$870 billion through 2033." AFP

Urban homes emit more greenhouse gases than industry

Vinayashree Jagadeesh | TNN

Chennai: The industrial sector has been taking the flak for emitting high levels of hazardous gases over the years but it might ultimately be our homes that are responsible for the highest emission of greenhouse gases.

A study by the Centre for Ecological Sciences of the Indian Institute of Science, Bengaluru, found that the domestic sector in seven cities was one of the highest contributors to greenhouse gases, which are responsible for global warming.

When the cities were considered individually, the domestic sector was the highest contributor in Chennai, Ahmedabad, Kolkata and Mumbai, and second highest contributor in Delhi, Hyderabad and Bengaluru.

Major sources of energy consumption in the domestic

RED ALERT

Greenhouse gas emission from the domestic sector in various cities (in %)



sector were electricity for lighting and household appliances and fuel for cooking. The fuels considered during the study were liquefied petroleum gas, piped natural gas and kerosene.

► Delhi homes highest, P 10

The Times of India, Delhi dated
March 23, 2015

The Times of India, Delhi dated
March 23, 2015

GHG emissions from Delhi homes highest at 26.4%

► Continued from P1

Delhi's domestic consumption accounted for the highest greenhouse gas emissions with 26.4% of the total, followed by Chennai in second place with 19.5% and Greater Mumbai with 19.1%, according to a study conducted in seven cities by the Centre for Ecological Sciences of the Indian Institute of Science, Bengaluru.

The study quantified GHG emissions after considering the following sectors: electricity generation or consumption, domestic and commercial sectors, transportation, industrial, agricultural, livestock and waste.

The study also analysed the GHG footprint — total amount of greenhouse gases emitted directly or indirectly and expressed in equivalent tonnes of carbon dioxide — in each of the seven cities. The study's findings were based on data gathered during 2009-10. T V Ramachandra of Energy and Wetlands Research Group, Centre for Ecological Sciences, who headed the study, believes the situation has only become worse



over the years.

In Bengaluru, he says, power usage in the domestic sector has risen. "Poor architecture with an increasing number of high-rise and glass buildings across cities has led to increased energy consumption — 14,000 units per person per year," he says.

Environmentalists point out that buildings must be designed to minimise use of artificial cooling and heating. Another reason for increased consumption could be utilising electricity for bathing purposes, they say, pointing out that solar energy must be the first option for citizens.

India contributes more than 5% of the total global emission of greenhouse gases. "While Beijing may be the big brother, the cities here could be smaller brothers," says Ramachandra.

According to the study, Delhi has the highest GHG footprint with 39 million tonnes of carbon dioxide equivalent emissions, while the least emissions are in Ahmedabad with nine million tonnes.

For the full report, log on to www.timesofindia.com

Deccan Chronicle, Hyderabad
dated March 25, 2015

Use tech to check pollution: Centre

DC CORRESPONDENT
MUMBAI, MARCH 24

Polluting industries will be under technology advanced surveillance as the government will leverage the latest advance in technology to protect the environment.

It will be via focused regulatory mechanisms through three pertinent measures, namely 24X7 pollution monitoring of 3,026 industries in seven critically polluting sectors; leveraging satellite technology to monitor as-is coordinates of projects such as sand excavation etc., and lastly GPS-based management monitoring and compliance regime to ensure implementation, said Union minister of state for environment, forests and climate change Prakash Javadekar.

Addressing the Indian Merchants' Chamber on 'Balancing Environment with Development', he said whilst the rest of the world was talking about climate change and what needs to be done, India is already in "mission mode, not com-

● Centre is planning 24X7 pollution monitoring, leveraging satellite technology to monitor projects such as sand excavation etc., and GPS-based management monitoring

mission mode. With clean water-clean air-clean energy mission, a clear plan, transparent practices and people's participation, we are determined to change and allow growth and protection at the same time."

India has planned 185 MW of renewable energy which will save 3 metric tonnes of carbon emission.

"We will be going to the upcoming Paris agreement on climate change in December 2015 with a positive agenda with a view to increasing the energy efficiency by 20-25 per cent in all sectors", he said, adding, the government has done real wonders in the coal and mining sector by adopting the auction route.

"The iron ore mines in Goa that were closed for two years, we made the Goa government responsible for allotting the mines," the minister said.

The Times of India, Delhi dated
March 25, 2015

Used CFL bulbs a health hazard

Study Says 74Kg Mercury Released From 14.9M Lamps In Capital In 2014

TIMES NEWS NETWORK

New Delhi: A study has estimated that 14.93 million compact fluorescent lamps releasing approximately 74.65kg of mercury were disposed of unsafely in Delhi last year. The figure was arrived at through extrapolation from Delhi's population data and CFL usage trends based on a random survey of households and large establishments by Toxics Link, an environmental NGO.

The study released on Tuesday also found that 82% of consumers throw broken compact fluorescent lamps directly into dustbins while the rest sell them as scrap in absence of authorized CFL recycling units in the capital.

Findings from the study, 'The dark end: CFL needs better management', highlights how the Central Pollution Control Board guidelines, drafted in 2008, are flouted with impunity as no infrastructure has been put in place to address the pollution from mercury in CFLs. There is no binding regulation for safe disposal of CFLs in India.

Even short-term exposure to mercury can lead to several health impacts. According to a World Health Organization publication (2007), inhalation of mercury vapour can affect the nervous, digestive and immune

SAFE RECYCLING OUR DUTY

Central Pollution Control Board framed guidelines in 2008 for safe disposal of compact fluorescent lights. However, there are still no binding regulations



COLLECTION

- Lamp recycling units (LRUs) can collect used CFL bulbs from bulk consumers via kabadiwalas
- An agency may also be engaged for door-to-door pickup

TRANSPORTATION

- Kabadiwalas should select a good vehicle to minimize breakage
- Used lamps should be transported directly to LRU
- Kabadiwala should be trained to take care of mercury spills

WHAT CAN BE DONE IMMEDIATELY

- Put spent CFL bulbs in a bag and hand it over to garbage collector
- Inform collector about the content
- Municipal authorities should train waste collectors on safe mercury handling
- Must provide a safe dumping place, preferably a concrete well
- Once full, dumping sites should be sealed

Source: Electric Lamp and Component Manufacturers' Association of India

systems, including lungs and kidneys, sometimes fatally. "Shocking, recyclers were found to be washing CFL bulbs in boiling water to clean the white coating and throwing away the water containing mercury in open drains," Piyush Mohapatra of Toxics Link said.

In Delhi, the team surveyed about 180 households—71.7% from middle income groups. About 93.9% use CFL because they consume less power. About 39.4% want to replace all lights with CFL, but 29.4% are not willing to change over to CFL. However, 30% of those surveyed are unaware that CFL contains mercury. About

87.9% of respondents were aware that CFL ought to have separate disposal methods. Of 82% who claimed they disposed CFL in dustbins, 37.2% said they dump these in the nearest bin using bare hands and sweep away the fine glass that cannot be picked up. In Bhopal, only 90 households

DISPOSAL ISSUE

were surveyed. But even they were clueless about how to dispose CFLs.

Malls, too, are giving spent CFLs to kabadiwalas on a monthly or bi-monthly basis. However, most malls are open to partnering with an authorized agency for

their safe disposal.

Many countries have implemented the Extended Producers Responsibility (EPR) policy for CFL where the manufacturer takes care of disposal. In the US, manufacturers have to hand over spent bulbs to an authorized recycler. In the European Union, manufacturers have set up a collection system, while in Taiwan, retailers act as collection centres. The RH Khwaja committee report to the ministry of environment, forest and climate change, titled 'Roadmap on Management of Wastes in India', recommends implementing EPR in India.

"EU has one of the best

Times View

Given the extensive use of CFL bulbs for lighting, it is urgent that systems are put in place for recycling them once they are spent. Otherwise, what started off as an eco-friendly option to incandescent bulbs could end up giving birth to an environmental disaster of its own. There are at least two possible ways of ensuring recycling. One of these would be to mandate that those who sell the bulbs will also have to accept them from consumers and then pass them on for recycling once their life runs out. The other is to create government collection centres in localities. Which of the two works better is for the municipal authorities in each area to determine, but allowing these bulbs to be simply dumped with household waste is not an acceptable situation.

collection systems. The authorized recycler collects the waste from community collection centres. People follow this system strictly and dispose of wet, dry, hazardous and other categories of waste in separate containers. Batteries, cans and CFL go into the hazardous waste container. The government needs to step in immediately," Mohapatra said.

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