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## Business Sustainability News

## International

### Why Does South Africa Score High On Corporate Sustainability Reporting?



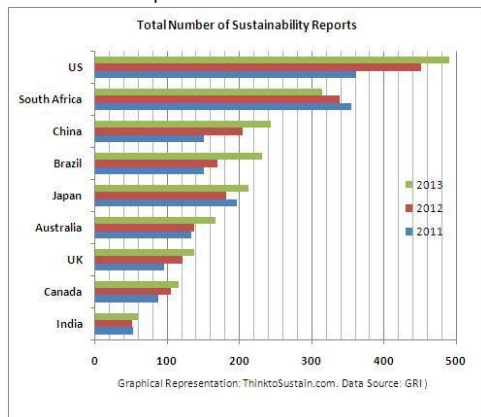
A statue of Nelson Mandela, former President of South Africa, at Washington D.C. – a symbol of a struggle that through the power of resilience put an end to an era of apartheid.

reporting when compared to companies from other emerging economies. This is surprising as emerging economies are more prone to suffer from improperly regulated capital markets and weak legal mechanisms. Environmental and social concerns often take a backseat as the pressure to increase foreign investments to boost economic growth dominates both the business and the political agenda. Environmental regulation is often considered as an obstacle to development and concessions are traded to attract and develop business.

A remarkably high number of sustainability reports are being published annually by South African companies. An analysis of data on sustainability reports maintained by the **Global Reporting Initiative (GRI)** shows that during 2011-2013 more than 300 companies had published sustainability reports.

This trend puts South Africa at the second top-most position when compared to developed nations – the U. S., Japan, U. K., Australia, Canada and emerging economies – China, India and Brazil.

In fact, South African companies happen to be far ahead in sustainability



But South Africa presents a different story.

#### 1994

Its journey on sustainability began in 1994 – a year that was economically, socially and politically challenging. In 1994, after decades of racial discrimination, an independent South Africa was set to place its first-ever democratically elected government. Despite these uncertainties, the new government took bold initiatives to develop guidelines on how the country should manage its economy. The overarching emphasis was on corporate governance and

The purpose of including a separate section on sustainability in King II report was to encourage an inclusive approach to sustainability (as the section title itself conveyed) and it was not mandatory. However, the application of these guidelines varied across companies. The **Johannesburg Stock Exchange (JSE)** also used some of the guidelines as listing requirements. Many companies started producing sustainability reports but they were not integrated with financial reporting.

#### 2009

The 2008 meltdown had reinforced the role of corporate governance and pushed business sustainability to the center. Interestingly, **King III** report was launched on 1<sup>st</sup> September 2009 at a time when the aftermath of the global financial crisis was in its full swing. King III emphasized the need to have an integrated approach towards the economic, social and environmental impacts of business. It further expanded the scope of corporate governance by incorporating leadership, sustainability and corporate citizenship in its core philosophy. It adopted an 'adopt' or 'explain' approach, meaning that companies that do not adopt the code need to explain reasons thereof.

In 2009 and 2010, the number of sustainability reports published by South African companies stood at 55 and 61, respectively. In 2011, the JSE made disclosures on integrated sustainability reporting mandatory. That year, out of 450 companies listed on the JSE, 355 companies published their sustainability reports – which constituted nearly 80% of the total number of companies listed on the JSE.

This action by the JSE does seem to have had a positive impact on the number of companies reporting on sustainability but raises a few questions. Should sustainability reporting via the "adopt" or "explain" rule be made mandatory or should it be kept as a voluntary initiative? It is believed that in a voluntary situation, companies would be free to adopt sustainability principles and would exercise their entrepreneurial skills to derive optimum value. Also, the markets would be able to factor in the demand for information on companies' sustainability performance. When sustainability reporting is made mandatory, companies are more prone to treat it as just another compliance instrument.

But whether sustainability reporting should be voluntarily driven or mandatorily imposed remains a debatable topic.

South Africa has a long way to go. Nevertheless, the country has a sound foundation with relevant guidelines formulated and modified at the most appropriate times in history. And when the notion of sustainability comes under the overall mechanism of corporate governance, it makes more sense.

[<Source>](#)

### First public lighting system that runs on solar, wind energy

Source Name: Business Standard

Spanish researchers have designed the first public lighting system that runs on solar and wind energy. The new system, developed after four years of research, is designed for inter-urban roads, motorways, urban parks and other public areas.

It is unique and reduces the cost by 20 per cent compared with conventional public lighting systems, researchers said.

The system was developed by Ramon Bargallo, a researcher from the Department of Electrical Engineering at the Barcelona College of Industrial Engineering (EUETIB) of the Universitat Politècnica de Catalunya (UPC), Spain, in collaboration with the company Eolgreen.

The prototype is 10 metres high and is fitted with a solar panel, a wind turbine and a battery. The turbine runs at a speed of 10 to 200 revolutions per minute (rpm) and has a maximum output of 400 watts (W).

The researchers' aim is to make the lighting system even more environmentally efficient, so work is being done on a second prototype generator that runs at a lower speed (10 to 60 rpm) and has a lower output (100 W).

An electronic control system manages the flow of energy between the solar panel, the wind turbine, the battery and the light.

"It takes very little wind to produce energy. The generator that has been developed can start working at a wind speed of only 1.7 metres per second (m/s), whereas current wind turbines need more than 2.5 m/s," said Bargallo.

"This low intensity can provide six nights of electricity without wind or sun," he added.

[<Source>](#)

sustainability was a part of it.

A committee, known as the **King Committee**, named after its Chair **Judge Mervyn King**, was constituted to lay out the road map to ensure that development was achieved without compromising economic, social and environmental aspects. In 1994, the King Report on Corporate Governance (also known as **King I**) formally laid the responsibility of corporate governance of publicly owned companies on their boards of directors.

The recommendations of King I Report dealt with the financial and ethical dimensions of corporate governance. It was a guidance to companies to be transparent in both financial and non-financial aspects of business which can impact not only shareholders financially but also the communities at large. It requested the boards of companies to develop, publish and enforce codes of ethics.

#### 2002

By 2002, a need was felt to align corporate governance goals with changed realities that confronted the world, especially in terms of sustainability. **King II** report was released in 2002 which coincided with the **Earth Summit** held at Johannesburg the same year. Besides broadening its reach to include government departments, King II report included a separate section (**Sec 5.0 – Integrated Sustainability Reporting**) on sustainability that laid the foundation for sustainability reporting.

## Tropical Forests Are More Precious Than We Had Thought



*Tropical forests like this one in the Serra do Mar Paranaense in Brazil may be absorbing far more human-emitted carbon dioxide than many scientists thought. (Photo by Deyvid Setti e Eloy Olindo Setti via Wikimedia Commons.)*

Scientists have found that tropical forests can absorb more carbon dioxide than what was originally thought of. The study, led by researchers at **NASA** and **National Center for Atmospheric Research (NCAR)**, estimates that tropical forests absorb 1.4 billion metric tons of carbon dioxide out of a total global absorption of 2.5 billion.

But what are the differentiating characteristics of tropical forests responsible for high absorption of CO<sub>2</sub>?

"The CO<sub>2</sub> effect is stronger, other things being equal, at higher temperatures. It is also proportional to overall plant growth, and tropical forests with long growing seasons and abundant water have high growth rates. Those characteristics, combined with their still remaining vast size, account for the effect most likely", says **David Schimel**, of **NASA's Jet Propulsion Laboratory** and lead author of the study, in response to our queries on email.

"Uptake by forests globally has increased significantly over the past decades, despite high rates of deforestation", says Schimel. These findings indicate Nature's response to rising temperatures, i.e., as the levels of carbon dioxide have risen, forests have responded by absorbing more CO<sub>2</sub>.

"Other studies have shown that the global terrestrial (mostly forest) rate of carbon uptake has been increasing over the past 150 years with apparent acceleration over the past 20-30 years. We argue that this is consistent with a strong response by the forests to increasing atmospheric CO<sub>2</sub>, and there really isn't any other candidate theory to explain this increase." says **Britton Stephens**, **NCAR**, co-author of the study. This can be seen as our beacon of hope as tropical forests can play a crucial role in containing adverse consequences of global warming.

Tropical forests are unique ecosystems that account for almost **half of all species on Earth**. But rampant deforestation of vast swathes of tropical forests in Amazon, Central Africa and South-East Asia poses a threat to this precious resource.

Globally, illegal land clearing for commercial agriculture has been found to be responsible for **half of tropical deforestation**. The **commercial drivers** for deforestation are different in different regions – in Latin America, it is soybean farming and cattle pastures; in Southeast Asia it is timber and palm oil plantations and in Africa it is charcoal production. Weak forest protection laws accounted for almost 90% of deforestation in Brazil's Amazon between 2000 to 2012.

Deforestation has triple negative effects. First, the carbon that could have been absorbed by trees is left wandering in the atmosphere. Second, when the cleared areas are burnt using slash and burn techniques more carbon is released into the atmosphere. Third, forest fragmentation caused by deforestation leads to loss of biomass at the forest edges which results in **more carbon dioxide emissions**.

In a study by researchers at the **University of Virginia**, reported in December 2014, it has been found that destruction to tropical forests can drastically alter rainfall patterns which can impact not only the survival of remaining tropical forests but can also have impending consequences far outside the tropics. The study estimates that tropical deforestation can impact agricultural productivity in places as far as the US, France and China.

The new finding that tropical forests absorb more carbon dioxide than other forests and that too in an era of rising global carbon emissions points out the need to explore further the extent to which Nature can extend its support through such self-correcting mechanisms. Shrinking tropical forests may continue to be resilient but uncontrolled deforestation can nullify such benefits.

Tropical forests are more precious than we had originally thought and it is even more imperative now to protect them from deforestation. Only then the math would add up in our favor!

## Why is California a safe haven for electric cars?



*An electric car getting charged*

2014 has been a mixed year for the global electric car market. Though electric car sales have shown an upward trend in the 3 major car automobile markets of China, North America and Western Europe, their market shares in these respective markets have fallen behind expectations. This year, the global auto market posted record fuel car sales posting a growth of about 3% over previous year, something that has not been witnessed in decades. This boom subdued the market share of electric cars in 2014 which shrunk from 3.84% in 2013 to 3.66%.

### So what went wrong?

Falling gas prices that stabilized temporarily around lower price levels and an improved economy that increased purchasing capacity are believed to have led to higher growth in the fuel car market as compared to the electric car market. For electric cars, the uncertainty around driving range on a single charge seem to have deterred users from adopting the new technology. In effect, this indicates that the prediction that electric cars would start displacing fuel cars is *somehow* not turning out anywhere close to be true.

### California – The biggest market for electric cars

But California, presents a different automobile market altogether. The State recorded an impressive growth in electric car market. As of November 2014, electric and plug-in hybrid cars account for almost 10% of all new car sales, (out of which 1.5% is all-electric share, 1.7% is plug-in hybrid share and 6.4% is standard hybrid share).

This year, California sold its 100,000th plug-in electric vehicle. As of December 2014, California accounts for 40% of national sales of plug-in electric vehicles, therefore, it captures a disproportionately large size of the US electric car market.

### What makes California a safe haven for electric cars?

California has been promoting use of renewable energy sources in the mobility space since 1990s. The push for zero emission vehicles dates back to 1990 when the **California Air Resource Board (CARB)** undertook an ambitious initiative by introducing the **Zero Emissions Vehicle (ZEV)** mandate that required car manufacturers to produce 2% Zero-emission cars by 1998 and 5% by 2001.

The challenge was taken up by the large auto companies – GM, Toyota and Honda and they came up with technically sound models – EV1 from GM was the first commercially produced electric car, followed by RAV4 EV from Toyota, EV Plus hatchback from Honda and Ford's Ranger EV pick up truck.

However, the electric car experiment soon started to fizzle out. Car makers demanded a revamp of the ZEV mandate. CARB diluted the zero-emission norms by relaxing the requirement to "**advanced technology partial ZEVs**", basically "hybrid" cars. This move by CARB ruffled feathers in the auto industry and Washington.

In 2001, the auto industry claimed that the partial ZEV mandate involved both fuel and electric drive technologies, and since it involved burning of traditional fuel, it amounted to regulation of fuel economy.

In 2002, matters became worse when Bush Administration filed a litigation by claiming that CARB's partial ZEV mandate was an infringement on its legal jurisdiction, as the fuel efficiency norms were set by the federal government.

In 2003, California had to finally step back and dilute the ZEV norms. The same year, almost all companies abandoned their electric car projects or recalled those already in the market. But by then, the state had already invested in charging stations and other infrastructure needed for electric cars.

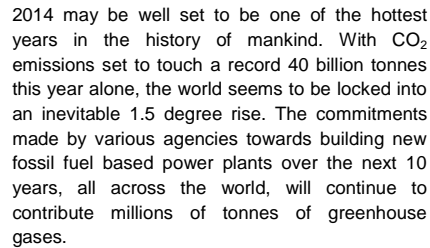
California already had a head start in the electric mobility space and is actively investing in charging infrastructure. The State is home to 1,840 public electric vehicle charging stations operated by Tesla, NRG and ChargePoint. This is almost 22 percent of the total in use in the US. The **California Energy Commission (CEC)** has earmarked special grants to support fast charging infrastructure different EV infrastructure projects in the state.

[<Source>](#)

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### Tip



Governments from the developing world need to understand that the growth models followed by

A group of people, including men, women, and children, are wading through deep floodwaters that have inundated a residential street. The water is murky brown and reaches up to the people's chests. In the background, there are simple buildings and more people further down the flooded street.

An aerial photograph of Los Angeles, California, showing a dense urban landscape. In the background, the city's skyline is visible, with several prominent skyscrapers rising above a thick layer of smog or haze that fills the middle ground. The sky is a pale, hazy blue, and the overall atmosphere is one of air pollution.

- In most of cities in India there is no facility to sort the waste hence we should try to store recyclable materials like plastic, metals, paper, glass etc in a separate bin and other compostable waste in another bin.
- Organize your neighbors and community members to give their waste in an organized way to local waste pickers. For this, you must work with the waste pickers so they come every day, on time.
- Give your old clothes, woolens, utensils, furniture etc to the waste pickers thus they will get help and you will reduce waste.
- Now days the newspaper publishers themselves are buying back old newspapers though they may pay you lesser amount but they give it to recyclers which save trees and water two very important natural resources.
- Don't waste foods distribute it to the needy and hungry people. If it is not fit for human consumption the same may be fed to cattle and if it is not possible then should be given for composting.
- Lead-Acid Car Batteries can be returned to almost any store that sells car batteries. The lead and plastics from the batteries can then be recycled and used to manufacture new products. As you are aware these batteries contain heavy metals by recycling you help to prevent these heavy metals from going to landfill.
- Do not throw your hazardous waste like used syringes, needles, glucometer strips etc along with other trash.
- Buy larger packing of commodities which are in regular use, which will be economical as well as help reduce the trash.
- Get your cartridges of printer refilled and not only reduce waste but also reduce energy consumption which would have been used for recycling it.
- Re-used tea bags/ tea leaves in a bucket of water and use the resulting weak tea to water your plants and protect them from fungal infections. Alternately, open up used tea bags and sprinkle the damp leaves around the base of your plants to fertilize the soil and deter garden pests like mice.
- When you prepare paneer (fresh cheese) don't throw away the leftover water it is whey and that can be used for raising flour or for preparing several food articles.

## 'It is profitable to let the world go to hell'

As politicians and business leaders gather in Davos, climate expert Jørgen Randers argues that democracy will continue to hamper climate action

By Jo Confino

- How concerned are CEOs about climate change? Not at all
- More than talking heads: why Davos matters
- 'Ethnic inequality is a drag on the economy'



Aurora borealis, Utaaleiv, Norway. A plan to solve climate problem if every Norwegian paid €250 (£191) in extra taxes every year for next generation or so, was not given the green light. Photograph: David Clapp/Getty Images

global battle to address climate change, they would do so from a pessimistic perspective.

The professor of climate strategy at the Norwegian Business School has been pretty close to giving up his struggle to wake us up to our unsustainable ways, and in 2004 published a pessimistic update of his 1972 report showing the predictions made at the time are turning out to be largely accurate.

What he cannot bear is how politicians of all persuasions have failed to act even as the scientific evidence of climate change mounts up, and as a result he has largely lost faith in the democratic process to handle complex issues.

In a newly published paper in the Swedish magazine Extrakt he writes:

More on this topic:

[Our economic system enriches the most powerful at the expense of the 99%](#)

*It is cost-effective to postpone global climate action. It is profitable to let the world go to hell.*

*I believe that the tyranny of the short term will prevail over the decades to come. As a result, a number of long-term problems will not be solved, even if they could have been, and even as they cause gradually increasing difficulties for all voters.*

Randers says the reason for inaction is that there will be little observable benefit during the first 20 years of any fiscal sacrifice, even though tougher regulations and taxes will guarantee a better climate for our children and grandchildren.

He has personal experience of this, having chaired a commission in Norway that in 2006 came up with a 15-point plan to solve the climate problem if every Norwegian was willing to pay €250 (£191) in extra taxes every year for the next generation or so.

If the plan had been given the green light, it would have allowed the country to cut its greenhouse gas emissions by two-thirds by 2050 and provide a case study other rich countries could learn from.

He says:

*In my mind, the cost was ridiculously low, equivalent to an increase in income taxes from 36% to 37%, given that this plan would eliminate the most serious threat to the rich world in this century.*

*In spite of this, a vast majority of Norwegians were against this sacrifice. To be frank, most voters preferred to use the money for other causes – like yet another weekend trip to London or Sweden for shopping.*

When it comes to more regulation or higher taxes, Randers says voters tend to revolt and, as a result, politicians will continue to refuse to take courageous steps for fear of being thrown out of office at the next election.

"The capitalist system does not help," says Randers. "Capitalism is carefully designed to allocate capital to the most profitable projects. And this is exactly what we don't need today."

"We need investments into more expensive wind and solar power, not into cheap coal and gas. The capitalistic market won't do this on its own. It needs different frame conditions – alternative prices or new regulation."

More on this topic:

[From water to weather: where to make money sustainably](#)

An obvious solution is putting a price on carbon so that companies are forced to internalise the external costs of CO2 emissions, but despite many progressive companies calling for such a tax, Randers says voters will be loath to pay more.

Optimists who believe this stalemate will end once it becomes profitable to solve the climate problem have a very long time to wait, according to Randers.

"It will always cost more to produce clean power from coal, than to produce dirty coal power as we do today," he says. "It will always cost to collect the CO2 emitted from the burning of coal. And global society will be burning coal for a very long time unless something drastic is done."

In the face of such intractable opposition, what can we do? Randers says the first step is to communicate effectively to citizens that short-termism represents a real threat to the sustainability of democratic society.

Second, we should argue for the use of low discount rates in public cost-benefit analyses and encourage the use of common sense rather than quantitative analyses when deciding whether to make long-term investments. One way would be to set aside a fraction of society's investment flow for long-term purposes, in similar fashion to the military budget.

Another sensible change, he argues, would be to lengthen the election period in order to give politicians time to implement unpopular measures before they lose the next election, and to guarantee all workers receive an adequate salary after their "dirty" jobs have been closed down until they get new "clean" jobs.

Randers says:

*These five solutions have all been proposed, and sadly rejected by a democratic majority, as has the most obvious sixth solution, which is to reinstall enlightened dictatorship for a time limited period in critical policy areas, like the Romans did when the city was challenged and which is the solution currently pursued by the Chinese Communist party, with obvious success in the poverty/energy/climate area. But I agree that the obvious solution of strong government appears unrealistic in the democratic west.*

Given that Randers believes these proposals will fail, what does he suggest? Rather than being idealistic, he says we need to promote policies that offer long-term solutions and short-term benefits.

More on this topic:

[More than talking heads: why Davos matters](#)

He gives the example of the Tesla electric car, which offers superior short-term advantages that compensate for the high price. He also highlights the introduction of huge subsidies in Germany for those who were willing to install solar panels on their rooftops or windmills in their fields, although Randers points to the system ending after many years because voters did not like the extra tax.

For many decades, Randers has refused to sweeten the bitter pill of climate change and is not going to start now. Some dismiss his pessimism as belonging to the past and argue we are transitioning to a new era of global climate action. But they would be wrong to ignore the warnings of an elder who has borne his scars with honour and dignity, and who continues to devote his energy to solving the greatest challenges facing humanity.

[<Source>](#)

## Green Buildings Cost 20% Less to Maintain

SustainableBusiness.com News

One of the many advantages of green buildings is that they cost less to operate, and now a study confirms how that's benefiting the federal government and taxpayers.

The US General Services Administration (GSA) and Pacific Northwest National Lab examined a year of data for 22 LEED-certified federal buildings across the country and found they cost 19% less to maintain than conventional buildings.

They also found the buildings consume 25% less energy and water, produce 36% less carbon emissions, and have a 27% higher rate of occupant satisfaction.

These savings have been achieved regardless of building size and green features, which include radiant air distribution, irrigation rain sensors, variable speed drives, vegetated or reflective roofs, PV panels, and energy-efficient elevators, according to Buildings.com.

Will this hold true for certified buildings under the industry-friendly Green Globes? In 2013, GSA changed its longstanding requirement that LEED certification be used for federal government buildings, giving equal footing to Green Globes.

Army Corps of Engineering complex:



In a related study on certified commercial buildings, researchers found lower greenhouse gas emissions from water consumption (50%), solid waste management (48%) and transportation (5%) than in conventional buildings in California. UC Berkeley's Center for Resource Efficient Communities evaluated the performance of more than 100 buildings across the state that are certified for LEED Existing Building Operations and Maintenance.

[<Source>](#)



# Climate report reveals which companies have been naughty or nice

By Lauren Hepler



New data reveals how the world's biggest greenhouse gas emitters stack up.

Sure, the Fortune 500 is a staple of the western business world. But what about the way the entire world's 500 biggest companies — the global 500 — are affecting our climate?

Thomson Reuters this week [released its latest report \(PDF\)](#) on the greenhouse gas emission patterns of the global 500, which reveals a mixed bag of environmental efforts and encompasses companies in diverse industries. The biggest emitters include household names concentrated in the energy and manufacturing fields.

The report is daunting in its scope, methodically reporting on hundreds of millions of tons of carbon dioxide released during the course of business operations in 2013. While some corporate players have reduced their footprints — including big names such as BP, Valero and ConocoPhillips — others have stayed relatively stagnant or even noticeably increased their CO2 output.

The 500 companies identified are directly or indirectly (through the energy they use) responsible for about 13 percent of global GHG emissions, with energy companies responsible for about 37 percent of those emissions. Combined global 500 revenues pencil out to about 28 percent of world GDP.

Profit motives, shifting regulatory frameworks and financial sustainability imperatives aside, there are also broader consumption patterns to take into account when it comes to the demand for products and services from global 500 companies.

"Responsibility' in this context is a complex concept," the Thomson Reuters report explained. "Nearly all of us regularly use the products from the largest emitters of GHG."

Here is Thomson Reuters' new list of biggest overall GHG emitters of 2013:

Appendix 1: Top 20 Emitters – 2013						
Company Name	Country	GCIS Sector	GCIS Sub-Industry	Estimated CO <sub>2</sub> e MT	Index	Estimation method
PETROCHINA Company Limited	China	Energy	Integrated Oil & Gas	310,518,999	104	Median
China Petroleum & Chemical Corporation	China	Energy	Integrated Oil & Gas	249,454,634	98	Median
Arcelor Mittal	Luxembourg	Materials	Steel	207,000,000	112	Reported
NTPC Ltd	India	Utilities	Independent Power Producers & Energy Trader	200,394,691	108	Reported
RWE AG	Germany	Utilities	Multi-Utilities	167,200,000	98	Reported
EDF Suez	France	Utilities	Multi-Utilities	153,338,806	136	CO <sub>2</sub>
Duke Energy Corporation	USA	Utilities	Electric Utilities	136,175,000	85	Reported
Gazprom OAO	Russia	Energy	Integrated Oil & Gas	131,895,468	96	CO <sub>2</sub>
Exxon Mobil Corporation	USA	Energy	Integrated Oil & Gas	126,000,000	86	Reported
E.ON SE	Germany	Utilities	Multi-Utilities	120,700,000	91	Reported
ENEL SpA	Italy	Utilities	Electric Utilities	115,690,000	99	Reported
American Electric Power Company, Inc.	USA	Utilities	Electric Utilities	115,000,000	83	Reported
Nippon Steel & Sumitomo Metal Corporation	Japan	Materials	Steel	114,071,904	189	CO <sub>2</sub>
Holcim Ltd	Switzerland	Materials	Construction Materials	102,100,000	101	Reported
The Southern Company	USA	Utilities	Electric Utilities	102,000,000	77	Reported
Lafarge S.A.	France	Materials	Construction Materials	92,500,000	88	Reported
POSCO	South Korea	Materials	Steel	88,198,000	123	Reported
Royal Dutch Shell	Netherlands	Energy	Integrated Oil & Gas	83,000,000	98	Reported
EDF	France	Utilities	Electric Utilities	80,800,000	99	Reported
Petrobras Braskem SA - Petrosbras	Brazil	Energy	Integrated Oil & Gas	79,400,000	120	Reported

Efforts to more precisely quantify GHG emissions have been gaining traction as a way to both gauge business costs and benefits, as well as provide a better baseline for relevant governmental regulations — a particularly hot topic with the next round of United Nations' Paris climate talks approaching next year.

The 15-year-old Greenhouse Gas Protocol, for example, is one of the most widely recognized GHG accounting initiatives and includes companies such as Sony, Intel and Office Depot.

In the new report, Thomson Reuters noted that the GHG intensity of specific industries is important to consider when evaluating ways to reduce emissions.

"For some industries with relatively large footprints, such as utilities, mining, cement production and steelmaking, GHG emissions come from running their core businesses. Efforts to reduce emissions will focus on stakeholder engagement in their operations to drive efficiency and reduction," the report noted. "Other businesses with smaller operational footprints, such as banking, telecommunications and retail, can also have profound emissions impact by requiring measurement and reductions across their value or supply chains."

That brings us to this year's nice list of companies that made notable headway cutting down on GHG emissions between 2010 and 2013:

Appendix 2: Businesses with 2013 GHG Footprint of > 10 Million Tonnes and a Decrease of > 10 Percent over 2010						
Company Name	Country	GCIS Sector	GCIS Sub-Industry	Estimated total Scope 1+Scope 2 CO <sub>2</sub> and CO <sub>2</sub> equivalents emission in tonnes	2013 versus 2010 Baseline 100	CO <sub>2</sub> estimate method
ConocoPhillips	USA	Energy	Oil & Gas Exploration & Production	27,386,496	40	Reported
Valero Energy Corporation	USA	Energy	Oil & Gas Refining & Marketing	18,747,879	58	CO <sub>2</sub>
Dominion Resources, Inc.	USA	Utilities	Multi-Utilities	35,463,532	62	CO <sub>2</sub>
BP	United Kingdom	Energy	Integrated Oil & Gas	55,800,000	74	Reported
Vale	Brazil	Materials	Steel	15,400,000	77	Reported
The Southern Company	USA	Utilities	Electric Utilities	102,000,000	77	Reported
Iberdrola SA	Spain	Utilities	Electric Utilities	36,019,292	79	Reported
LyondellBasell Industries C I A	Netherlands	Materials	Commodity Chemicals	19,000,000	79	Reported
Eni SpA	Italy	Energy	Integrated Oil & Gas	48,055,680	81	Reported
CEZ	Czech Republic	Utilities	Electric Utilities	31,764,986	82	CO <sub>2</sub>
American Electric Power Company, Inc.	USA	Utilities	Electric Utilities	115,000,000	83	Reported
Rio Tinto	United Kingdom	Materials	Diversified Metals & Mining	37,800,000	85	Reported
Anglo American	United Kingdom	Materials	Diversified Metals & Mining	17,010,000	85	Reported
Duke Energy Corporation	USA	Utilities	Electric Utilities	136,115,000	85	Reported
Cherone Corporation	USA	Energy	Integrated Oil & Gas	57,000,000	86	Reported
Exxon Mobil Corporation	USA	Energy	Integrated Oil & Gas	126,000,000	86	Reported
NextEra Energy, Inc.	USA	Utilities	Electric Utilities	44,947,871	87	Reported
Total	France	Energy	Integrated Oil & Gas	50,300,000	88	Reported
Lafarge S.A.	France	Materials	Construction Materials	92,500,000	88	Reported
BASF SE	Germany	Materials	Diversified Chemicals	22,829,000	89	Reported

Other than sparing some of our air, what's the business upshot for cutting GHG emissions?

One recent report suggested that more than 60 percent of Fortune 500 companies have set formal targets for reducing emissions and/or transitioning to renewable energy. In fact, 53 leading companies in this space collectively have saved some \$1.1 billion annually, according to an analysis by environmental advocacy groups Ceres and WWF.

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## Historic Day in South Korea, National Cap-and-Trade Begins

SustainableBusiness.com News

On January 1, South Korea launched national cap-and-trade, the second largest program in the world after the European Union.

Out of the gate it covers the biggest 525 polluters - about 60% of total emissions - in a wide range of economic sectors: utilities, refineries, steel and car manufacturers and even airlines and ship-builders, livestock farms and large universities.

On the first day of trading, over 1000 emissions permits sold for an average \$7.97 on the Korea Exchange, about the same as in the EU.

The fourth largest economy in Asia, South Korea is the fastest growing source of greenhouse gas emissions among industrialized countries, doubling since 1990. It is the 8th biggest source of the world's emissions - the goal is to cut them 30% by 2020. The cap-and-trade program has been planned since 2012.

The country ranks #10 in the world for energy efficiency and has specific targets for cap-and-trade, which it says is the most efficient, least burdensome way to lower emissions: 34.3% from transportation; 26.9% from buildings; 26.7% from power generation; 25% in the public sector; 18.5% in industry; 12.3% from waste and 5.2% from agriculture and fisheries.



South Korea is headquarters for the Green Climate Fund and pledged \$100 million in donations to help developing nations.

Cap-and-trade programs are taking root around the world. Besides the EU, there are national programs in Kazakhstan, Croatia and New Zealand, and one that covers the city of Tokyo. There's the joint California/ Quebec program and RGGI in the eastern US. South Africa is planning one.

China's regional program goes nationwide next year - the world's biggest. Phased in over the past few years, pilot programs are now operating in all seven regions.

73 countries, 22 states, provinces and cities - together responsible for 54% of the world's greenhouse gas emissions and 52% of GDP - and over 1,000 businesses and investors signed a document supporting pricing carbon emissions, either through a carbon tax or cap-and-trade program. The US is not among them.

[<Source>](#)

## 3 ways for cities to go 'carbon negative' by 2030

By Noah Deich



*Cities are notorious for high emissions levels, but emerging "carbon negative" technologies can help mitigate the problem — or even create benefits for urban environments.*

*This article originally appeared at Everything and the Carbon Sink.*

As it stands, the world's cities account for roughly 70 percent of global carbon dioxide emissions.

With urban populations expected to keep growing, cities' exposure to climate change only looks likely to get worse — unless these population and business hubs can break away from a status quo defined by high greenhouse gas emissions.

Fortunately, the emerging field of carbon dioxide removal offers hope.

Carbon removal technologies, also known as "carbon negative" technologies, afford cities the opportunity to turn the current GHG emission paradigm on its head by enabling cities to subtract more GHGs from the atmosphere than they emit.

Just imagine: the more that a carbon negative city emits, the greater positive environmental impact the city would have — assuming that its individual carbon removal systems can scale.

In the process of becoming carbon "negative," cities will gain opportunities to build sustainable foundations that enable continuous advances in health, prosperity and well-being for their citizens.

Here's how cities across the globe might become carbon "negative" by 2030:

### 1. Start with the built environment

The physical structures of our buildings hold great potential to lock away carbon.



*Sustainably-harvested wood can be used in myriad structures that serve as a carbon sinks, including this bridge in the city of Sneek in the Netherlands.*

Materials such as sustainably harvested timber and carbon negative cements one day could trap large volumes of carbon in our cities' skyscrapers, roads and sidewalks, preventing that carbon from escaping back into the atmosphere for decades.

What's more, our buildings literally can begin to come alive: green walls and rooftop gardens not only suck carbon out of the air, but they also can provide healthy local produce, reduce storm water runoff and decrease the urban heat island effect.

While the potential for rooftop gardens may be limited by the number of suitable roofs, the sky is the limit for carbon-consuming "vertical farms."

And coastal cities even could expand similar agriculture projects offshore, as illustrated by the "Green Float" concept.

### 2. Harness the potential of public spaces to sequester GHGs

In addition to buildings, public areas hold the potential to be carbon "negative." For example, cities can employ biochar to enhance the ability of parks to sequester carbon.

Cities also can manage public rights of way with landscaping techniques that enhance carbon sequestration.

For coastal cities, restoring wetlands and/or offshore areas can remove carbon from the air all while protecting the city (from extreme weather events and sea level rise) and providing outdoor recreation areas.



### 3. Unleash the power of innovation hubs

While many carbon removal concepts are nearing commercialization today, cities will have to accelerate innovation to make carbon "negative" cities a reality by 2030.

To accomplish this, one possibility is for cities to create innovation hubs by providing workspace and seed funding for promising startups.

Take Climeworks as an example. The

Swiss startup spun out of ETH Zurich and leveraged workshop space provided through the university and philanthropic seed funding to develop a machine that pulls carbon dioxide directly out of ambient air to make transportation fuels.

By building on this approach, cities can create innovation hubs for different carbon removal niches — energy, urban agriculture, waste management. The process not only builds tools for cities to go carbon negative, but also helps create a durable culture of innovation designed to address cities' most pressing concerns for the future.

### Can any city go carbon negative?

Yes. No two cities will pursue the same path to being carbon negative, but each can work to create an environment that encourages the development of CDR solutions best suited to its people, geography and unique history.

In working towards carbon negative goals, cities will see immense positive impacts as they become healthier, more prosperous, innovative and beautiful.

[<Source>](#)

## Barack Obama moves to cut US methane emissions by almost half

*Environmental Protection Agency will cut oil and gas industry methane emissions as president seeks to bolster climate legacy*

By Suzanne Goldenberg, US environment correspondent

Barack Obama will unveil a plan to cut methane emissions from America's booming oil and gas industry by as much as 45% over the next decade in an attempt to cement his climate legacy during his remaining two years in the White House.

The new methane rules — which will be formally unveiled on Wednesday — are the last big chance for Obama to fight climate change.

The Environmental Protection Agency is aiming to cut methane emissions by up to 45% from 2012 levels by 2025, White House officials told campaigners during a briefing call.

But it was not clear whether the new rules would apply to existing oil and gas installations, in addition to future sources of carbon pollution, which could weaken their effectiveness in fighting climate change.

"It is the largest opportunity to deal with climate pollution that this administration has not already [been] seized," said David Doniger, director of the climate and clean air programme at the Natural Resources Defence Council.



*Methane gas flares near an oil well in the Bakken oil fields, in North Dakota. Photograph: Richard Hamilton Smith/Corbis*

Methane is the second biggest driver of climate change, after carbon dioxide. On a 20-year timescale, it is 87 times more powerful as a greenhouse gas.

US officials acknowledge that Obama will have to cut methane if he is to make good on his promise to cut US greenhouse gas emissions 17% from 2005

levels by 2020, and by 26% to 28% by 2025.

"It is the largest thing left, and are there that they intend to step forward on that," Doniger said.

it's the most cost-effective thing they can do that they haven't done already, and all the signs

The Environmental Protection Agency is expected to roll out a combination of regulations and voluntary guidelines for the oil and gas industry, people familiar with the plan said.

The rules represent Obama's first big climate push on the oil and gas sector, after moving to cut emissions from power plants and, during his first term, cars and trucks.

But the clock is ticking. Any new EPA regulations would have to be finalised by the end of 2016 — and Republicans in Congress and industry lobby groups are already mobilising to oppose the standards.

Methane accounts for about 9% of greenhouse gas emissions, according to the EPA. The biggest share of this by far comes from the oil and gas industry, which has exploded over the last decade.

The US is now the world's largest producer of natural gas, and is on track to become the world's largest oil producer in 2015.

Most of those greenhouse gas emissions are from leaky equipment — faulty casing on newly fracked wells, but also millions of miles of pipelines and ageing infrastructure.

The EPA had originally promised to announce a new methane plan by the end of last year.

The agency administrator, Gina McCarthy, indicated that the agency would combine regulations with voluntary guidelines for industry.

Unlike the power plant rules, which left industry a fair amount of latitude in cutting emissions, the methane standards are believed to be tightly focused on plugging leaks.

The new rules could directly target leaking valves and other equipment that allow methane to escape from wells, pipelines and other infrastructure.

The new rules could also be backed up with voluntary guidelines for other types of air pollutants that would also lower methane emissions.

"If you take steps to reduce volatile organic compounds, those steps would automatically have the secondary benefit of reducing methane emissions," said Sandra Snyder, an environmental attorney at the Bracewell Giuliani law firm.

[<ReadMore>](#)



## How to turn human waste into drinking water – and more

By Terry Slavin

*The winning entry in a Bill Gates-funded design challenge provides clean water, generates power ... and makes a profit*



*Bill Gates tests drinking water made from human waste, produced by the Omniprocessor.*

Bill Gates sipping from a glass of water doesn't sound like riveting television. But add the subtitle: "This water was human waste five minutes earlier" and people will sit up and take notice.

That's precisely the reaction Gates was aiming for earlier this month when he unveiled a new technology on his blog which he claims could revolutionise the way sanitation is provided all over the developing world and improve the lives of millions of people.

The Omniprocessor, which has been developed by Janicki Bioenergy, a small family-run company north of Seattle, is a compact waste treatment plant that can process sewage for a community of about 100,000 people. Unlike modern sewage plants, which squander huge amounts of electricity treating waste, the technology combines incineration, steam power and filtration technologies to ensure no energy is wasted in the process.

Its star turn is to generate 11,000 litres of high-grade drinking water a day – and that is just the start. The processor derives enough energy from the faecal matter it incinerates to run the unit, with 150kw a day spare to export to the grid. It also produces ash, which can be commercially valuable as a soil amendment.



[Play Video](#)

potentially be its most powerful weapon in tackling the problem of the 2.5bn people who still lack access to a toilet. Poor sanitation is a global public health crisis, and is one of the primary reasons why 1.5 million children die every year from diarrhoea, according to Unicef.

In 2011, the foundation issued a challenge to researchers around the world to design a toilet that works without running water, electricity or septic system, and can be operated for as little as 5 US cents (3p) per person per day to run, including purchase and maintenance costs.

It set another challenge for scientists to develop technologies to make the servicing of pit latrines and septic tanks cheaper and easier, and a third to design a new type of waste treatment plant, which led to Peter Janicki's family company winning a contract.

"We are working on a number of other projects that we are excited about," Arbogast says, "but this is the closest to being commercially available. It treats the sludge of 100,000 people so it's a much larger social intervention [than simple toilets]. Every unit will transform its community."

That is, of course, providing it can be proved to work in the real-world environment of Dakar, Senegal, where the first unit will be shipped next month accompanied by Janicki's 22-year-old son, Aaron. Depending on the outcome, Janicki and his team are planning a second model that they say will be almost eight times more efficient: producing 86,000 litres of clean drinking water a day.

Arbogast says what makes the Omniprocessor so potentially revolutionary is its income-generating potential, which the foundation hopes will attract private sector entrepreneurs to a sector that until now only governments have been able to bankroll. The expected price tag of \$1.5m (£0.99m) may sound a lot, but Arbogast says conventional sewer-based sanitation systems cost tens of millions of dollars to buy, and then millions of dollars every year to

maintain due to their high electricity consumption. "Where they exist, sewage treatment plants tend to only serve downtowns, central business districts and the wealthiest neighbourhoods. It is very rare for the poorest to be served by them," he says.

And even if a city can afford the initial outlay for a sewerage system, many abandon them a few years later because they can't afford the upkeep. In Accra, Ghana, fecal sludge is dumped untreated in the sea because the city no longer has a functioning sewage treatment plant.

The fact that the Omniprocessor will generate income from the water, electricity and ash it produces means it will become a money-spinner within two to five years, says Arbogast. "In many communities the poor pay 15 cents (9p) per litre for drinking water. This unit would be very profitable at a fraction of that price."

Dakar was chosen as the test site for the first Omniprocessor because the municipal sanitation agency, Onas, had already partnered with a private company to operate three of its sewage treatment plants. Delvic, which is run by Lena Tall Faye, improved profitability from the plants so dramatically that Onas is making more than when it was running them itself, says Arbogast. "Madame Faye is a remarkable woman, and a great example of the type of entrepreneur we think could dramatically help a city like Dakar improve its sanitation."

And Faye, too, is excited about the arrival of the new processor. "Our objective is to make these plants profitable, but at the moment our only revenue is from a charge paid by the trucks that deliver the sludge," she says. The trucks in turn charge Dakar's residents for removing it. "That's why we have great hopes for the Omniprocessor. If it performs as expected, it will increase Delvic's profits substantially and ultimately allow us to cut the cost of collecting sludge from needy homes."

She says Delvic will look at acquiring the Omniprocessor for other cities in Senegal and in the rest of the subcontinent.

Gates was reportedly impressed that the Omniprocessor is equipped with sensors and webcams to enable Janicki's engineers in Seattle to monitor and control its operations in Dakar, should local engineers need help. But this questions whether the technology involved is too sophisticated to provide a sustainable solution to sanitation in developing cities such as Dakar.

[<ReadMore>](#)

## Scotland: On Track to 100% Renewable Energy

*SustainableBusiness.com News*

Let's start the year off with some good news. At least one country is on track to getting all its electricity from renewables, and that's Scotland.

In December, the country's wind farms produced 107% of its electricity, according to utility National Grid. And World Wildlife Fund (WWF) released a study showing Scotland's electricity can be entirely fossil-free by 2020, meeting its ambitious target.

Throughout the year, wind provided all the power for 98% of households, and renewables **matched fossil fuels for the first time**. Renewables supplied 32% of all electricity, equal to oil, coal and gas, and coming close to nuclear (34.9%) - the top electricity source in Scotland.

In October, renewable energy quietly kept the lights on while nuclear reactors were closed because of cracks. And the government approved four huge offshore wind farms that will generate another 2.2 gigawatts of power for 1.4 million homes.

Even without strong solar resources, there's enough to meet demand for most households during June and July, and for 60%-plus in March, April, May, August and September, according to WWF's report.



"Scotland has plenty of renewables in the pipeline to cut the carbon from its power supply by 2030, particularly if we see progress on reducing electricity demand. And crucially, Scotland can continue to be an electricity exporting nation," notes lead author Paul Gardner. "There is no technical reason requiring conventional fossil and nuclear generation in Scotland."

Wind is breaking records across the UK, growing 15% in 2014. It supplies 9.3% of all electricity, up from 7.8% in 2013. In December, wind hit a record 14% of total electricity.

All this comes when Prime Minister Cameron has said "enough with onshore wind," promising to block further development if Conservatives win in May's election, as he promotes fracking.

Globally, offshore wind is expected to grow fivefold by 2020, to 40 gigawatts, up from 7.1 GW in 2013, according to GlobalData, largely in the UK, Germany and China. **Marine Energy**

This month, the world's largest tidal energy project breaks ground in Scotland, with 400 megawatts of energy eventually supplying 175,000 homes. About 60 of 269 turbines in the MayGen project will be running by 2020, says developer Atlantis Resources.

That's even while marine energy is experiencing growing pains, with leaders like Scotland's Pelamis Wave Power bankrupt after running out of money, and Siemens exiting the industry for faster developing sectors. Most marine energy companies are struggling.

[<Source>](#)

## 2014: The year water rose to the top of public consciousness

By Will Sarni



Stockholm World Water Week, water.org), client engagements and the numerous off-the-record conversations that, for me, are a highlight of conferences with colleagues.

2014 was the year the water issues went mainstream, propelled to the forefront of challenges facing the public and private sectors. In January, the World Economic Forum ranked the “water crisis” No. 3 in terms of impact (the food crisis was ranked as No. 8); the CDP Water Program report was released, further highlighting water related risks; and a VOX Global and Pacific Institute report on water risks in the United States was issued. These reports and many others highlighted the business liabilities — and in some cases, the business opportunities — from water scarcity and quality risks.

Here are some of the year's highlights:

- **The “drought”** — First, let's stop calling it the “drought.” It's the “new normal,” and we need to plan how we manage water by looking forward instead of looking to the past for a view of supply and demand. The drought in the American West, Brazil and China highlighted the toll water scarcity takes on the public, businesses and, ultimately, the economy. One didn't have to look any further than California agriculture to see the impact of water scarcity on economic activity. The drought promoted funding for water-related projects in California this year just as it did in Texas last year.
- **Management to stewardship** — In the private sector there appears to be real movement from thinking of water as a management issue to a stewardship issue. CDP Water, CEO Water Mandate, WWF, the Alliance for Water Stewardship and others, including me, are pushing to get the public and private sector to understand that managing water will not completely address water risks. In most cases the majority of water-related risks are outside your operations — in your supply chain, downstream and in the watersheds in which you operate.
- **WASH** — This year saw an increase in businesses addressing access to safe water, sanitation and hygiene as part of their sustainability and water stewardship strategies. WBCSD has gained traction with their WASH Pledge, with more than 20 companies having signed it to address this most essential human need.
- **Water tools** — Tools and frameworks were everywhere as NGOs, multinationals and consultants attempt to quantify the full value of water. While tagged as “full value” they actually were more focused on risk and full cost. What is missing is quantifying reputational risks and brand value in economic terms. Perhaps in 2015.
- **Water-energy-food nexus** — One could not go to a sustainability conference without at least one session on “the nexus.” While education and awareness are essential, most of these sessions were dedicated to viable solutions in terms of public policy and technology. 2015 should see a real shift to solutions as Big Data applications are leveraged to drive increased water efficiency/reuse and smart agriculture.
- **Water tech garners increased attention, yet liftoff seems slow** — This year was filled with optimism that investment in water tech innovation would pay off. Increased attention in data treatment technologies holds the promise of vastly improved efficiency and effectiveness in water use.

Here's what to expect in 2015:

- **State and federal initiatives on water.** Expect to see states rethinking water policy and infrastructure investment taking the lead from Texas and California. The economic value of water and the “branding” of water at the state and local level will come into view as competition for water-intensive business heats up. States will quantify the economic value of water as a foundation for increased (and smart) funding and changes in policy and engagement with NGOs and the private sector.

[<ReadMore>](#)

## Say sayonara to Styrofoam and hello to Mushroom Materials

By Victoria Knowles

*This article originally appeared at 2degrees.*

A few years ago, mushrooms were something that accompanied beans and hash browns for breakfast, and even comprised the meat-free substitute in your veggie sausage. Now, you'll still find mushrooms on your dinner plate, but you'll also find its derivatives lining your walls and packaging products. Not only that, but you'll soon be able to grow it yourself.

Ecovative is the U.S.-based company behind Mushroom Materials, which is made from agricultural waste (stalks and seed husks) and fungal mycelium (a natural, self-assembling glue). In September, the firm will release a “Grow It Yourself” kit in the U.S., containing bags of living Mushroom Material, the base for its innovations such as plastic and insulation.

Because Ecovative doesn't want to keep the fungi to itself — it wants everyone from designers and artists to educators and innovators to develop all kinds of compostable products and projects.

Take designer David Benjamin, principal architect at The Living: He took a few bags of live Mushroom Material and grew them into bricks that he had designed himself. He then went back to Ecovative, which helped him manufacture his bricks at scale. Three months and 10,000 bricks later, the 40-foot Hy-Fi tower was born, representing the largest structure made from Mushroom Materials to date.

Yes, mycelium is making its debut in everything from lamp shades, flower pots to an “awesome” surfboard. The firm recently asked budding innovators people to share their ideas for using the kit in a social media contest. The winners, announced at the beginning of the month, came up with some innovative (and somewhat unusual) ideas. “We're looking forward to seeing our three winners create products along the lines of pet coffins, personalized acoustic panels for band rooms, and Styrofoam cup replacements,” Eben Bayer, Ecovative's CEO, told me.

Future kit owners are free to keep, sell or even scale up their design as Benjamin did. Ecovative can help with the latter at its New York-based production facility, which consistently can replicate designs to a high quality.

The company has come a long way since Bayer co-founded it in 2007. His TED talk back in 2010 now has just shy of a million views (“TED was an amazing experience”), and the few years then since have been keeping the young inventor pretty busy, including progressing from a production process that “relied on duct tape and used equipment” to inhabiting two state of the art facilities in New York and Iowa.

### Are mushrooms the new plastic?

Bayer said Mushroom Materials are a way for businesses to achieve their sustainability goals, without having to compromise on cost or performance. (The 10-pound Grow It Yourself kit will be \$19.99 plus shipping and handling, if you're wondering.)

The company's kick-off product was its Mushroom packaging — a Cradle to Cradle gold certified alternative to conventional plastic. The likes of Dell, Puma, and Crate & Barrel used the fungi-based material in the U.S., before Ecovative expanded it to the European market.

Application since has expanded into the building sector. “Mushroom Materials are cost competitive to standard foams,” the CEO said. “Our insulation will be similar to rigid board insulation, providing a tight envelope with few thermal bridges, resulting in a more energy efficient building. Mushroom Insulation is safe to touch and be installed without any special safety gear.” Plus, it achieves a class A fire rating with no toxic fire retardants required, he added.

This has been road-tested with the tiny mushroom house, which is insulated with the natural material rather than shaped like the vegetable, as the name might suggest. The project can be replicated by anyone with a buddy and two months of free evenings and weekends.

So — packaging, insulation and bringing Mushroom Materials to the masses. What's next? The company now has its beady eye on wood, and has engineered a replacement called Myco Board.

“Current engineered woods are held together with urea-formaldehyde, a known carcinogen. Our technology platform binds particles together with naturally occurring mycelium,” Bayer explained. Potentially, this could outperform MDF (medium density fiberboard) and particleboard, he adds.

Where possible, Bayer wants to develop natural materials that can replace synthetics — something the company already has proved with a plastic foam replacement. “Now we're expanding into denser materials that can replace engineered wood like fiberboard, without the need for carcinogenic adhesives,” he explained.



*A U.S. startup has found a way to use mycelium — the root structure of mushrooms — as a sturdy, nontoxic replacement for styrofoam. Future implementations may be able to replace materials such as MDF (medium density fiberboard) and plywoods.*

[<ReadMore>](#)



# Forget carbon offsetting, insetting is the future

Rather than planting trees at arm's length, businesses from hotel groups to construction firms are embedding sustainable activities directly into their supply chains

By Tim Smedley



In partnership with the Lisu communities of Yunnan region, China, Pur Projet develops the "Liming" reforestation program. This develops herbal agroforestry gardens to help preserve traditional Chinese medicine culture and protect China's threatened biodiversity. Photograph: Christian Lamontagne/Cosmos

Planting trees for carbon offsets is little better than green-washing in many people's eyes. But what if this sustainability cliché were turned on its head – if trees were planted to support agroforestry within a business's direct supply chain? Welcome to the world of insetting. Coined and promoted by sustainability standards Plan Vivo and Pur Projet, it's a potentially powerful concept that can benefit businesses and the environment.

Offsetting may have long had a bad name (George Monbiot has strongly voiced his concerns), but it remains big business. Commodities Now reported that the globally-traded carbon market was expected to reach €64bn in 2014. If even a small slice of that were diverted towards sustainability schemes within supply chains, it could have a big impact.

The Accor hotel group, for example, has 470,000 rooms across 92 countries, and a water and electricity footprint akin to a 1 million inhabitant city. Its sustainable development manager, Arnaud Herrmann, explains that instead of offsetting, "we wanted to support projects that made sense with our own activities. The hotel industry is very water-intensive ... and food and beverage represents about 40% of Accor's turnover. So it was natural to support local projects committed to sustainable water and agriculture."

Teaming up with Pur Projet, Accor identified the potential to bolster community groups within its supply chain. One such project in Morocco planted olive groves and helped to set up a female-run olive oil business. "Women in the area can have trouble finding work," says Herrmann, "so we provide the budget to plant the olive trees, the women of the region take care of the trees and transform the olives into olive oil, and part of the olive oil produced is sold back to our hotels."

Accor now has similar projects in other countries growing rice and vegetables. It also supports more traditional tree-planting for CO2 reduction, but does so only in areas close to its hotels that its clients can see. Herrmann believes this is valuable for marketing and customer loyalty.

The coffee firm Nespresso has also committed to planting 10m trees by 2020, and plans to do so among its suppliers' farms and surrounding ecosystems. "By planting trees in coffee farms," explains Jérôme Perez, head of sustainability at Nespresso, "you are protecting the coffee bushes from heavy rain, and we know that adverse weather events impact a lot on the production of Arabica coffee in the last few years in Colombia. Trees also prevent landslides ... I met with farmers in March this year [2014] who lost their entire farm due to a landslide. The trees protect the soil, the water, the biodiversity, and ultimately the sequestration of carbon. All of these elements are making insetting a very relevant approach."

Nespresso already has a direct relationship with its 60,000 suppliers through its own AAA sustainable quality programme, in partnership with Rainforest Alliance, and employs 300 agronomists to work directly with farmers.

The appeal of offsetting for some businesses, however, is that it's simple and done at arm's length. Insetting by contrast sounds like a lot of work. "Initially it could be quite a challenge for businesses if that's not how they typically operate," says Christopher Stephenson, director at Plan Vivo Foundation, who recently ran a one-day capacity-building workshop on insetting. But he relates the experience of one business: "Offsetting for them was an expense, it was a cost line. They recognised that that could become a more strategic investment for the company. Instead of being a simple cost on their balance sheet, they can actually transform that into an investment, plus a fantastic communication and marketing tool."

While both Plan Vivo and Pur Projet are predominantly interested in agroforestry initiatives with smallholders in the developing world, both are clear that the insetting concept is bigger than that. "The term is obviously a derivative of offsetting, and offsetting is traditionally known around carbon," says Stephenson. "But insetting can extend into other areas".

Tristan Lecomte, co-founder and president of Pur Projet, also told businesses at Davos last year that "insetting is a way to help companies to regenerate the ecosystem that they depend upon ... to make the offsetting strategy more legitimate, more linked with the business."

A paper by Ecometrica also suggests insetting could extend to commuting or home insulation for employees, joint investment in energy efficiency projects with suppliers, or joint recycling schemes between companies within a neighbourhood or office complex.

In a sense, insetting is nothing new. Sustainability has been spreading to supply chain management for some time, and many business CSR activities could be described as insetting. But rather than adding another term to the already overlaid sustainability lexicon, it actually pulls several together, uniting sustainability and procurement at the same time.

The Body Shop, Ben and Jerry's and construction firm Costain are just a few examples of companies now working on active insetting projects. A business guide to insetting has also been produced, with Paul Comey of Sustainable Food Lab quoted as saying: "When you realise that you're spending real money on carbon offsets, you start to wonder if you can spend that same money to strengthen your supply chain."

That, says Stephenson, is the point. "If this helps communicate the benefit of businesses working with their own supply chains in a more holistic, sustainable way, then that can only be a very positive thing."

[<Source>](#)

## Solar Floats On Water Around the World

SustainableBusiness.com News

Last year, Japan's largest solar plant came online, a 70 MW Kyocera project with 290,000 solar panels that juts way out into Kagoshima Bay.

Now, Kyocera will build one that's completely detached from the land, on a reservoir in Japan (Yamakura Dam). At 13.4 MW, it will have 50,000 modules covering 180,000 square meters of water - the largest floating solar project in the world so far. The company is also building two smaller ones totaling 2.9 MW.

In fact, floating solar projects are becoming popular with small installations in Britain (200 kW), Italy, and soon, in Singapore, India - which is installing them on canals and on reservoirs - and South Korea - which wants to install 4 GW of solar on 5% of its water surfaces.

Pilot floating project in South Korea:

There are lots of interesting benefits to floating solar over water:



- Water offers a stable surface, full exposure to the sun, and installation is cheaper;
- The entire PV plant can easily be moved, tracking and rotating with the sun;
- Water cools the modules, increasing energy production by 10%; during warm months, the ground heats up on land, reducing output;
- They reduce algae growth in the water, keeping it healthier for wildlife;

- They reduce evaporation, helping preserve water levels during warm months, which provides security for farmers;
- They are important for countries like Japan, where there's little available land.

Because of all these advantages, South Korea's Sunflower Solar Power Plant is expected to produce 22% more energy than a comparable ground-mounted PV project.

One thing we haven't heard about is the potential negative affect on marine life from large projects that darken the surface water.

[<Source>](#)

# What's driving the clean vehicle revolution?

By Kristin Meek



Americans are on the road to greener vehicles. Over the last five years, the number of SUV models getting at least 25 miles per gallon has doubled, while the number of car models achieving at least 40 mpg has increased sevenfold. By 2025, cars and light trucks will be almost twice as efficient as new cars are today, thanks to recent

greenhouse gas and fuel economy standards from the U.S. Environmental Protection Agency and Department of Transportation.

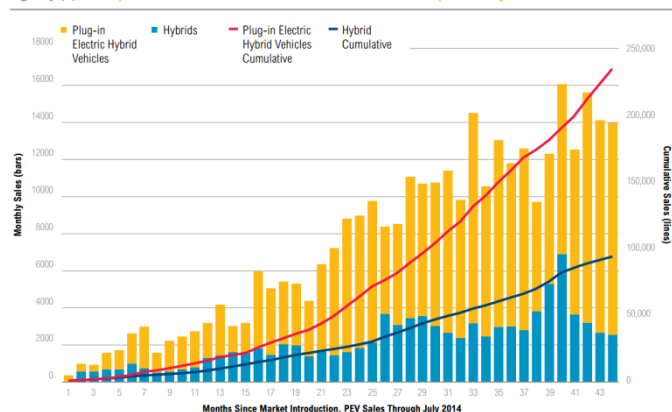
These lower fuel costs are expected to save drivers an average \$3,400 to \$5,000 over the life of the vehicle, compared with 2016 cars and trucks.

A greener fleet of vehicles is also good news for the planet, as passenger cars and light trucks account for about 16.5 percent of U.S. greenhouse gas emissions. Research shows that new policies can drive efficient vehicle use even further, lowering emissions and saving consumers money.

Enter the next generation of cars and trucks

While fuel-efficient vehicles such as hybrids are taking off, next-generation vehicles such as electric and hydrogen-powered cars and trucks also approach their heyday. In fact, the first three years of plug-in hybrid and electric vehicle sales significantly outpaced hybrids' first three years on the market.

Figure 3-4 | The Uptake of Electric Vehicles Has Been Faster than the Uptake of Hybrid Vehicles



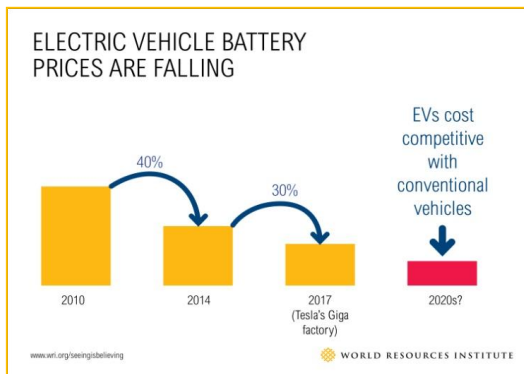
Notes: Insight was first released in the U.S. market in December 1999. Prius HEV was first released in the U.S. market in January 2000. Volt and Leaf were first released in the U.S. market in December 2010.

Source: Argonne National Laboratory Transportation Technology R&D Center, 2014, "Light Duty Electric Drive Vehicles Monthly Sales Update," Technology Analysis, U.S. Department of Energy (DOE), accessible at [http://www.transportation.anl.gov/technology\\_analysis/drive\\_vehicle\\_monthly\\_sales.html](http://www.transportation.anl.gov/technology_analysis/drive_vehicle_monthly_sales.html).

In addition to federal and state measures such as tax credits and the eight-state mandate to put 3.3 million zero-emission vehicles on the road by 2025, the 40 percent decline in battery prices over the past four years also pushed clean vehicles forward.

Electric vehicle battery prices are likely to drop even further — Tesla believes that its "gigafactory" will drive prices down 30 percent by 2017 (or possibly sooner). This could culminate with electric vehicles becoming cost competitive with more conventional vehicles in the early 2020s, which the Department of Energy predicts.

Hydrogen vehicles are showing great potential as well. Toyota recently announced it will begin selling its Mirai fuel cell car in late 2015, with several other large car manufacturers (including Honda, Hyundai and Mercedes) also planning to commercialize hydrogen cars through 2017. Perhaps the greatest advantage presented by hydrogen cars and trucks is that fuel cells can store a lot more energy than



current electric vehicle batteries, so cars can travel further between refueling/recharging stops.

Policies can drive efficiency further

The EPA's current fuel standards already are helping make new vehicles more efficient. And, if technological progress continues, it should be easier and more cost effective (PDF) to meet the agency's 2025 fuel economy and emissions-reduction requirements.

Continued fuel economy improvements also will help enhance U.S. energy security and improve air quality. The National Academy of Sciences found that reducing light-duty vehicle CO2 emissions by 80 percent below 2005 levels by 2050 could yield \$670 billion to \$2.3 trillion in net savings due to reduced fuel costs. However, additional policies and programs are needed to accelerate the technological progress and infrastructure improvements needed to achieve a goal like this.

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## UN climate chief: Carbon bubble is now a reality

Source Name: RTCC

The idea that investors may lose money sunk into fossil fuel projects is no longer just a theory—according to UN climate chief Christiana Figueres, it is now a reality.

Green groups have warned that huge reserves of oil, gas and coal are overvalued and could lead to a "carbon bubble". This is because increasingly stringent climate policies will require around half of known fossil fuels to stay in the ground, instead of returning a profit to investors.

Many, including oil giant Exxon Mobil, have shrugged off the threat. But Figueres, who leads the UN's climate body, said that low oil prices are already affecting the market.

"A lot of the stranded asset conversations we've been having for a long time are now coming true," she told RTCC, speaking in an interview from the World Future Energy Summit in Abu Dhabi.

"Those expensive oil projects — deep sea, Arctic, tar sands — those are actually beginning to be taken off the table because of the low oil prices."

Norwegian oil major Statoil, for instance, has handed back three exploration licenses on the west coast of Greenland, where the costs of drilling are high. The dramatic drop in oil prices — which have more than halved to \$45 per barrel since June 2014 — renders these kinds of projects unviable, said Figueres.

Statoil is not alone. In December, Chevron delayed plans to drill in the Canadian Arctic, citing "economic uncertainty" as oil prices fall. Last week, Shell announced it was abandoning plans for a \$6.5 billion petrochemical project with Qatar Petroleum, while the UK-based Premier Oil deferred projects off Norway and in the South Atlantic.

This is only the beginning of the troubles which loom ahead for the fossil fuel industry, warns the Carbon Tracker Initiative, the group which coined the term "carbon bubble".

The group warns of "systemic risks" to investors as governments take action to curb fossil fuel emissions and accelerate the shift to a low-carbon economy.

"If the 2C target is rigorously applied, then up to 80% of declared reserves owned by the world's largest listed coal, oil and gas companies and their investors would be subject to impairment as these assets become stranded," wrote the group in their report Unburnable Carbon.

The 2C target is the internationally agreed limit to global warming, after which the impacts become much more severe. This December, Figueres will lead negotiations in Paris aimed at stimulating the action needed to avoid this threshold.

Figueres said that the threat of stranded assets will be a message that she takes to the world's leading financiers and heads of state during a trip to the World Economic Forum in Davos this week.

But she doubted that she will have been the only one there who has taken notice of the threat. If her expectations play out, it will be a sign that the carbon bubble notion has moved from the niche to the mainstream.

"When you begin to see very specific examples of a concept that was previously only a concept, I do think it's going to be taken much more seriously on the part of investors," she said, adding that she expected an "exciting conversation" on the impact that falling oil prices will have on the potential for investments in renewables.

The stability offered by the clean tech industry should be a comfort to investors in the wake of oil's evident volatility, she adds.

"That volatility in prices is one that incrementally and gradually makes investment in oil and gas more risky than investment in renewables, where it is very predictable what the upfront cost of infrastructure is, and then the price of fuel from then on is very predictable and certain."

Meanwhile, she said that cheap oil offers a key opportunity to cut fossil fuel subsidies and invest accruing savings into renewable infrastructure.

Nonetheless, the immediate threat of stranded assets need not spell the end of the oil and gas industry, which can be part of the solution if they want to be, said Figueres, pointing in particular to German utility E.ON which announced in November that it would split the company to focus on renewables.

She predicted: "That kind of a division is probably one that will be looked at by several other companies because they can see the demand — not just the supply — but the demand for fossil fuels is flattening out, and there is every day more demand for renewable energy because of the many benefits that it brings."

[<Source>](#)



## The Prius of planes? Boeing helps first hybrid aircraft take flight

By Norman Rozenberg



Cambridge University has used funding from Boeing to design, build and test this microflight aircraft: the world's first hybrid aircraft. This image is from the YouTube video at the end of this article.

This article first appeared at [Dell Tech Page One](#).

Air travel is expected to increase sixfold by 2050, according to the International Air Transport Association (PDF), which certainly won't help reduce greenhouse gas emissions that are expected to rise by 50 percent (PDF) by 2050.

Many research groups and NASA have attempted to design planes that rely on fuel alternatives in an attempt to reduce carbon footprint. Tesla co-founder Elon Musk has hypothesized that battery-powered planes are the future of aviation.

Most of the conversation has been theoretical — until now. One research group from Boeing and Cambridge University is a step closer to making this a reality, testing the world's first hybrid aircraft.

"The test flights have gone well, but we did lots of testing on the ground first," Paul Robertson of Cambridge's Department of Engineering, a leader of the project, told Tech Page One.

Designed with green in mind

Two of the biggest challenges for making hybrid and electric aircraft a reality are the weight and power of batteries. The team needed to build an ultra-lightweight, high-powered battery.

The team ended up designing a hybrid unit that marries an electric motor and a specially tuned gasoline engine. With financing by Boeing, the team built a plane with a customized electric subsystem consisting of a pack of 16 lithium polymer cells placed in the wings, which brings power to and from the engine. This is the first time that a plane is able to recharge while in flight, according to the researchers.

To make the parts lightweight, the team used a custom version of the Song airframe. The mass of this empty craft (without a pilot or fuel) is less than 140 kilograms. The experimental unit uses 30 percent less fuel compared to conventional aircrafts, Robertson added.

Now, the question is how quickly we will see hybrid airplanes take off from commercial airports globally.

Prius of the sky a few decades down the line

The hybrid aircraft handles the same as traditional aircrafts, and it's also quieter thanks to the electric motor.

However, additional safety concerns might need to be addressed as hybrid technology becomes more widely available. The large batteries on board a plane could be hazardous if not properly monitored and maintained.

The researchers had to house them in a metal compartment with fan cooling and precise temperature, current and voltage readings of every individual cell. Luckily, an automatic battery management system designed by the team monitored this.

As exciting as this breakthrough is, the aircraft itself was very small, and the hybrid technology required to power something as large as a commercial jet is currently out of our reach.

"As the energy density of batteries improves, then larger-scale aircraft will become viable, but don't expect hybrid-electric airliners for some decades yet," Robertson said. "The hybrid power unit is still experimental, but I would imagine that in a few years' time, small aircraft will be commercially available with hybrid power units."



[Play Video](#)

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## From urban aquaponics to fruit jerky: meet London's green entrepreneurs

The London Leaders programme helps sustainable businesses get off the ground. Here are some of this year's enterprises

On the roof of an old shopping centre in Stratford, east London, stands a shipping container. Within it, a tank the size of a hot tub is full of water and hundreds of small, edible fish. On the top, a specially adapted greenhouse grows salad greens and micro-herbs in tightly stacked, vertical columns. Water is pumped from the bottom to the top before slowly dripping down tall plastic tubes, directly feeding diluted fish droppings to the roots of the plants enmeshed within.



Tom Webster is the co-founder of GrowUp Urban Farms in London. Photograph: GrowUp Urban Farms

Run by entrepreneurs Kate Hofman and Tom Webster, Grow Up Urban Farms' GrowUp Box is the first commercial aquaponic urban farm in the UK. "We didn't just want to be people talking about urban farming, we wanted to be actually doing it and able to engage people in that," explains Hofman. "But even more important than communication and engagement was to have something that we could actually start selling. Because restaurants and chefs don't want to talk to you about some food you might potentially be able to grow. They want to taste it."

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In light of this project, Hofman has been selected as one of this year's London Leaders, a business accelerator programme run by the London Sustainable Development Commission and supported by the mayor of London. Now in its seventh year, it supports green entrepreneurs trying to get a business off the ground. It doesn't offer funding, but rather gives mentoring and tailored business support from a wide range of partners, including Lloyds Bank, Thomson Reuters and Futerra. It is also an effective PR and marketing machine.

Unsurprisingly, Hofman isn't the first leader to have hit on a great idea. However, the new commissioner for the London Leaders programme, Karen Lawrence, points out that the challenge for many comes in trying to translate a great idea into a great business. "Some of these visionaries have over-ambitious ideas of how quickly they can make things happen," says Lawrence, who was also director of marketing, communications and business development at the Energy Saving Trust. "What we try and do, particularly when they are trying to sell items, is to say that sales don't happen overnight."

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There are recent London Leaders stories that give reason for optimism. Of last year's leaders' alumni, Arthur Kay's business Bio-Bean, making biofuel out of waste coffee grounds, has grown from five to 15 members of staff within a year and raised around £2m from private investors and grants.

Hofman and Taub, along with seven other leaders from this year's crop, hope for similar success. And arguably Hofman is already close. Grow Up Urban Farms closed an ambitious funding round at the end of 2014, raising enough to fully fund the building of a commercial-scale farm in London some 70-times the size of its Stratford operation.

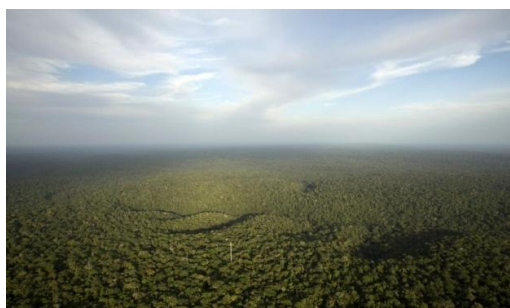
"We are looking at a number of different industrial spaces in London," says Hofman. "The farm will be around 700-800 square metres, and produce 20 tonnes of salad and four tonnes of fish a year, which is enough for us to supply about 80 restaurants or feed 3,000 people." The goal for all the London Leaders is that, by the end of 2015, they are not just talking about successful businesses but running them.

[<Source>](#)

## Rate of environmental degradation puts life on Earth at risk, say scientists

Humans are 'eating away at our own life support systems' at a rate unseen in the past 10,000 years, two new research papers say

By Oliver Milman



The view from the Amazon Tall Tower Observatory in the middle of the Amazon forest. Researchers say that of the nine processes needed to sustain life on Earth, four have exceeded "safe" levels.

Photograph: Reuters

for humans, with stark results.

Of nine worldwide processes that underpin life on Earth, four have exceeded "safe" levels – human-driven climate change, loss of biosphere integrity, land system change and the high level of phosphorus and nitrogen flowing into the oceans due to fertiliser use.

Researchers spent five years identifying these core components of a planet suitable for human life, using the long-term average state of each measure to provide a baseline for the analysis.

They found that the changes of the last 60 years are unprecedented in the previous 10,000 years, a period in which the world has had a relatively stable climate and human civilisation has advanced significantly.

Carbon dioxide levels, at 395.5 parts per million, are at historic highs, while loss of biosphere integrity is resulting in species becoming extinct at a rate more than 100 times faster than the previous norm.

Since 1950 urban populations have increased seven-fold, primary energy use has soared by a factor of five, while the amount of fertiliser used is now eight times higher. The amount of nitrogen entering the oceans has quadrupled.

All of these changes are shifting Earth into a "new state" that is becoming less hospitable to human life, researchers said.

"These indicators have shot up since 1950 and there are no signs they are slowing down," said Prof Will Steffen of the Australian National University and the Stockholm Resilience Centre. Steffen is the lead author on both of the studies.

"When economic systems went into overdrive, there was a massive increase in resource use and pollution. It used to be confined to local and regional areas but we're now seeing this occurring on a global scale. These changes are down to human activity, not natural variability."



View of aluminium-polluted water, which flows into the Yuanjiang River, in Taoyuan county, Changde city, central China's Hunan province, 19 November 2014. Photograph: Imaginechina/Corbis

There are large variations in conditions around the world, according to the research. For example, land clearing is now concentrated in tropical areas, such as Indonesia and the Amazon, with the practice reversed in parts of Europe. But the overall picture is one of deterioration at a rapid rate.

"It's fairly safe to say that we haven't seen conditions in the past similar to ones we see today and there is strong evidence that there [are] tipping points we don't want to cross," Steffen said.

Humans are "eating away at our own life support systems" at a rate unseen in the past 10,000 years by degrading land and freshwater systems, emitting greenhouse gases and releasing vast amounts of agricultural chemicals into the environment, new research has found.

Two major new studies by an international team of researchers have pinpointed the key factors that ensure a livable planet

"If the Earth is going to move to a warmer state, 5-6C warmer, with no ice caps, it will do so and that won't be good for large mammals like us. People say the world is robust and that's true, there will be life on Earth, but the Earth won't be robust for us.

"Some people say we can adapt due to technology, but that's a belief system, it's not based on fact. There is no convincing evidence that a large mammal, with a core body temperature of 37C, will be able to evolve that quickly. Insects can, but humans can't and that's a problem."

Steffen said the research showed the economic system was "fundamentally flawed" as it ignored critically important life support systems.

"It's clear the economic system is driving us towards an unsustainable future and people of my daughter's generation will find it increasingly hard to survive," he said. "History has shown that civilisations have risen, stuck to their core values and then collapsed because they didn't change. That's where we are today."

The two studies, published in *Science* and *Anthropocene Review*, featured the work of scientists from countries including the US, Sweden, Germany and India. The findings will be presented in seven seminars at the World Economic Forum in Davos, which takes place between 21 and 25 January.



Trash accumulates on Nash Run, a creek that empties into the Anacostia River, in Washington DC, US, 4 December 2014. Environmental groups routinely list the Anacostia as one of the most polluted waterways in America. Photograph: Jim Lo Scalzo/EPA

[\[Source\]](#)

## Plant-e Dutch Startup Produces Electricity from Green Plants

Source Name: Green Optimistic

Plants have once again made it to the green news, and surprisingly, the main reason this time is not their ability to absorb carbon dioxide. Dutch start-up Plant-e is currently harvesting the energy from plants and using it to power street lights, Wi-Fi spots and charge cell phones.

Protecting world's vegetation cover is unquestionably one of the most important actions we can take to slow down climate change. But while plants are considered precious mainly because of their ability to take up CO<sub>2</sub>, other properties that they have might make them just as important.

A few months ago, in the late 2014, a start-up called Plant-e showed off their greatest invention for a first time in a pilot site near Amsterdam (see demo video here). The set-up comprises of small plastic containers, also referred to as modules, used for growing of plants. As the greens grow, they start photosynthesizing, a process which essentially turns solar power into sugars. Any excess sugars are released through the roots into the soil, where they get broken down into electrons and protons.

The guys at Plant-e realized that these byproducts of photosynthesis can actually be harnessed and used to conduct electricity without needing to damage the plant at all. Naturally one would presume that the electricity will be far from sufficient in quantity to power anything, but in fact, it is more than enough.

Currently, Plant-e is using the prototype technology to power more than 300 LED streetlights in the municipalities of Ede and Wageningen, and this is still far from what the guys behind the technology aim for. Although their crowd-funding campaign on Kickstarter did not hit the goal, and therefore did not manage to provide them with a much-needed financial boost, the guys still went ahead and are developing the first real-size plant power modular system. The ultimate goal is to be able to generate 28kWh of power per year from one square meter.

Alongside, a tabular large-scale system is also under development. The fully functional pilot system of this scale is expected to be completed in the coming five years, when the technology might well become a major competitor in the world of renewable energy generation.

[\[Source\]](#)



# How innovative solar business models can benefit all

By James Sherwood, Mathias Bell and Virginia Lacy



Although distributed solar PV has been growing by 50 percent annually over the past decade, there's still plenty of room for growth.

This story was originally published by the Rocky Mountain Institute's RMI Outlet.

The next time you're on an airplane, take a look out the window at the city as your plane descends to its destination. How many solar PV arrays do you see atop (and around) that endless sea of rooftops? Probably not very many. Although distributed solar PV has been growing rapidly — 50 percent annually over the past

decade — it's still a small fraction of the overall U.S. generation mix. This means there is still a lot of room for additional growth.

But, importantly, there's also a critical opportunity to make that new distributed solar an even more valuable resource to all electricity system stakeholders, including individual customers, utility and solar investors, the electric grid and society. Many of the largest opportunities to increase the value of distributed solar PV will require targeting opportunities that neither solar companies nor utilities can address alone. They will have to work together.

## Increasing solar value

When we talk about the "value" of solar, or any electricity system resource, we're referring to a simple formula: the difference between the benefits and costs that a project creates for an individual customer, the grid and society, or both. There are two clear avenues for maximizing the potential value of distributed solar PV: reducing the costs for manufacturing, developing and installing projects, and increasing the benefits that each project's power creates for customers and the greater electricity system.

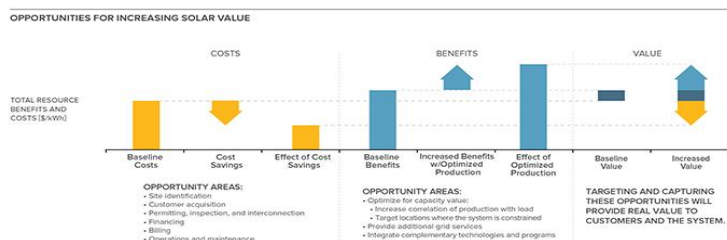
The solar industry has made tremendous strides over the past decade toward reducing project costs — decreasing costs by more than 60 percent since 1998. But several large cost reduction opportunities remain, particularly for solar's "soft costs" — all the non-hardware-related costs of installing a solar PV system. Specific cost reductions that are ripe to target include:

- Site identification
- Customer acquisition
- Permitting, inspection and interconnection processes
- Financing

The other side of the equation, increasing the benefits each distributed solar PV project creates, has received less attention to date, leaving substantial value uncaptured. Increasing these benefits will require a greater focus on three interrelated dynamics: the location where the project connects to the grid (e.g., a city's urban core vs. its rural outskirts), the time when the project produces power (e.g., peak output at midday vs. the afternoon) and the specific services the project provides (e.g., energy, reactive power, voltage support, etc.). However, several efforts around the country, such as those in New York, California and Hawaii, are now under way to make distributed solar PV as beneficial as possible by investigating and implementing new design strategies. These include:

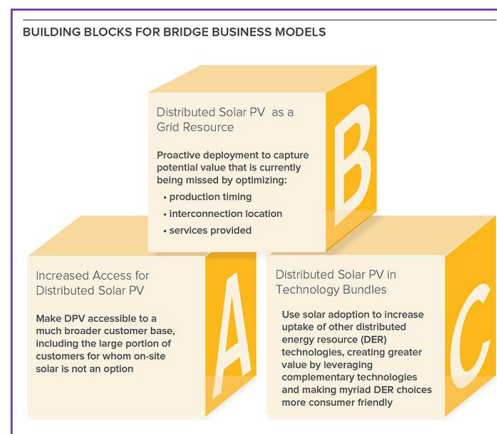
- Optimizing distributed solar PV's generation with both the grid's needs and the customer's demand, for instance by facing panels to the west in certain situations or targeting parts of the grid where projects can alleviate congestion
- Providing additional services to the grid beyond energy, such as local voltage support or helping to smooth variations in distributed solar PV output and customer load, that could improve the reliability and quality of electric service
- Pairing distributed solar PV with complementary technologies, such as demand response, energy efficiency and batteries

Taking steps to maximize the value of distributed solar PV can create a positive feedback loop: By making smarter, more-strategic decisions about where and how we deploy some of that distributed solar, we can reduce the need to invest in traditional grid infrastructure and reduce overall investment costs (which could free up more capital to invest in efficiency and renewables).



## The need to work together

While reducing costs and increasing benefits sounds intuitive, many of the greatest opportunities cannot be tackled by a single stakeholder. For example, customer acquisition is one of the largest cost drivers for rooftop solar installations, often accounting for more than 30 percent of total installed costs. Today, solar companies spend significant resources identifying potential customers. Utilities have direct access to these customers and their energy consumption data. However, they have little incentive today to help solar companies drive down costs and expand solar's market.



So why collaborate? All indications point to continued customer demand for distributed solar PV projects. As customers have projects installed on their roofs, without increased collaboration between utilities and solar companies there will likely be significant value left on the table, meaning that capital is being invested inefficiently. Further, a lack of collaboration leads to other suboptimal outcomes, such as more challenging grid operations and less customer engagement. While there is a clear need for collaboration, the existing business and

regulatory models currently do not encourage it. But improved mechanisms can foster greater alignment and seek to provide "wins" for customers, solar companies and utilities. These "win-win-win" solutions can accelerate, optimize and sustain distributed solar PV adoption.

## Seeking win-win-win solutions

RMI's report *Bridges to New Solar Business Models: Opportunities to Increase and Capture the Value of Distributed Solar Photovoltaics* outlines three building blocks for solar business models that could create win-win-win outcomes:

Utilities, solar companies and regulators can use components of these building blocks to design and implement new solar business models today. Over the coming weeks, the following blogs in this series will explain the details of these building blocks and the steps needed to implement them.

While the distributed solar PV market has been growing rapidly, ensuring sustained growth will require focusing on value creation. This may be difficult to capture if solar companies or utilities choose to act independently. But by focusing on collaborative solutions, utilities and solar companies can unlock additional value, increasing the net value of distributed solar PV to accelerate — and optimize — continued adoption.

[<Source>](#)

# New wind turbine looks like a tree, generates power silently

Source Name: The Geek

Wind turbines used for power generation work best when they're large and mounted up high where wind speed is higher. This is not an aesthetically appealing proposition, but it's the only way wind power makes sense on the large scale right now. A French company is trying to change that with a contraption called the Wind Tree. As you might guess, it's an array of wind power turbines in the shape of a tree, and several of them will be deployed in Paris this coming March as a test.

The Wind Tree is being developed by NewWind and has 72 artificial leaves. Each one is a vertical axis turbine, vaguely conical in shape. Because each one has little mass, they can generate power with a gentle breeze as slow as 2 meters per second (4.4 mph). This could make the Wind Tree useful for generating power, on average, 280 days of the year. Total power output across all 72 turbines is estimated at 3.1 kW. Larger traditional turbines can produce considerably more power, but they need more wind to get going and thus operate fewer days of the year.

At 11 m (36 ft) tall and 8 m (26 ft) in diameter, the Wind Tree is about the size and shape of a real tree, and images of the prototype actually do look rather nice. It could probably pass for a decorative sculpture in an urban setting. It's made entirely of steel, and NewWind says it is completely silent during operation. All the cables and generators are sealed inside the steel structure. It can be plugged into the public grid, or used to supplement the power of a particular building or complex.

Each Wind Tree is expected to cost €29,500 (US\$36,500), but could pay for itself in a few years. The real advantage here is that cities could install "groves" of Wind Trees at ground level to harvest power. The neat design could help avoid the public opposition that wind farms sometimes cause.

[<Source>](#)

## From urban aquaponics to fruit jerky: meet London's green entrepreneurs

The London Leaders programme helps sustainable businesses get off the ground. Here are some of this year's enterprises



Tom Webster is the co-founder of GrowUp Urban Farms in London. Photograph: GrowUp Urban Farms

On the roof of an old shopping centre in Stratford, east London, stands a shipping container. Within it, a tank the size of a hot tub is full of water and hundreds of small, edible fish. On the top, a specially adapted greenhouse grows salad greens and micro-herbs in tightly stacked, vertical columns. Water is pumped from the bottom to the top before slowly dripping down tall plastic tubes, directly feeding

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[<ReadMore>](#)

## Meet the Chilean upstart turning sea pollution into skateboards

By Nancy Averett



Bureo wants to clean up the world's shorelines by making skateboards out of recycled fishing nets.

This article was originally published by the Worldwatch Institute.

Ben Kneppers paused as he strolled around a music festival in Santiago, Chile. In front of him was a booth where local kids could repair damaged skateboards, making them ride-able again rather than throwing them away. Kneppers, an environmental consultant originally from Massachusetts, was impressed by the project. And as an avid boarder himself, he admired the kids gliding and kick-turning along a stretch of pavement with their refurbished boards.

Then he got an idea.

He and two friends had been talking for months about finding a way to address the issue of plastic pollution in the world's oceans by starting a business making products out of that trash. "I thought, 'Wow, maybe skateboards could be our product,'" he said. "It would be a great tool for educating the younger generation on this issue."



Discarded fishing nets on the Chilean coastline.

Fast-forward 18 months. Kneppers and his business partners, Dave Stover and Kevin Ahearn, have started a skateboard company they named Bureo, which means "the waves" in Mapudungun, the language of the Mapuche, the native people of Chile. They recently shipped their first batch of skateboards, the Bureo Minnow Cruiser, to select shops in California, Chicago and New York.

What makes the Minnow different from dozens of other skateboards is

that it's built from trash. The board's 25-inch skatedeck is made out of recycled plastic fishing nets. What makes Bureo different from most companies is that it's just as focused on its recycling mission as it is on selling its product. Kneppers, Stover and Ahearn — who grew up near beaches in the United States — formed the company with a mission to do something positive to address the growing problem of ocean plastic pollution.

"As surfers who have spent our lives around the ocean, we have a deep connection with the ocean," Stover said. "We needed a product that would support our idea for a sustainable collection and recycling program and make a skateboard fit our mission to address this problem in a positive way."

The group decided to focus on recycling fishing nets because 10 percent of the ocean's plastic waste comes from fishing gear and because the nets can harm marine life: dolphins, sea turtles and seals can get tangled in them and often die. Chilean fishers typically dump worn nets in the ocean because disposing of them is costly; landfills are privately owned in the country and getting garbage to them requires paying for a truck to haul it away. Kneppers was quick to add that the net littering is not just a Chilean problem. "When we were doing our research," he said, "we talked to people in California and on the East Coast, and everyone's admitted to doing it at times for convenience."

He and his business partners created a program they call Net Positiva, Chile's first fishnet collection and recycling system. They distributed collection bags in three villages and offered to compensate the local fishers' organizations for every kilo of recycled nets; the groups then could distribute the money to their members. "We collected over three tons in the first six months," Kneppers said. "We hope to soon extend the program to three more locations, as the whole model is designed for scalability."

The idea for a recycling program came before Kneppers had his moment of inspiration at that music festival in Santiago. He and Stover were roommates while they were working in Australia in 2011. Both are avid surfers, and they often stayed up late talking about how to tackle plastic pollution in the oceans — something they were reminded of each time they headed into the surf. (Ahearn, also a surfer, joined them later when they realized they needed a designer.)

Once they had a product in mind, the hard part followed: how to actually make their dream a reality. They went to Kneppers' alma mater, Northeastern University, which runs a program for potential entrepreneurs. The university provided them with a coach and some initial funding that allowed them to test the fishing nets to see if they would be durable enough to create a skateboard. From there, they applied for and received a grant from the Chilean government through a program called Start-Up Chile to help set up the net recycling program. Finally, they turned to Kickstarter, launching a campaign in April that quickly raised \$64,000 — more than twice their \$25,000 goal — which allowed them to start production on a large scale.

[<ReadMore>](#)



## Andhra Pradesh government inks pact with ICRISAT to boost sustainable farming

Source Name: India.com

The Andhra Pradesh government has signed a pact with International Crop Research Institute for Semi-arid Tropics (ICRISAT) to provide assistance in making agriculture sustainable and profitable. "The agreement with ICRISAT is part of the state government's plans to increase productivity of agriculture and allied sectors," the state government said.

The Memorandum of Agreement was signed yesterday in the presence of Chief Minister N Chandrababu Naidu by Special Chief Secretary (Planning) S P Tucker and ICRISAT Director-General David Bergvinson. Through the agreement, the best technological tools and scientific practices from across the world will be incorporated into primary sector activities, said a state government release quoting the Chief Minister.

As part of the agreement, the ICRISAT would prepare a "strategy paper" for primary sector mission, hold research and development and establish "sites of learning" in districts.

ICRISAT would also bring in international expertise from other CGIAR centres like International Livestock Research Centre (ILRI), International Rice Research Institute (IRRI), International Water Management (IWM), Asia Vegetable Research and Development Centre (AVRDC), International Centre for Improvement of Maize and Development Centre (AVRDC), World Fish Centre and International Food Policy Research Institute (IFPRI).

This consortium (of international organisations) will also bring in regional and national research institutions for the benefit of farmers.

Facilitation of detailed plan preparations for operationalising the mission annually by providing guidance and technical support to mission coordinator would also be done by the ICRISAT. The institute would establish pilot sites of learning in 13 districts (10,000 hectares each) of AP for increasing productivity, profitability and sustainability through science-led development and climate-smart agriculture.

ICRISAT would also develop quality assurance system for soil analytical laboratories in the state, undertake capacity building for staff and help in upgrading existing soil labs for complete nutrient profile analysis. It would assist in developing PPP mode guidelines, mobilising private entrepreneurs and preparing DPRs and organise Global Investors Meet, the release added.

[<Source>](#)

## Ashok Leyland introduces new electric bus in India

Source Name: Business Standard

Commercial vehicle major Ashok Leyland today unveiled the Versa EV from its UK arm Optare plc, at the Bus & Special Vehicles Show organised by SIAM in Greater Noida, Delhi NCR.

The bus is targeted for feeder, airport tarmac and intra-city applications. Versa EV, the low-floor electric bus, minimises environmental impact, including zero emissions and zero noise; whilst matching the performance of a diesel vehicle. With its low-weight integral structure according to company's release.

The bus can accommodate up to 44 seats, optimising seating and it is available in lengths of 9.7m, 10.4m, 11.1m and 11.8m.

"With increased awareness and sensitivity around environment safety and carbon footprints, the timing for the introduction of an electric bus is optimal," said T Venkataraman, senior Vice President - Global Buses, Ashok Leyland

Versa EV is ideally placed to help deliver on government's commitment to make urban transport efficient and reduce our country's carbon footprint.

Ashok Leyland also presented the 12m FESLF CNG (front-engine, semi low-floor, compressed natural gas) and the MiTR School bus at the SIAM show.

[<Source>](#)

## Clean & green

Source Name: Financial Chronicle

Nualgi is a made in India nanotech breakthrough that treats water bodies and absorbs greenhouse gases, offsetting the effects of global warming. This bit of nano-technology fits perfectly into the setting of Make in India overdrive, Swachh Bharat Abhiyan and the clean river programme. Nualgi, a breakthrough nano-technology used for cleansing polluted waters in rivers and drains, lakes and ponds, bays and coastlines, was developed in Bengaluru by T Sampath Kumar, a national awardee for innovation in 2013.

In the process of treating water bodies, it absorbs greenhouse gases like carbon dioxide, checks water acidification and works against the effects of global warming. The technology promotes exceptional water quality, converts organic pollutants into healthy food for fish, creates aquatic biodiversity and replenishes dwindling aquatic life in water bodies.

The technology has been adopted by San Diego, US-based Nualgi America, which has been investing in promoting the product in aquarium, pond and waste water management.

The company has set up facilities and a team of research scientists from Mississippi State University to perform a 52-week study to review Nualgi's safety and effectiveness at reducing water pollution to improve water conditions in a commercial setting.

"Nualgi is a carefully manufactured formula and not an 'organic' product, which may concern some environmental communities. However, being a nano-scale solution, it is added in

relatively minuscule quantities and uses the existing natural process by growing the diatoms in the water, which empowers the aquatic food chain and benefits all aspects of the ecosystem," said Sunil Nanda, director of Nualgi America.

Existing methodologies used for water treatment involves bacteria and enzyme dosing and oxygenation, which is significantly more expensive and, therefore, create a chain of vested interests that would likely resist change.

Nualgi America has set up a crowd-funding programme called Kickstarter to carry out the university-level research for aquaculture and lake remediation. "If funded, university-level testing will once and for all silence the critics of this revolutionary new technology," Nanda added.

**So how does Nualgi work?**

Nualgi America promotes the product as nature's solution to water pollution and toxic algae. It is a patented nano-scale nutrient formula in the range of 5-100 nanometers. At this scale, elements react differently with each other, remain suspended longer, disperse easily across the water column, and are therefore 'bio-available' to marine organisms.

The liquid additive contains 10 essential micro-nutrients in a nano-silica base that acts as a nutrient and a carrier. These micro-nutrients are specifically chosen to stimulate diatom growth in the water column.

They release oxygen and consume carbon dioxide, dramatically increasing dissolved oxygen level, an important parameter to measure water quality and which is an essential factor for aquatic life. This helps aerobic bacteria break down organic matter (pollution).

Diatoms, a ribbon-like group of algae, are among the most common types organism found in oceans, seas and freshwater basin ecosystems. Diatoms are favourite food for zooplankton, the primary food for fish, crustaceans, and other organisms.

By boosting diatoms, Nualgi empowers the natural food chain at the source! The diatoms outcompete blue green algae and other toxic algae producers for nutrients and are then consumed by zooplankton and fish. Nutrient pollution is converted to fish biomass, toxic algae is eliminated, and healthy balance is restored in the water body.

Diatoms play an important role in global ecology, producing about a quarter of all the oxygen within earth's biosphere. "We want to represent these unappreciated jewels of the water with some unique rewards for our backers," Nanda said.

Every water body is different, which raised the risk that Nualgi may not perform in a particular environment. But diatoms are ubiquitous, which can significantly reduce the risk of Nualgi not being effective.

Globally, there have been instances of people desperate to reduce harmful algae trying to dump copper sulfate into the water, which kills just about everything. In one case, copper sulfate led to 88 deaths, mostly children in Bahia, Brazil in 1988 during attempts to kill aquatic cyanobacteria at a water reservoir.

Very recently on September 30, 2014, an estimated 280,000 salmon died due to toxic algae off the coast of British Columbia and 95 per cent of fish died at Lake Van in New Mexico after another toxic bloom in October, 2014.

"When Sampath Kumar first told us about his formula, it sounded too good to be true. But after seeing the amazing results in our trials first hand, we knew that it that it could reverse the damage being done to water bodies the world over," said Nanda.

In the US, over 10,000 customers have tried Nualgi in their ponds and aquariums with amazing results, sometimes as early as after the first dose.

Nanda claims Nualgi can work wonders in any water body, and even in a flowing river, to naturally improve the health of the aquatic ecosystem and reverse damage from water pollution. The formula is certified non-toxic and has been successfully used in large water bodies in India.

"Nualgi is the economically viable and eco-friendly solution we need to address water pollution," said Nanda. "It is safe enough to drink, though it tastes terrible! It improves the health of fish and plants by empowering the natural food chain," he added.

Through last year, Nualgi America worked hard to spread the word about the formula's environmental benefits and its potential for eliminating water pollution in lakes, rivers, bays and oceans.

First used to target toxic algae responsible for mass killing of fish, the product has already entered India and is seeing scattered, experimental use. The New Delhi Municipal Corporation asked the company to treat the dirty water ponds alongside the Rajpath connecting India Gate to Rashtrapati Bhavan.

Using Nualgi three times in three weeks, the company claims it removed 85 per cent of the six-inch thick algae level, completely eliminated the stink and turned the water friendly for aquatic life.

Citing from a CSR report of Ashok Leyland, the company shows how the automaker managed to restore ponds around its facilities using Nualgi and turned them liveable for fish.

The company claims in a specific case like the Delhi stretch of the Yamuna river, Nualgi can neutralise the hazardous sewage that flows into the river and increase the population and size of fish there, turning it into a 'waste to wealth' solution.

Nualgi also has preventive effects on curbing vector-borne diseases, something cities like Delhi struggle with every summer. Nualgi does not attack the larvae directly, but prevents growth and neutralises existing larvae through aquatic balance in a water body.

Nualgi can be used in static water like ponds and lakes, bays and coastlines; slow moving waters like drains and even in fast-moving waters like canals and rivers. "It is effective in fresh waters, brackish waters like in delta regions, marine waters, sewage-affected waters as part of a larger solution and even in industrial waste water as part of a larger solution," the company claimed.

[<Source>](#)

## CSP Solar-Biomass Model In India

**Source Name: Clean Technica**

The solar-biomass model may prove to be optimal solutions when it comes to developing renewable solar energy power plants that can dependably distribute power on an ongoing basis.

This might be especially true in India, where coal power, a leading emitter of CO<sub>2</sub>, remains a leader in providing electricity.

This hybrid CSP project looks interesting and, if successful, will elevate the fortunes of renewable energy and CSP in India. Called SCOPEBIG (Scalable CSP Optimised Power Plant Engineered with Biomass Integrated Gasification), the hybrid project is being set up under the EU-India Cooperation on Renewable Energy with a commitment of around €8 million.

Other CSP and biomass pioneers include Israeli-based AORA Solar, with niche 24/7 power plant projects existing in Spain, Israel, the United States, with a soon-to-be-announced plant in Ethiopia.

As for the developing the gasifier technology, expertise will come from the Energy Research Centre of the Netherlands and from the 250kW plant sponsored by India's Department of Science and Technology and built by Thermax near Pune.

Among the priorities of the project is to use low-cost solar collectors and to localize all of the components, of which the latter would make the power plant a first of its kind in India.

"The components used in this plant, in both the CSP and biomass island will be completely indigenously manufactured," Dr. R. R. Sonde, executive vice president of research, technology & innovation at Thermax, said during the inauguration event.

Specific to the India project, biomass is abundant in India, especially in Bihar, yet large quantities remain untapped. The MNRE estimates that the country produces 500 million metric tons of biomass annually but 120 to 150 million tons remain unused.

With the construction of the SCOPEBIG project might demonstrate the viability of CSP-biomass plants at a smaller scale for replication across India, while studying the social effect on rural areas.

[<Source>](#)

## IARI develops super absorbent polymer to improve water use efficiency in agriculture

**Source Name: Times of India**

The Indian Agriculture Research Institute (IARI) - a government institution - has indigenously developed a novel hydrophilic super absorbent polymer which will help farmers in using water with utmost efficiency in agriculture practices in arid and semi-arid regions of the country.

The technology, comprising super absorbent hydro-gels, will be commercialized by the National Research Development Corporation (NRDC) - a ministry of science and technology enterprise - and the Reliance Industries Limited (RIL).

Since hydro-gel has capacity to absorb a minimum of 350 times its weight of pure water at 50 degree Celsius, its use will help farmer in getting high productivity by using much less quantity of water. Agriculture scientists claim that its use will also improve physical properties of soil such as porosity, aggregate stability and hydraulic conductivity.

After successfully testing its potential, the NRDC and the Reliance Industries Limited (RIL) executed an agreement for commercialization of this novel super absorbent hydro-gel technology.

"The scientists had successfully demonstrated the potential of resolving the problem of poor water use efficiency in agricultural crops. Besides improved nutrient use efficiency, an array of other benefits has also been achieved by using this product", said an official statement of the ministry of earth science.

It said, "The NRDC is about to execute another agreement with a Chennai based company for the transfer of the same technology".

Sharing the details of the technology, the ministry claimed that "no undesirable effect on the crops raised in the fields treated with hydro-gel has ever been observed or reported by the experimenters or the end users (farmers)".

[<Source>](#)

## IICT makes organic LED technology

**Source Name: Deccan Herald**

Imagine a wall which can turn into a television, but can be operated with power from a small solar cell. Or the windscreen of your car that can turn into a television when powered just by the car battery.

All these are futuristic gadgets based on the phosphorescent 'organic' LED technology. And now scientists from the Hyderabad-based Indian Institute of Chemical Technology (IICT) have made a breakthrough in realising a simple and low-cost model of an organic LED that has a high power and luminescence efficiency.

Current technology makes use of inorganic LEDs, while organic LEDs are in development and limited production.

However, phosphorescent organic LEDs are a futuristic technology that many researchers around the world are working on. These have the major advantage of extremely high energy efficiency.

"Organic LEDs are very light weight. Their power efficiency is also very high but the struggle now is get that up. Light from organic LEDs is like moonlight.

We always prefer moonlight to sunlight, isn't it?" Dr V. Jayathirtha Rao, chief scientist and head of Crop Protection Division at IICT said. His group has made a breakthrough in devising a simple organic LED module that has a high luminescence and power efficiency.

Dr Jayathirtha Rao said his group achieved a luminescence efficiency of 34 per cent and a power efficiency of 22 per cent.

IICT scientists' model focuses on the harvest of inactive 'triplet excitons' that are formed when electricity is passed through the organic material.

Other scientists, around the world, have achieved higher efficiencies of organic LED materials, but their processes have been much more expensive.

"These can be powered up with very low voltage, say 10 Volts. So you can have organic LED screens in cars. A small solar cell can power an organic LED television at home," he said.

[<Source>](#)

## Indian Railways Plans 1 GW Solar Power Capacity

**Source Name: Clean Technica**

Like all other major state-owned companies in India, the Indian Railways has also been tasked with setting up large-scale solar power projects across the country.

**Indian Railways plans 1 GW solar power capacity**

Indian Railways is planning to set up 1 GW of solar power capacity over the next few years and is currently working on a plan to implement this capacity. The announcement came from the Railway ministry which is directing the Indian Railways to set up small-scale solar power projects at railway stations.

The Indian Railways currently operates 10 MW capacity in the form of small-scale solar PV projects at 500 stations and buildings. It plans to double this capacity by setting up similar projects at 200 additional stations and buildings.

The large-scale solar PV projects are likely to come up on the vast area of unused land available with the Railways. This capacity will be set up with support from the Ministry of New & Renewable Energy through financial assistance from the National Clean Energy Fund.

The power generated from these large-scale power plants may be used for meeting the Renewable Purchase Obligation of the Railways, which is one of the largest consumers of electricity in the country, or it could be sold to the power utilities at a fixed pre-determined rate.

Like other public sector companies looking to set up large-scale solar power projects, the Railways is also expected to source PV modules and other equipment from Indian manufacturers.

Earlier this year, the Indian Railways announced a plan, in collaboration with IIT-Madras, to use solar power for providing air conditioning and lighting inside the coaches. The Indian Railways would do well to adopt renewable energy sources, as it is heavily dependent on diesel, whose prices are now linked to the global market and is also a major source of greenhouse gas emissions.

[<Source>](#)

## Indore Municipal Corporation to segregate plastic waste during collection

**Source Name: Times of India**

Plastic waste seems to have emerged as the biggest challenge for municipal solid waste management in city, as plastic constitutes around 26% of the waste generated in Indore daily. This was revealed during the on-going observation of trenching ground at Devguradia by a team of experts on the directives of Indore bench of Madhya Pradesh high court.

Indore generates around 800 tonnes of municipal solid waste per day, while IMC has a capacity to process only around 400 tonnes of waste resulting into mountains of garbage dump at trenching ground.

IMC commissioner Rakesh Singh said a plan is afoot to increase the capacity of processing plant by setting up another plant with 500 tonnes capacity. For segregation of garbage, it would be done at the beginning during door-to-door collection, he said.

However, IMC has no proper plan for recycling of large amount of plastic waste. According to survey conducted by Central Pollution Control Board (CPCB) for the assessment and quantification of plastic waste generation in 60 major cities of the country, Indore was ranked as the largest producer of plastic waste in Madhya Pradesh and the 14th largest across the country.

Asad Warsi of Hostech Eco Management, who was associated with recycling of plastic, said out of 60 tonnes plastic waste generated per day, 20 tonnes is thick plastic, while the remaining 40 tonne constitutes plastic bags and wrappers.

"A large chunk of plastic bags are discarded with municipal solid waste. It is a big problem that it appears. If we have a mechanism to collect such plastic waste and send it to recycling plants, things can improve. A good quantity of the waste can be segregated and re-used. However, due to poor collection, plastic is burnt on road sides along with municipal waste, which causes a high degree of air pollution," said Warsi.

[<Source>](#)



## Plastic roads help solve Bangalore rubbish crisis

**Source Name: RTCC**

Rubbish dumping in Bangalore is reaching crisis levels as rapid economic growth, overcrowding and poor urban planning combine.

India's Silicon Valley produces some 5,000 tonnes of waste a day, of which 1,500 tonnes are plastic. Only 25% goes for recycling and the rest is dumped in land fill or burnt, generating greenhouse gas emissions.

As the local authorities sit on their hands, local businessman Ahmad Khan has taken it on himself to rid the city of its stinking garbage menace.

Khan runs a firm named KK Plastic Waste Management that aims to "create eternal scarcity of garbage" in the city.

KK Plastic has been building roads using waste plastic for a decade. It has been working with Bruhat Bengaluru Mahanagara Palike (BBMP) since 2002.

The Ministry of Environment and Forest has authorised civic bodies to use waste plastic in road construction, but red tape and policy paralysis have discouraged wide-spread use of technology.

"We can lay 500 km road in a year. But as you know, things get stuck at the bureaucratic level. Since the garbage problem became a headache for the authorities and they got to know about the importance of our work, now they are giving us more assignments," said Khan.

Khan's firm supplies waste plastic to BBMP, which cleans and shreds it. Eight parts plastic are mixed with 100 parts bitumen to create a hard-wearing road surface.

Acknowledging the viability of the technology, the Public Works department has included instruction to use waste plastic in road construction.

Though using plastic waste increases the cost of road construction by Rs 500 per cubic metre (nearly 7% more than bitumen road), it helps the civic body cut on cost of waste management and reduces emissions.

It also reduces air pollution from incinerating waste. "For people with lung diseases such as asthma and Chronic Obstructive Pulmonary Disease, even a single exposure to this type of smoke can worsen their disease," advised Gufran Ansari, a local doctor. "This can result in hospitalisation, increased use of expensive medications and absences from school or work."

Though Khan's technology passed the acid test of all leading institutions, including Central Road Research Institute (CRRI), the ultimate authority on road construction, IIT-Chennai and IIT-Khadakpur, back in 2002, it is still limited to certain pockets of Bangalore city.

"If the authorities had taken us seriously back then, Indian cities wouldn't have been sitting on a pile of garbage now," said Khan, who has been roped in by Housing & Urban Development Corporation (Hudco) to replicate his Bangalore success story in the national capital region of Gurgaon.

According to a BBMP report, the roads made using waste did not develop cracks and provided a smooth riding surface displaying much better durability even two years after construction.

About 40 tones of compound can be generated from 100-120 tones of waste plastic bag. If the entire length of roads in Bangalore city is overlaid with the poly-blend compound it will require about 9022 tones of compound. So far, according to BBMP officials, around 2,000km of arterial and sub-arterial roads such as Bellary Road and G C Road of the city has been laid using waste plastic.

Dr CEG Justo, under whose guidance the survey to assess the scope of using the processed waste plastic was conducted in 2000, vouched for the technology.

"The main advantage is the useful utilisation of the waste plastic bags, which generally get piled up as garbage along the roadside of many cities and towns in India," he said.

"The collection of the waste plastic, sorting them out into different types and processing are difficult; also transporting the processed plastic to distant places is very expensive."

[<ReadMore>](#)

## Soon, BMC will turn waste into power, fuel

**Source Name: DNA India**

The mountains of garbage that Mumbaiers generate every day will thankfully be put to some use, if the authorities find success in their latest endeavour. Taking a step towards generating electricity and fuel from waste, the Brihanmumbai Municipal Corporation (BMC) has decided to set up biomethanation plants at its dump yards.

Biomethanation is a process by which organic material is microbiologically converted under anaerobic conditions to biogas. The civic body has sought expression of interest (EOI) from firms across the globe in this regard. According to the proposal, the BMC will set up the plants at the dumping grounds in Deonar, Kanjur Marg, Mulund and Gorai (non-operational) to produce power and gas.

The corporation is hoping to generate 11 mega watts of power at each of the four grounds. And, nearly half of the Brihanmumbai Electric Supply and Transport's 4,200-strong bus fleet can be operated on the natural gas gleaned from the plants.

A report compiled by BMC's solid waste management department says that the Gorai dumping ground alone can generate 700 cubic metre of gases per hour. The gases are mainly a mix of methane (CH<sub>4</sub>), carbon dioxide (CO<sub>2</sub>) and sulphur (S).

"The waste dumped at the yards generates a mixture of gases. The BMC has not been able to make use of the gases as there is no set up to tap them. When we have the plants installed, we will be able to produce electricity and natural gas," a senior civic official said.

The official added that if everything goes as per plan, the corporation should be able to set up the plants over the next eight months. "The agencies bidding for the project will have to suggest technologies, and the one we find the best will be selected," the official said.

### Weighing the waste

The city generates around 10,000 metric tonnes of refuse daily. Of this, 7,500 metric tonnes is municipal waste, which can be degraded to produce gas, and the remaining is construction waste. The average per capita per day waste generated in Mumbai is 450 g.

[<Source>](#)

## Surat to get its own plastic disposal plant

**Source Name: Times of India**

The Diamond City is set to have its own plastic treatment plant to dispose of over 200 metric tons of daily plastic waste. This comes at a time when the city already boasts of a tertiary plant that treats 40 million litres of water per day (MLD).

The plant is part of a public private partnership model wherein the private partner will set up the treatment plant and produce diesel from the non-recyclable plastic waste.

The project is the result of a memorandum of understanding that was signed between the Surat Municipal Corporation (SMC) and En-vision, a private party at the recently held Vibrant Gujarat Summit at Gandhinagar.

At present Surat's entire waste is disposed off in single stream at a land fill site in Khajod. However, since plastic is non biodegradable, it remains unrecyclable for hundreds of years.

Executive engineer for solid waste at SMC, E H Pathan told TOI, "After the Plastic Waste(Management and Handling) Rules, 2011 came into existence, SMC has taken a lead in setting up an effective system for collection transportation and disposal of plastic waste. The participating private partner would set up a plant on two acres of land provided by SMC." The land could be provided at Khajod disposal site.

Sources said that under the agreement, there is no financial obligation on the corporation apart from providing land. The private party would be responsible for developing the plant, setting up of collection centers across all seven zones, creation of a collection system from bulk generators, NGOs, scrap dealers, door to door collectors among others.

"Out of the collected plastic, 30 to 40 per cent can be recycled where as diesel would be generated from the remaining. We plan to set up the plant in the first 12 months and cover the whole city within three years," said Nihar Doctor of En-vision.

[<Source>](#)

## Terra Motors targets Indian market with R6 electric rickshaw

**Source Name: Giz Mag**

Rickshaws are a part of life across much of Asia for tourists and locals alike. However, the gasoline-powered versions of these three-wheeled vehicles are rarely environmentally friendly, creating smog and noise-pollution. Japanese company Terra Motors has developed a new, electric rickshaw it hopes will improve environmental degradation and also save on fuel costs for drivers.

An electric rickshaw may sound like a delightful toy, something to ferry Google's staff about with. However, given the terribly deleterious effects gasoline-powered rickshaws have upon the environment, coupled with their necessity as a quick and cheap form of transport for people and goods across much of the developing world, such a vehicle could be a boon for hundreds of millions of residents of crowded and polluted cities.

In India, as elsewhere across Asia, rickshaws are thought to be responsible for up to 20 percent of all trips. "Current transport trends in Indian cities are leading to growing sustainability challenges, such as deteriorating air quality and rising road fatalities," according to a recent report from the World Resources Institute. "These trends point to the urgent need to promote more sustainable urban transport."

Terra Motors' new R6 electric rickshaw, designed for the Indian market, could form part of that push towards sustainable urban transport. According to the company, the vehicle has fuel costs a thirteenth of what a gas-powered vehicle does (at the current gasoline pricing in India). It can carry six people for up to 100 kilometers (62 mi) on a full charge with a top speed of 30 km/h (18.6 mph), which should be adequate for many urban environments. Its lead acid battery can recover to 80 percent after two hours and a full charge takes around seven hours. Adding to its suitability for the likes of Delhi's narrow roads, it has a turning circle of 3.2 meters (10 ft) and also features rain covers that can be pulled down during inclement weather.

While the low running costs of an electric rickshaw may drive down price costs for passengers, the purchase price may be one of the biggest issues, and no price for the R6 has yet been confirmed.

Terra Motors has previously unveiled another electric rickshaw built for the Philippines, which we covered in 2013. There pollution worries from the ubiquitous transport is serious enough for the government to have committed, in 2013, to having 100,000 electric rickshaws on the roads, beginning with 3,000 next year. However, the project, which was largely financed by the Asian Development Bank, hit snags last year according to the Philippine Star, as the unit prices quoted jumped significantly.

[<Source>](#)

## Forthcoming Events

### 7<sup>th</sup> International Conference on Climate Change: Impacts & Responses

10<sup>th</sup> to 11<sup>th</sup> April 2015

Vancouver, British Columbia, Canada

Conference titled “7<sup>th</sup> International Conference on Climate Change: Impacts and Responses is being organized on 10<sup>th</sup> and 11<sup>th</sup> April, 2015 in Vancouver, British Columbia, Canada. This conference seeks to create an interdisciplinary forum for discussion of evidence of climate change, its causes, its ecosystemic impacts and its human impacts. The conference shall also explore technological, policy, strategic and social responses to climate change. The major themes of the conference are Scientific Evidence, Assessing Impacts in Divergent Ecosystems, Human Impacts and Impacts on Humans, and Technical, Political and Social Responses. Speakers from U.S.A., India, Canada, and several other countries are expected to give their deliberations in the conference. Presenters have the option to submit completed papers to The International Journal of Climate Change: Impacts and Responses for possible publication. If one is unable to attend the conference in person, community membership includes the option to submit a video presentation, and/or submission to the journal.

[<ReadMore>](#)

### National Conference on Sustainable and Smart Cities (SSC-15)

10-11 April, 2015

Surat (Gujarat), India

The National Conference on Sustainable and Smart Cities (SSC-15) is being organized by Sardar Vallabhbhai National Institute of Technology, Surat on 10<sup>th</sup> and 11<sup>th</sup> April 2015. The conference will create a platform for the researchers, policy makers and consultants to deliberate various issues pertaining to sustainable smart cities. The program provides an opportunity to the participants to understand the concepts involved in the indicators of smart cities as well as the characterization and modeling for the future sustainable smart cities. It is an ideal opportunity for planning experts to share ideas and findings and set future direction of research which is implemented and acceptable at global level.

The program will focus on following major themes:

- Sustainable Cities: Issues & Solutions
- Urban Trends in Smart City Planning
- Sustainable Smart Tourism
- Urban Infrastructure: Issues and Solutions
- Impact of Smart Cities on Quality of Life
- Sustainable Urban Environmental Design
- Smart Urban Transportation Planning
- Integrated Urban Development
- Sustainable Land Management and Housing
- Green Building and Smart Cities
- Economic and Legal Aspects of Urban Development
- Urban Housing; Implementable Solutions
- Sustainable Urban Land Management

[<ReadMore>](#)

### The Conference on Management and Sustainability in Asia (COMSA-2015)

April 29 – May 1, 2015

Hiroshima, Japan

The Inaugural Conference on Management and Sustainability in Asia will be held during April 29 and May 01, 2015. This event will coincide with the 2015 deadline for the Millennium Development Goals as well as the 70<sup>th</sup> Hiroshima Peace and Remembrance Commemoration.

Therefore, holding this conference in Hiroshima, the City of Peace, offers a unique platform for scholarly and applied conversations among a wide variety of stakeholders concerned with the continual challenge of advancing both management and sustainability. With the theme of Breaking Barriers, the three-day event will provide an interdisciplinary platform for academics, researchers, policy makers, students and professionals.

The conference will also include important topic areas like Agribusiness Management, Conservation and Ecology Management, Green Marketing, Environmental Management, Natural Resource Management, Sustainability and Total Quality Management, Sustainability in Production and Manufacturing, Sustainable Business, Sustainable Development and Sustainable Innovations.

[<ReadMore>](#)



Deccan Chronicle, Hyderabad  
dated December 26, 2014

# Alarming fluoride content in city water

■ All the 27 samples had fluoride above safe limits

**SUDHEER GOUTHAM | DC**  
HYDERABAD, DEC. 25

Analysis of groundwater in the city by the National Institute of Nutrition has found that areas including Uppal, Alwal, Medchal and Miyapur had fluoride more than the permissible limits of 1 microgram/litre.

"Of the 27 water samples, all had fluoride content more than the permissible limits. Using groundwater for cooking and drinking regularly would result in various symptoms of fluorosis," said Dr Arjun L. Khandare, Scientist E (deputy director), Food and Drug Toxicology Research Centre, NIN.

Even analysis by the Central Groundwater Board has revealed similar facts.

"Out of the total number of samples (171) analysed in the pre-monsoon period, 40 samples (23 per cent) showed high fluoride values beyond permissible limits. The concentration of fluoride is relatively high in deeper groundwater ranging from 0.50-2.57 mg/l. At certain places, the concentration of fluoride is beyond permissible limits," Damodhar Rao, regional director, Central Ground Water Board, said.

High fluoride was observed in samples collected from urban areas like Shivam, Amberpet, Nampalli, Raj Bhavan, Balanagar, Nallakunta etc., at suburban areas like Nacharam, Mallapur, Malkaram, Ahmedguda, Kondapur, Bandlaguda and Jeedimetla etc. and in peri-urban parts of the study area in Gopanapalli, Brahmanapalli, Raipol, KR Peta, Maheswaram, Raidurg and Shapur Nagar, New Boiguda, BJR Nagar, Borabanda areas etc.

However, the experts said that the fluoride content in the groundwater might not necessarily be continuous in the same locality or area.

Mr Rao said, "The fluoride content in water is mainly in the form of dissolved minerals and it occurs mainly due to drilling of rocks in the ground. Hence, the fluoride content may vary from one borewell to other borewell."

NIN scientist Dr Arjun L. Khandare said, "Since most of the individual houses in the area have borewells and use the water for potable purpose when metropolitan water is not supplied, the groundwater should be used only after analysis."

"There were also water samples supplied by the city metropolitan water board, however, the fluoride content was within the permissible standard 1 milligram/liter, which is safe," he added.

Medical experts say that symptoms of fluorosis take longer to appear in a person as it gets deposited in the bone and other body parts, said H. Kishan, a senior doctor, at Apollo hospital.

Another medical expert, Dr Srinivas Rao, said, "Fluoride in minimal level helps in building bones. In excess levels it causes deformation of bone, crooked teeth, straining and affects overall lifestyle. Hence, whoever is using groundwater should use filters and home-based purifiers."

"People come to know about it only after 10-15 years when the bones start showing deformity. It increases the thickness of the bone, causes stiffness of the spine. However, in growing children below 15 years the deformity is seen early."

Since in urban areas the population is not largely dependent on groundwater, consumption of water with excess fluoride would only emerge at a much later stage.

## WATER THREAT

**RECYCLING OF THE FRESH WATER TWO-THREE TIMES, HAVING DUAL PIPELINE SYSTEM, SUPPLYING FRESH WATER AND RECYCLED WATER, —IS THE NEED OF THE HOUR FOR HYDERABAD.**



The fluoride content in water is mainly in the form of dissolved minerals and it occurs mainly due to drilling of rocks in the ground. Hence, the fluoride content may vary from one borewell to other borewell.

— DAMODHAR RAO  
Regional director,  
Central Ground  
Water Board

Fluoride in excess levels causes deformation of bone, crooked teeth, and affects overall health. People come to know about it only after 10-15 years when the bones start showing deformity. Hence, whoever is using groundwater should use filters and home-based purifiers.

— DR SRINIVAS RAO,  
Medical Expert

## Focus on recycling water

DC CORRESPONDENT  
HYDERABAD, DEC. 25

Groundwater levels in the city have been depleting over the last 10 years. Apart from deficit rainfall, over withdrawal and concretisation of the city are to be blamed, scientists at the Central Groundwater Department observed that number of rainy days in the monsoon have reduced, while erratic heavy rainfall days have increased resulting in inundation and poor groundwater recharge.

During June-October, about 477 mm of rainfall was received in Hyderabad city, which is nearly 54 per cent lesser than the 967 mm received in the same period last year.

As per the experts at Central Groundwater Board, of the total water supplied by the Water Board over 80-85 per cent goes into the drain or sewer lines, while only 15-20 per cent is consumed by the population.

"The water to the city is drawn about 130 km away from Krishna and Godavari. Of which 80-85 per cent goes into drains," said Damodhar Rao, regional director, Central Groundwater Board.

Experts opine that recycling of the fresh water two-three times as done in Singapore, Canada and other cities, with every household having dual pipeline system, supplying fresh water and recycled water, is the need of the hour for Hyderabad.



*Deccan Chronicle, Hyderabad  
dated December 26, 2014*

## Nitrate danger due to poor drainage systems

DC CORRESPONDENT  
HYDERABAD, DEC. 25

Besides fluoride, analysis of groundwater samples from different parts of the city by the Central Groundwater Board also found high nitrate contents.

The high nitrate (NO<sub>3</sub>) content was mainly due to the lack of drainage system and the age-old septic tanks.

Damodhar Rao, regional director, Central Groundwater Board, said, "Highest nitrate contents were found mainly in semi-urban areas where the drainage system is either poor or nonexistent and also in areas which have old septic tank systems."

Sub-urban areas like Miyapur, Yapral, Malkaram, Jawaharnagar, etc. had concentration of NO<sub>3</sub> beyond permissible limits along with urban areas like Charminar, Alwal, Chandrayangutta, Saifabad, Hussainsagar etc.

High nitrate concentrations were found in and around industrial areas, residential areas adjoining industrial areas like Patancheru, Jeedimetla and IDA Uppal.

"High nitrate levels in water can cause methemoglobinemia or blue baby syndrome, a condition found especially in infants under six months," said H. Kishan, a senior doctor, at Apollo hospital.

Nitrite is absorbed in the blood, and hemoglobin (the oxygen-carrying component of blood) is converted to methemoglobin, which does not carry oxygen efficiently. Pregnant women, adults with reduced stomach acidity, and people deficient in the enzyme that changes methemoglobin back to normal hemoglobin are all susceptible to nitrite-induced methemoglobinemia, said medical experts.

Incidentally, UP, Punjab and Delhi also lie in the fog belt of northern India and

## North India's cities the most polluted, south's cleanest

### Air Quality Worsening Fog Problem

Dake Kang | TNN

Almost all of the most polluted cities in India are located in the north with Uttar Pradesh, Punjab and Rajasthan dominating the list, according to a WHO report on the most polluted cities in the world published earlier this year.

Incidentally, UP, Punjab and Delhi also lie in the fog belt of northern India and

### DELHI TOPS DUBIOUS LIST

Concentration of particles under 2.5 microns (parts per million)

Delhi	153
Patna	149
Gwalior	144
Raipur	134
Ahmedabad	100
Lucknow	96
Firozabad	96
Kanpur	93
Amritsar	92
Ludhiana	91

there's evidence to show that air pollution is worsening the problem. Early last year, TOI had reported on a study which found that average fog hours in the month of January in Delhi had increased by

as much as eight hours since 1989 — a trend attributed to rising pollution.

When the WHO report came out in May, much was made out of the fact that Indian cities dominated the list,

with Delhi earning the dubious tag of the most polluted city in the world. But not as much attention was paid to the most polluted among Indian cities.

Of the worst 30 cities, UP laid claim to nine, Punjab to five and Rajasthan to four: Madhya Pradesh and Maharashtra had three cities each while J&K, Bihar and Uttarakhand had one each. Raipur in Chhattisgarh, Ahmedabad in Gujarat and Delhi rounded out the list. In all, 124 Indian data stations — mostly in cities — were featured in the WHO report.

On the other hand, the five cities with the cleanest air are all located in south India.

► Indo-Gangetic cities, P 22

## 'Neighbouring regions adding to pollution in Indo-Gangetic cities'

► Continued from P1

Five Indian cities with the cleanest air were all in the south, a WHO study has found. Two were in Kerala (Kollam and Pathanamthitta), one in Karnataka (Hassan), one in Tamil Nadu (Madurai), and Pondicherry.

WHO used the concentration of particles in the air under 2.5 microns to determine how bad air pollution is. Such particles cause the most damage to health because when inhaled, they can penetrate deep into the lungs, whereas larger particles are generally

**Pathanamthitta, the cleanest city, has a concentration of 10 parts per million of particles under 2.5 microns whereas Delhi has concentration of 153 parts per million**

filtered out before they reach that far. Pathanamthitta, the cleanest city on the list, recorded a concentration of 10 parts per million of particles under 2.5 microns. However, Delhi has a concentration of 153 parts per million of such

particles — more than fifteen times that of Pathanamthitta.

Dr Gufran Beig, the director and chief scientist of System Air quality Forecasting and Research (SAFAR), said, "In addition to local sources of pollution, Indo-Gangetic cities also get pollution from neighbouring regions and other parts of India, so as a result the pollution level becomes very high." Because of the location of the Indo-Gangetic plains, climate conditions are such that air masses often converge in plains.

For the full report, log on to [www.timesofindia.com](http://www.timesofindia.com)

*The Times of India, Delhi dated  
December 28, 2014*

## OBAMA NAMA - Can't win climate fight without India: US

### Obama Makes Strong Pitch For Emission Cuts In Final Speech

TIMES NEWS NETWORK TNN

New Delhi: The United States could not get a climate deal with India, but President Barack Obama on Tuesday made a strong pitch for emission cuts and said the world does not "stand a chance against climate change" unless developing countries like India cut their carbon emissions by reducing dependence on fossil fuels.

"I know the argument made by some, that it's unfair for countries like the US to ask

developing nations and emerging economies like India to reduce your dependence on the same fossil fuels that helped power our growth for more than a century," said Obama in his Town Hall address.

"But here's the truth: even if countries like the US curb our emissions, if growing countries like India — with soaring energy needs — don't also embrace cleaner fuels, we don't stand a chance against climate change," he said in his last public speech before leaving the country.

Though India does not deny the importance of mitigation (emission cuts), the country lays greater emphasis on fighting climate change through massive adaptation measures and by moving on the renewable energy (solar, wind and biofuels) path if it gets economically viable technology and investment.

India took this stand at all platforms and meetings ahead of Obama's visit. As a result, both the countries agreed for cooperation in renewable energy sector but did not go for the climate agreement that may factor in India's emission cut targets.

Obama, in fact, welcomed India's "ambitious targets" for generating more clean energy and promised to help the country to achieve this. He said, "We will continue to help you deal with impacts of climate change because you shouldn't have to bear that burden alone." He also said that with the breakthrough achieved during this visit, the two countries can finally move to fully implementing the civil nuclear agreement which would mean more reliable electricity for Indians and cleaner energy that helps fight climate change.



US President Barack Obama started his address with a 'namaste' at the Sri Fort Auditorium in New Delhi on Tuesday. That was not the only Hindi expression in his speech. He ended the lecture saying 'Shukriya' and 'Namaste'.

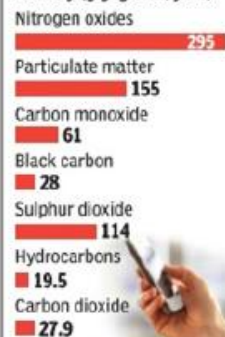


The Economic Times, Delhi dated December 29, 2014

# Power-hungry cell towers poisoning air

## ALARM BELLS RINGING

Emissions from the telecom industry (gigagrams/year)



(The figures have been estimated based on available data)



### Some alarming facts

- The Indo-Gangetic plain is found to be most polluted due to dense rural population
- Nearly 80% of telecom emissions generated in rural areas
- The gravity of rural air quality problem is being identified
- The total PM emission from Indian telecom industry in 2011 was three times larger than emission from Delhi in the same period

## Study Estimates 7.5 Billion Litres Of Diesel Being Consumed

Jayashree.Nandi  
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**New Delhi:** A day without your smartphone can be demanding. But a new study has thrown up some interesting finds about how energy-guzzling the telecom industry is. Scientists at Indian Institute of Tropical Meteorology and Forschungszentrum Julich in Germany have revealed that the Indian telecom sector could be consuming up to 7.5 billion litres of diesel annually to run its mobile towers.

Because mobile towers require continuous power supply not assured in either cities or rural areas, they largely depend on diesel generator sets

and electricity from the grid whenever possible. In Delhi alone, the telecom sector used 6.6 lakh MWh energy in 2011 which generated 382 tons of carbon dioxide and 2,123 tons of particulate matter, the study has said.

But Delhi consumed the

### NOXIOUS FUMES

least energy for telecom, compared to rural areas in other states where power supply is irregular. According to the study, the number of Indian telephone connections rose from 22.8 million in 1999 to approximately 1 billion in 2013. Of these, 96.5% were mobile lines. There is currently a net

work of 8.6 lakh operational base transceiver stations (BTS) in India.

"Supply of uninterrupted electric power to BTS sites is a major challenge. In rural BTS, masts have power for only 13.5 hours a day compared to 20 hours per day in cities," the study says. In Delhi, there are over 14,000 mobile towers or BTS.

The authors of the study—SK Sahu, MG Schultz and Gufran Belg—used the emission factor or the average emission rates from the diesel generator sets used for telecom towers to project nationwide figures. "We have an estimate of how many towers there are in India. We also

know how much diesel is required per hour and the number of hours DG sets are used on an average. The emissions have been estimated based on the data already available," said Belg.

The total annual emissions from the sector are huge at about 27.9 million tons of carbon dioxide and 295 gigagrams of nitrogen oxides. The World Health Organization has recently defined diesel fumes as carcinogenic. The telecom sector's dependence on diesel is hence worrying.

"Total particulate matter emissions from telecom sector are three times the particulate matter emissions of Delhi," the study concludes.

The Times of India, Delhi dated  
December 30, 2014

# Pachauri: IPCC future not tied to Paris climate deal

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**New Delhi:** The Intergovernmental Panel on Climate Change (IPCC), the leading UN body for the assessment of climate change, will continue its work, no matter whether countries arrive at a global climate deal next year in Paris or not. Its successive science-based reports had always been key inputs for negotiators in the past over two decades.

The IPCC had come out with its last (fifth) assessment report in November ahead of the Lima climate talks. It is also most likely to come out with its sixth assessment report in future, bringing more scientific information to the table for policy-makers and general public on causes and impact of climate-damaging greenhouse gases released into the atmosphere.

Amid speculation over the future of the IPCC once it submitted its 'synthesis' report, its chairman R K Pachauri said his expectation was that the body would also come out with the sixth assessment report (AR6) and a decision in this regard would hopefully be taken by member countries in February, 2015.

"Whether it is going to be structurally identical to the fifth assessment report

## WORLD'S CLIMATE WATCHDOG

**SET UP:** In 1988 by World Meteorological Organization (WMO) & UN Environment Program (UNEP)

**TASKED WITH:** Preparing assessments on all aspects of climate change and its impacts, with a view to formulate realistic response strategies



material to negotiators in the run-up to adoption of Kyoto Protocol in 1997  
➤ AR3 came in 2001 and AR4 in 2007

**RECOGNITION:** IPCC shared the Nobel Peace Prize with former US vice-pres Al Gore in 2007 for "efforts to build up and disseminate greater

**FIRST ASSESSMENT REPORT 1990:** Underlined importance of climate change as a challenge requiring international cooperation to tackle consequences. It played a decisive role in creation of United Nations Framework Convention on Climate Change (UNFCCC). This is the key international treaty to reduce global warming and cope with consequences of climate change

**SECOND ASSESSMENT REPORT 1995:** Provided important

knowledge about man-made climate change..."

(AR5) or whether it would be different would be clearer by the end of February when the next plenary of the IPCC takes place", he told the TOI.

Asked about future of this Nobel Prize winning UN body, Pachauri said, "I think the work of the IPCC will continue as there is also growing desire on the part of the scientific community across the world to contribute to the work". The IPCC is a scientific body which reviews and assesses the most recent scientific, technical and so-

cio-economic information produced worldwide relevant to the understanding of climate change. It was established in 1988 to provide the world with a clear scientific view on the current state of knowledge in climate change and its potential environmental and socio-economic impacts.

The body has since then come out with five successive assessment reports, telling the global community how human activities are playing havoc with environment.

For the full report, log on to [www.timesofindia.com](http://www.timesofindia.com)

Deccan Chronicle, Hyderabad dated  
December 31, 2014

**TOXIC | WASTE**

■ **Need to prevent biological hazards is one of the major trends**

# India's e-waste biz to surpass China

New Delhi, Dec. 30: The e-waste market in India is expected to grow at a higher rate than in China in the next few years, said a report.

According to a research report, the e-waste market in India is expected to grow at a Compound Annual Growth Rate (CAGR) of 26 per cent during 2015-2019, while the e-waste management services market in China is forecast to grow at a CAGR of 19.41 per cent over the period 2013-2018.

As per the research report titled e-waste market in India 2015-2019, the need to prevent biological hazards is one of the major trends upcoming in this market.

"Growing need to reduce toxins discharged from unattended e-waste has triggered more investment in the market," the report said, adding that the average discard/replacement rates have increased with a corresponding increase in buying power.

The report by US-based

ReportsnReports.com further said that lack of effective e-waste disposal mechanisms is hindering market growth. E-waste broadly describes loosely discarded, surplus, broken, obsolete, electrical and electronic devices.

It is an area of immediate and long term concern as its unregulated accumulation and recycling can lead to major environmental degradation which will pose a major threat to health, it said.

—PTI

## Growth of E-WASTE

**LACK OF EFFECTIVE  
E-WASTE DISPOSAL  
MECHANISMS IS  
HINDERING MARKET  
GROWTH.**

■ E-waste market in India is expected to grow at a Compound Annual Growth Rate (CAGR) of 26 per cent during 2015-2019, while the e-waste management services market in China is forecast to grow at a CAGR of 19.41 per cent over the period 2013-2018.



The Times of India, Delhi dated  
January 01, 2015

## Go solar by Sept, Haryana tells flat, house owners

### Defaulters To Face Steep Penalties

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**Gurgaon:** The Haryana government has decided to usher in the New Year with one of the biggest pushes for solar power in the country. The state has made it mandatory for all buildings on plot size of 500 square yards or more to install rooftop solar power systems by September 2015.

The order will apply to private bungalows, group housing societies, builder apartments, malls, offices, shopping complexes, schools, hospitals — any building, new or old, that fits the plot size criteria.

The government will offer a 30% subsidy on installation costs on "a first-come-first-served" basis, which means it would depend on availability of funds.

The order, passed by the department of renewable energy, is in line with the state's solar power policy framed in September 2014, officials said. Its implementation will help the power-hungry state augment gen-

## PANEL POWER

### SOLAR PANELS TO BE A MUST FOR

- Residences on 500sq yrd plots & above
- Govt buildings, private schools, colleges, hostels etc with connected load of 30kW or more
- Private hospitals, industrial units, malls, banquet halls etc with load of at least 50kW
- All group housing societies, builder flats

eration and ease pressure on its distribution network that is prone to breakdowns, particularly in Gurgaon where demand is very high.

The minimum solar power capacity to be installed is 1 kilo Watt or 5% of a building's load, whichever is higher. A 1 kW plant can generate up to 4.5 units a day, enough to power three fans, seven tube-lights and a cooler for four-five hours, said Sandeep Yadav, project officer of the renewable energy department.

Failure to install solar panels will attract penalties ranging from Rs 10,000 to Rs 10 lakh, officials said.

➤ **Must in malls, P 16**

## Solar panels must in Haryana hospitals, malls

▶ **Continued from P 1**

Additional deputy commissioners (ADC) of all districts in Haryana will be the implementation officers for the mandatory solar power programme.

"This policy is being implemented to meet the expected rise in demand for electricity in cities like Gurgaon," said Vinay Pratap Singh, ADC Gurgaon. "All residential buildings on a plot size of 500 square yards and above, falling within the limits of municipal corporations, municipal councils, HUDA and HSIIDC will have to install solar power plants... Even educational institutions, government buildings, hospitals, commercial establishments like malls and licenced builder colonies will have to conform to the policy."

Sandeep Yadav, project officer in Gurgaon, said the modalities of connecting rooftop panels to the power grid through net-metering system were being worked out. In such a system, a consumer generating excess power can sell the surplus and get the amount deducted from the bill.



# Policy slow but city ready to tap the sun

Use Commercial, Govt Property: Experts

## EARN BROWNIE POINTS FOR BEING SELF-RELIANT

### HOW DELHIITES CAN BECOME RENEWABLE ENERGY GENERATORS

- Install, either by yourself or through a third party, a renewable energy system for connectivity with the power supply system of your discom
- Inject surplus energy, if any, into the grid, and carry it forward as energy credits, which you can subsequently draw back within the financial year
- Provide compensation for



surplus energy, which the consumer is unable to draw back within the financial year

- No wheeling, cross-subsidy surcharge and other charges for the time being

### BENEFITS TO CONSUMERS

**1** Besides subsidy amounting to 30% of the capital cost being provided by ministry of new renewable energy, cost of storage battery can be avoided as the system supplies extra power to the grid

- 2** Energy generated from such sources will
- Not attract power purchase adjustment cost (PPAC) charges
  - Be insulated from some of the escalation factors resulting in stability on energy charges
  - Reduce a consumer's dependence on grid during grid failure and help in islanding scheme
  - Be sold to discoms at approximately ₹4-5/unit

Jayashree Nandi  
& Richi Verma | TNN

New Delhi: Delhi may not have made solar rooftop systems mandatory for homes and commercial buildings as Haryana has, but the city is already in gear to maximize the capital's solar output. So far, the capital has been extremely slow in installing solar rooftop projects for a variety of reasons, but the recent initiatives to help Delhiites become renewable energy generators are seen as a big step forward.

Discoms believe that solar rooftop systems have high potential, mostly in commercial, industrial and government buildings. "In a setup like Delhi, private residences with 500 square yard space are located only in select areas. There are usually multiple residents on different floors and terrace rights are disputed. But solar rooftops have very high potential in commercial, industrial and government buildings," said a top discom official.

Regulatory body DERC has paved the way for Delhiites to generate solar power and sell it to the grid for adequate compensation, but, while enquiries are coming in at the dis-

com offices, officials say it would take a while for this to become financially feasible. "Making solar rooftop systems may not be ideal. It may be too expensive and burdensome for homes. The most feasible strategy is to immediately focus, in a phased manner, on large buildings like industries, malls and commercial structures which have very high peak loads," said an expert.

**Several government agencies like DMRC, NDMC and DDA have sent their solar rooftop system proposals to Solar Energy Corporation of India**

The total installed capacity for Delhi was only 2.5 MW till 2013 as compared to Haryana's 7.8 MW, 442 MW for Rajasthan and a whopping 824 MW for Gujarat. Running a couple of shopping malls requires up to 3 MW; Delhi currently generates just a paltry amount. But now, with a net metering policy in place, the city is much better placed to start large solar rooftop projects.

Delhi Metro Rail Corporation, New Delhi Municipal Council and Delhi Development Authority have already sent their solar rooftop system proposals to Solar Energy Corporation of India, the nodal body for implementation of solar projects. DDA is looking to use the rooftop space of three sports complexes—Akshardham, Siri Fort and Yamuna Sports Complex—to generate 1 MW this financial year. "Renewable energy will also be at the core of our smart city projects. A detailed plan for these is being developed," Balvinder Kumar, vice-chairperson, DDA, said.

"I think making solar rooftops mandatory without having technology and proper equipment supply ready or having a favourable tariff is a recipe for disaster. It can give the technology a bad name," Abhishek Pratap, renewable energy campaigner, Greenpeace India, said. "Consumer categories for which it makes economic sense should go for rooftop systems, primarily for self-consumption," said Ashwin Gambhir of Prayas Energy Group. Pratap, on the other hand, feels subsidies would make the sector attractive.

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

## Pollutants making Taj yellow identified

### Particles From Burning Of Fossil Fuels To Blame: Study

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New Delhi: India's white marvel, the Taj Mahal, is slowly turning brownish-yellow because of air pollution, says an Indo-US study which also identifies the pollutants responsible for the effect.

It says the Taj is changing colour due to deposition of dust and carbon-containing particles emitted in the burning of fossil fuels, biomass and garbage. The study confirms what has been suspected for long — that Agra's poor air quality is impacting India's most celebrated monument.

The research was conducted by experts from US universities — Georgia Institute of Technology and University of Wisconsin — as well as the Indian Institute of Technology, Kanpur and the Archaeological Survey of India (ASI). The paper was published in the Environmental Science & Technology journal in December.

The findings can lead to targeted strategies to curb air pollution in and around Agra and more effective ways to cleanse the marble surface of the 366-year-old mausoleum,

### WHITE NO MORE

- Taj Mahal's marble turning brownish-yellow due to 3 main pollutants
- Dust accounts for 59% of colour change and gives yellowish-brown hue to the white marble
- Brown carbon, from biomass & garbage burning, responsible for 30% of colour change. Gives marble yellowish-brown colour



- Black carbon, from fossil fuels, accounts for 3% of colour change, giving the monuments a greyish hue

which remains by far the most visited man-made structure in the country with more than six million footfalls in 2013.

The researchers first analysed air samples at the site for roughly a year using filters and found high concentrations of suspended particles that could potentially discolour the Taj's surface. Clean marble samples were then placed at various points on the monument accessible only by ASI staff. After two months of exposure, the samples were analysed using electron microscope and X-ray spectroscopy.

The pollutants deposited on the marble were identified through these investigations. Researchers found 3% of the deposits to be black carbon, around 30% organic carbon (or brown

carbon) and most of the rest dust. Black carbon is emitted by vehicles and other machines that burn fossil fuels. Brown carbon is typically released by burning of biomass and garbage, a common practice in the region.

SN Tripathi of IIT Kanpur, one of the authors, said the team used a novel approach to estimate how these particles would impact light reflecting off the marble surface. "We found that black carbon gives a greyish colour to the surface while the presence of brown carbon and dust results in yellowish-brown hues," he said.

"Results indicate that deposited light absorbing dust and carbonaceous particles are responsible for the surface discolouration of the Taj Mahal," the study concludes.



The Times of India, Delhi dated  
January 04, 2015

# With affordable solar panels, Delhiites can cut power bills

## Equipment Cost ₹6L , Return Of Investment Within 6 Years

TIMES NEWS NETWORK

New Delhi: With the Haryana government making rooftop solar power systems mandatory for all buildings on a plot size of 500 square yards or more, the issue has generated a lot of interest among Delhiites as well. Many residents now want to know how exactly they can get their homes powered by the alternative energy.

While experts say that the most feasible option for Delhi will be to set up rooftop solar systems for large commercial establishments such as malls and industries first, even residents can reduce their electricity bills drastically by investing in rooftop solar photovoltaic (PV) systems. TOI takes a sneak peek at the options available to Delhiites.

There are many solar equipment companies in Delhi, which are empanelled with the ministry of new and renewable energy (MNRE) for the "capital subsidy scheme". Residents can select one of them and get their houses and rooftops scoped for what capacity panels may be required. Usually for a 3-BHK house with five fans and five lights and an AC, a 5-KW system is ideal.

Currently, MNRE offers 30% subsidy on solar equipment. Even the Delhi government is likely to increase the subsidies, which will bring down the cost even further. A 5-KW system will cost Rs 6.65 lakh after the MNRE subsidy. But what is most important is the roof space. Larger roofs

### HARNESSING SUN TO POWER HOMES

How you can install a rooftop solar system in your house

#### 3-BHK independent house

CAPACITY | 5 KW

What can you run?

		
5	5	1
fans	tubes	AC

and small appliances

► Residents can also install a 250-litre solar water heater

Roof area needed | 75 sq m

Orientation | South-north

Cost | ₹6.6 lakh after 30% govt subsidy\* (battery included)

Cost of water heater | ₹40,000



\* The subsidy offered by Union ministry of new and renewable energy  
Source: Delhi-based solar equipment firms

#### 4-storey apartment

CAPACITY | 20 KW

What can you run?

		
5	5	1
fans	tubes	AC

& small appliances on each floor

Roof area needed | Over 300 sq m

Orientation | South-north

Cost | ₹20 lakh after 30% govt subsidy\*

Loans | Most nationalized banks offer loans for purchase of solar equipment at 2% interest rate

Companies | MNRE website has a list of manufacturers, including the Delhi-based firms, empanelled under the capital subsidy scheme for solar rooftop systems

Many solar equipment companies in Delhi are empanelled with ministry of new and renewable energy for capital subsidy scheme

can have a return on investment (ROI) after six to seven years of installation.

According to an assessment done by Tata Power Delhi Distribution Limited (TPDDL) for four-bedroom homes, "Assuming usual loads in four-BHK house—the connected load can be of five ACs, seven lights, two water heaters, five fans, one TV and refrigerator—a 12-KW system will do. However, all of these equipment do not run simultaneously usually." Such a 12-KW system will cost about Rs 12 lakh.

Residents can make use of the recently approved net metering facility in Delhi. This system facilitates consumption of electricity generated by the rooftop project and allows for feeding the surplus into the grid or the network of the distribution company. "In the international context, the rooftop solar projects have two distinct ownership arrangements—self-owned wherein rooftop owner also owns the PV system and the other is third-party ownership in which a developer owns the PV system and also enters into a lease or commercial arrangement with the rooftop owner," said a TPDDL spokesperson.

are better from the points of view of cleaning and maintenance of the solar panels.

"The panels should be south-facing with minimal shadow obstruction. Consumers should look for A-grade panels as their efficiency is higher. The panels may have to be replaced every 14 to 15 years when their efficiency starts to decrease," said Anand Prabhu Patanjali, renewable energy campaigner of Greenpeace India. Residents should be careful that trees or other taller buildings

do not cast shadows on the solar panels. According to Jose George of Delhi-based Mass Solar Technologies, "Almost all nationalized banks such as SBI and Vijaya Bank are offering loans at 2% interest rate for the purchase of these equipment. The process can be facilitated by the company. There is a lot of interest among Delhiites about rooftop systems. We have close to 112 such residential projects of various capacities in the city."

Patanjali said residents



Deccan Chronicle, Hyderabad dated January 05, 2015

## Pachuri says end sops on fossil fuels

DC CORRESPONDENT  
HYDERABAD, JAN 4

A meeting to discuss climate change will be held on January 12 to discuss increase in production of solar power in the country, said eminent environmentalist R.K. Pachuri, here on Sunday.

Mr Pachuri strongly believes that India's target of producing 1 lakh MW of solar power would be achieved in the next ten years and catapult India to world leader position.

Talking to the media after a function to lay the foundation stone of Hyderabad campus of TERI on the outskirts of the city, he suggested a shift in policy formulation in Solar Energy Mission apart from getting rid of subsidies on some fossil fuel resources. The setting up of the campus would benefit Telangana state as the research and development that will be carried out in the university would be helpful to the new state, he said.

To meet the world target of reducing global warming, India should adopt renewable energy technology which would be low in carbon emission, he said.

Ministers K. T. Rama Rao and Lakhma Reddy also participated in the function.

● Mr Pachuri believes that India's target of producing 1 lakh MW of solar power would be achieved in the next 10 years.

## POLLUTION | HAZARDS

## Heat changes the way grapes mature

# Global warming alters wine taste

London, Jan. 4: The taste of some of the world's finest wines is changing as global warming alters the way grapes mature, scientists have found.

Grapes such as pinot noir, merlot and chardonnay are now growing more quickly, subtly changing the compounds produced as they ripen and the synchronisation between maximum flavour and the ratio of sugar to acid, scientists said.

An increasing number of vineyards are thus struggling to identify the perfect moment for picking the grapes to ensure their wines retain their characteristic flavours, according to research by Kimberly Nicholas, associate professor of sustainability science at Lund University in Sweden.

"Climate change is beginning to affect the singular flavours that people expect

from different wines — the experience you come to know and trust from your favourite reds and whites," Ms Nicholas said in a report in *Scientific American*.

"As a grape matures, its sugar level rises and its acid level falls. The ideal ratio for picking occurs at around four months. Overall flavour should also peak at that time, creating a tight window for the best harvest time," she said.

Climate change is making the identification of the harvest window more difficult, Ms Nicholas was quoted as saying by *The Times*.

"As the atmosphere warms, the desired ratio of acid to sugar occurs earlier in the season," she said.

"The optimal flavour moment may occur earlier too leaving a gap between the ideal sugar-to-acid ratio and the ideal flavour," she said.

— PTI

## VANISHING | SPECIES

## Industrialisation along River Godavari is destroying birds' habitat

# Pollution killing Godavari waterbirds

VADREU SRINIVAS | DC  
KAKINADA, JAN. 4

Rapid industrialisation in the area covered by East Godavari estuarine ecosystem (Eggee), stretching from Kakinada to S. Yanam through the Coringa wildlife sanctuary, poses a threat to waders that migrate during winter.

The mud and tidal flats in the region support waders. Water birds like lesser sand plover, black-tailed godwit, Curlew sandpiper and little stini are the most abundant species in the region.

The Eggee region plays an important role for the fragile wader groups in the Central Asian Flyway

(CAF); the wader populations are indicators of the effective food supply and healthy status of the wet-

land.

The Eggee Foundation, a project involving the UN Development Programme

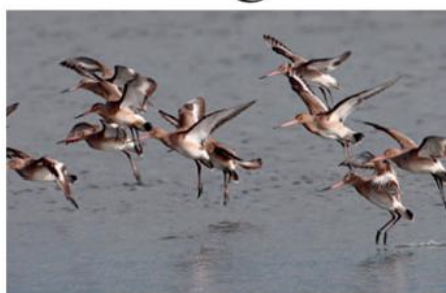
and the Centre and state governments, carries out a bird census during January at the end of the winter sea-

son.

"The major threat observed to the water birds was habitat loss" said P. Sathya Selvam, conservation biologist with the Eggee Foundation.

The Eggee area is witnessing industrialisation and filling of the mud and sand flats around Kakinada, Coringa and Gadimoga for industrial and aquaculture expansion.

As per the survey, there were 12,200 birds in Kakinada Bay in 2012 and 29,500 birds in the stretch from Kakinada to S. Yanam through the Coringa Wildlife Sanctuary in 2013. The next survey will be held on January 25 and 26.



Black-tailed Godwits



Curlews

The Times of India, Delhi dated January 05, 2015

The Times of India, Lucknow dated January 05, 2015

## Solar subsidy: Centre plans cut, Haryana may give more

Praveen.Jose@timesgroup.com

Gurgaon: The Centre has decided to reduce by half its subsidy on rooftop solar power panels that are now mandatory in Haryana's buildings, an early hurdle for a scheme the state government wants implemented by September this year.

The Union ministry of new and renewable energy has announced the subsidy is likely to be reduced up to 15%. When the scheme was announced, state officials had expected the Centre to offer a 30% subsidy with additional concessions from Haryana to make the scheme more attractive and implementation easier.

But the ministry put out a notification on its website on January 2, saying the subsidy policy was under revision and was likely to be reduced up to 15% from the current 30%, ei-



WILL IT BE COSTLIER?

ther in the form of capital subsidy to be given directly to Aadhaar-linked accounts or in the form of interest subvention.

State officials said the Haryana government was yet to decide on the quantum of subsidy it would give. Vinay Pratap, Gurgaon's additional deputy commissioner and project officer for implementation of the solar scheme, said, "If there is any reduction in central subsidy, the state government may consider reworking its share,

clarifications and guidelines for which are yet to be issued."

Arun K Tripathi, scientist at the ministry, told TOI it may also not be possible to provide central subsidy to all categories of beneficiaries applying for installation of rooftop solar power panels. Educational institutions, hospitals, old-age homes, government buildings and residential buildings would be prioritized over industrial and commercial buildings, he added.

Uppendra Tripathy, secretary in the ministry said, "Subsidies are needed to create demand and the demand is increasing now with a state making it mandatory to install solar power projects. With the increase in demand, we need to make these subsidies available to a larger audience, which is why they will have to be brought down," he said.

## Pollution Solution

Swachh Bharat also means Swachh Vatavaran, start discouraging diesel

Showing up the continuing constraints on deregulation in India, government has raised excise duty on fuel three times since November — violating the spirit of deregulation to meet its budgetary challenges, instead of wholly passing through the drop in global prices. This kind of interference also undermined both UPA and the previous NDA government's commitments to price deregulation. Meanwhile, nothing much is being done about a truly foul distortion in the fuel price market — higher excise duties on petrol make diesel look more attractive, even though diesel is much the worse polluter as it is easier to adulterate.

Helped along by this differential diesel passenger vehicles reportedly accounted for 49% of all new cars sold last year across India — up from 20% just a few years ago, even as data about their polluting impact is piling up. An Environment Pollution (Prevention and Control) Authority report linked a spurt in diesel cars to the premature death of thousands of children in Delhi. In winter, signs of a growing crisis are palpable in the capital and other north Indian cities. A low-hanging shroud of smog impairs visibility, chokes lungs; children are particularly traumatised by asthma, respiratory illnesses and hospitalisations.

Votaries of low diesel prices call it the poor person's fuel. But there is nothing stopping the wealthy from taking advantage of India's fuel pricing anomaly. After all private cars use a lot more diesel than buses or agriculture — an overwhelming majority of SUVs are running on diesel. In India's growing car market, every day's delay in discouraging diesel noisily expands how long the country will be captive to its pollution. Swachh Bharat ought to include Swachh Vatavaran, clean air, in its definition. It's imperative to level excise duties across petrol and diesel.





# Govt moots ideas to sync green norms with growth

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New Delhi: A number of steps have been taken in the past six months to speed up green clearances but the government is also examining 55 additional suggestions to achieve its twin goals of economic growth and environment protection.

Many of the suggestions, extended by a high-level panel of the environment ministry, will either be incorporated in existing laws through suitable amendments or be made part of a new 'umbrella' law which may be introduced in Parliament during the Budget session. Though suitable changes in the existing green laws to bring it in sync with the Narendra Modi government's development agenda are the high points of the former cabinet secretary T S R Subramanian-led panel's recommendations, it also suggested many other measures which may go a long way in protecting the environment. "We are looking at all those 55 suggestions and discussing it with stakeholders, including experts and environmentalists," said a senior official of the ministry.

The recommendations include stringent measures and a multi-pronged approach to deal

## BALANCING ACT

Government is looking at 55 suggestions to achieve its twin goals of economic growth and environment protection

Most suggestions will be incorporated either in existing laws through amendments or in new 'umbrella' law

### KEY SUGGESTIONS

► **Revised application process for environmental clearance:** Single-window, unified and time-bound procedures

► **Special treatment for linear projects, power/mining and strategic border projects**

► **Environmental mapping of the country:** Clearly identifying the areas where projects can come up or cannot be allowed

► **Finalize the demarcation of the coastal regulation zone and bring it in public domain**

► **Incorporate noise pollution as an offence in Environment Protection Act, au-**

Protection Act

► **Add polythene bags and plastic bottles in the banned list under the Wildlife Protection Act**

► **Authorize officers of the Wildlife Crime Control Bureau to file complaints in courts**

► **New systems and procedures for handling municipal solid waste in cities**

► **Economic incentives for increased community participation in farm and social forestry**

► **Market-related incentive system to encourage green projects**



with air pollution, environmental mapping of the country; definite timeframe for cities to dispose of their municipal solid waste, incorporation of noise pollution as an offence in the Environment Protection Act, au-

thorizing officers of the wildlife bureau to file complaints in courts, banning manufacture and possession of leg and mouth traps that are used by poachers and demarcation of a coastal regulation zone.

The Times of India, Lucknow  
dated January 05, 2015

The Times of India, Delhi dated  
January 07, 2015

## Solar plane to begin round-the-world trip

Payerne: A sun-powered plane was loaded onto a cargo carrier in Switzerland late on Monday heading for the Middle East from where it will attempt a revolutionary round-the-world trip.

The air carrier transporting Solar Impulse 2 is due to leave on Tuesday for Abu Dhabi, from where the long-winged plane will begin its record-making bid in March with the aim of completing the trip by July.

It is the successor of Solar Impulse, a pioneering craft which notched up a 26-hour flight in 2010, proving its ability to store enough power in lithium batteries during the day to keep flying at night. The forerunner was put through its paces in Europe, crossed the Mediterranean to reach Morocco and traversed the United States in 2013 without using a drop of fossil fuel.

The masterminds of the project are Bertrand Piccard, the scion of a dynasty of Swiss scientists-cum-adventurers, and Andre Borschberg, a former Swiss air force pilot. "I am moved, because this is really a magical moment, an important moment," said Borschberg. "We've been working on this for 12 years." Piccard, who made history in 1999 by becoming the first person to fly around the world in a hot-air balloon, said the objective was



**SUN POWER:** The Solar Impulse crew loads the experimental aircraft onto a cargo plane at an airbase in Payerne, Switzerland, on Monday, before takeoff to Abu Dhabi

to prove that clean energy could "achieve incredible things".

"What we need to do now is convince the political and the industrial world that this is the direction we need to go in," Piccard said. The goal with Solar Impulse 2 is to fly non-stop over 120 hours — five days and five nights — enabling it to cross the Pacific and Atlantic legs of its global mission. The operation will circle the globe eastwards, heading over the Arabian Sea to India, Myanmar and China, to cross the Pacific Ocean, the US, the Atlantic, southern Europe and North Africa before returning to its starting point. AFP

The Economic Times, Delhi dated  
January 06, 2015

## Modi Govt Removes Green Hurdle for Make in India

Exemption for projects of up to 150,000 sqm from environmentals nod

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New Delhi: The NDA government has done away with an arbitrary environmental clearance mandated by the UPA for building large factories that industry captains had red-flagged with the Prime Minister's Office as a major deterrent for new investment projects.

In a notification issued late last month, the environment ministry has exempted the building of large industrial sheds, schools, colleges and hostels of up to 150,000 square metres from seeking a prior green nod for construction.

In early 2013, the ministry had held that the building a factory was tantamount to undertaking a construction project and stipulated a prior environment clearance for any such industrial building with a built-up area of over 20,000 square metres.

The order, issued under the watch of controversial UPA environment minister Jayanthi Natarajan, had jeopardised or scuttled several greenfield and brownfield investment plans of large manufacturing players, including MNC auto makers as getting such a clearance takes two years in a best-case scenario. The country's largest auto maker Maruti Suzuki India Limited

### Boosting Growth

**Government notification says:**

Exempted building of large industrial sheds, schools, colleges and hostels of up to 150,000 sqm from seeking a prior green nod

**Decision in 2013:** Clearance needed for any such industrial building with a built-up area of over 20,000 sqm

**Must have in new buildings:**

Rainwater harvesting  
Solid and liquid waste management

was even prosecuted by the Haryana government for starting work on its ₹3,500 crore research and development facility in Rohtak without this nod and had to turn to courts.

"The new norms would help businesses build larger factories that enjoy economies of scale much faster," said a senior vice president of Indian subsidiary of a global auto player. "This green hurdle had made it difficult to build any plant over 5 acres of land and had forced some investors to explore alternate

production hubs with lesser red tape as their return on investments shrinks with every month of delay," he said.

Two weeks before PM Narendra Modi launched the Make in India campaign in September last year, the environment ministry steered by Prakash Javadekar had declared its intent to roll back this norm. The ministry had initially proposed that such a prior environmental clearance would only be required for projects over 20,000 square metres that involve residential or commercial buildings, hotels, hospitals and information technology or software development units and parks.

However, it has opted to go for a negative list of projects in the final notification issued on December 22, stating that advance environmental clearances are not required for industrial sheds, schools, colleges and hostel for educational institutions. At the same time, the ministry said such new buildings must ensure environment management by putting in place systems for rainwater harvesting, solid and liquid waste management.

The new norms also suggest that investors 'may use recycled materials such as fly ash bricks' for building new factories, according to the notification reviewed by ET.



*The Times of India, Delhi dated  
January 08, 2015*

## Capital's polluted air may force Obama to stay indoors

Jayashree Nandi & Indrani Bagchi

New Delhi: Amid reports that the US may curb President Barack Obama's early morning schedule during his visit to Delhi later this month, air pollution monitoring agencies said the levels of 'PM2.5' or fine, respirable particles that get lodged in the lungs are likely to be in the range of moderate to high in the period while he's here.

Air quality, because of the high pollution in the city, is routinely rated by the US embassy pollution monitor as "poor" — in other words, unhealthy. It's in that context

### CHOKING IN DELHI

	PM2.5 LEVEL
Jan 26, 2015 (estimated day's avg)	90-110
Jan 26, 2013 6-10am (during R-Day parade)	160-234
Jan 25-27, 2012-14 (3-day average)	130-170
WHAT'S PM2.5	Fine, respirable particles floating in air that get lodged in lungs



	USEPA	WHO	INDIA
	15	25	60

Figures in microgram per cubic metre

there is speculation that the US authorities here could seek to curtail Obama's "outdoor activities" during his visit.

However, what makes this difficult is that Obama is chief

guest at the Republic Day parade which is held in the open and in the morning when pollution levels are usually high.

► Prez in enclosure? P 3

## Enclosure may keep out polluted air

► Continued from P1

It's possible that Obama will be seated in a sealed bulletproof enclosure which will keep out the polluted air. US embassy sources dismissed all speculation about Obama's outdoor activities being curtailed.

According to data with Delhi Pollution Control Committee, the PM2.5 level for the past three years during January 25 to 27 (the period when Obama will be here) was between 130 to 170 microgram per cubic metre, which is at least five times the WHO

standard, eight times the US Environment Protection Agency (USEPA) standard and twice the Indian safe standard.

The PM2.5 levels early in the morning when the R-Day parade is held is likely to be very high. In 2013, on the Republic Day between 6 am to 10 am, PM2.5 values ranged between 234 to 160 µg/m<sup>3</sup>. So, the levels could peak to 15 times the US safe standard of 15 µg/m<sup>3</sup>.

This winter, the US embassy's monitoring station in Chanakyaपुरi has been recording several days with "hazardous" air quality because of severe smog. The

embassy provides an AQI in the city with real time PM2.5 values and a corresponding health advisory.

"It is too early for the SAFAR model to predict the air quality on January 26, but based on the statistical analysis of past four year of data and considering the growth in emissions and weather conditions, it is estimated that value of PM2.5 on that day is likely to be hover between moderate to poor, between 90 to 110 µg/m<sup>3</sup>, which is better than now," said Gauran Beig, chief project scientist of SAFAR, IITM.

### SMOG AND FOG CREATING HAVOC

## Blame Pollution for Cold Wave in North India

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New Delhi: One big reason for the long spell of extreme cold weather in Delhi and many parts of North India this winter season — affecting road, rail and air traffic almost every day and claiming tens of lives — is rising air pollution, say scientists.

Delhi's air quality, which was adjudged to be the worst among world cities by the WHO in May, worsened as winter approached because of smog and fog, caused by vehicular and factory emissions staying close to the ground in heavy cold air. And fog impacts day temperature by blocking sunshine.

"The fog keeps the day-time temperatures low, making it colder," said climate scientist Ajit Tyagi, who holds the Koteswaram chair in the ministry of earth sciences.

Since mid-December, Delhi and north India have been experiencing unusually cold weather even though there has been no appreciable dip in the minimum temperature.

This is not unusual for Delhi. A 2007 paper by RK Jenamani of the Indian Meteorological Department (IMD), analysing hourly fog and temperature data for December and January at the IGI Airport and Safdarjung Airport for the period between 1960 and 2005, established a link between pollution and lower winter temperatures.

The paper titled 'Alarming Rise in Fog and Pollution Causing a Fall in Maximum Temperature over Delhi' established that pollutants as like particulate matter and aerosol act as additional sources of cloud condensation nuclei necessary for fog formation, which lead to lowering of maximum day time temperatures.

Global warming and melting Arctic ice caps were causing the jet stream to become more extreme, leading to the transplanting of unusually cold weather into the mid-latitudes. Matters were aggravated in Delhi and north India by unusually high levels of particulate matter in the air, which led to persistent foggy conditions.

The situation has only worsened.

In November, the Delhi Pollution Control Committee found that levels of particulate matter (PM2.5) in the air, as per data from the six stations that it monitors, remained on an average at least three to four times the 24-hour standard of 60 micrograms



ET PIC

per cubic metre.

DS Pai of IMD's National Climate Centre said fog on account of pollution and moisture in air has aggravated the current cold spell by limiting sunshine. Experts said in cold air pollutants accumulate in the atmosphere, especially in the absence of wind, pushing up air pollution levels. In part this is explained by the increase in the quantity of wood and other substances being burnt for heating, especially by the poor, homeless and those doing outdoor duty.

Experts said clear skies for a couple of days after the rains last weekend vindicated this point, explaining that the rains and winds helped wash out the build-up of pollutants and fog.

A recent multi-institution study has found that Delhi's

air has higher concentrations of harmful components such as lead, zinc and polycyclic aromatic hydrocarbons in winter season. The study by University of Birmingham, the Indian Institute of Technology, Delhi, the Central Road Research Institute, and the Desert Research Institute, US, was based on data collected between December 2013 and January 2014 from an area adjacent to a heavy traffic site on Mathura Road, an area influenced by industrial emissions in Delhi.



The Times of India, Delhi dated  
January 08, 2015

The Economic Times, Delhi dated  
January 09, 2015

# Not cars, dust pollutes Delhi most: MoEF

## SC Told Vehicles Contribute Just 6.6%, Dust's Share Is 52%

Dhananjay Mahapatra &  
Amit Anand Choudhary | TNN

New Delhi: The major source of pollution in the capital is dust particles and not vehicular emissions, the ministry of environment and forest (MoEF) submitted before Supreme Court on Wednesday.

While dust contributed 52% of particulate matter in the air pollutions from vehicles, including trucks and light commercial vehicles, accounted for just 6.6%, the ministry said.

"In Delhi, vehicles contribute only 6.6% particulate matter (PM) emission, 18.3% oxides of nitrogen (NOx) and 0.3% of noxious sulphur dioxide (SO2) emissions whereas dust particles from paved/unpaved roads contributed 52% of particulate matter pollution," the ministry said, quoting a Source Apportionment Studies conducted in Delhi, Kanpur, Pune, Mumbai, Chennai and Bengaluru.

"The source apportionment study carried out in Delhi reveals that re-suspension of the dust is also the major source of particulates in the ambient air. There is a need to focus on initiation of steps to reduce re-suspension of dust and management/regulation of construction activities," MoEF said.

Of the total particulate matter and NOx pollution caused by vehicles, private cars were responsible for 22% while trucks caused 45.8% and light commercial vehicles 27%, it said.

"Industry/power plants contribute 78% of NOx and 95.4% of SO2 content in the ambient air," the ministry said. It also responded to several suggestions made by se-

### WRONGLY TARGETED?

PARTICULATE MATTER	
Vehicles   6.6%	(Trucks   45.8% / LCVs   27.6%)
Paved/unpaved roads	
52.2%	
NO <sub>x</sub> (Oxides of Nitrogen)	SO <sub>2</sub> (Sulfur dioxide)
Vehicles	Vehicles
18.3%	0.3%
Industry / power plants	Industry / power plants
78%	95.4%



Source: Study coordinated by Central Pollution Control Board

### BS-IV PERCEIVED REMEDY FOR POLLUTION

#### Centre's rollout plan

Apr 1, 2015 | Whole of northern India except Leh/Kargil. That means J&K, Punjab, Haryana, HP, Uttarakhand, Delhi and bordering districts of and parts of Rajasthan and western Uttar Pradesh

Apr 1, 2016 | (1) Goa, Kerala, Karnataka, Telangana, Odisha, and UTs of Daman and Diu, Dadra & Nagar Haveli and

Andaman & Nicobar Islands  
(2) Parts of Maharashtra (Mumbai, Pune, Thane) and parts of Gujarat (Surat, Valsad, Dangs and Tapi districts)  
(3) A corridor spanning the highway link through Gujarat and Rajasthan linking north India to the ports of the west coast

Apr 1, 2017 | Rest of the country

nior advocate Harish Salve, who as amicus curiae had personally filed an application drawing the court's attention to the deteriorating ambient air quality of the capital, which squandered the advantage of converting its entire city passenger transport fleet to cleaner fuel CNG on court's orders more than a decade back.

Clarifying that the National Green Tribunal headed by former SC judge, Swatanter Kumar, was already seized of the issues raised by Salve, the ministry said Salve's suggestion to restrict plying of private cars on alternative days might not be feasible.

"It may not be an effective

and feasible option as people using personal cars are not likely to shift the mode of travel. Persons using two-wheelers are likely to shift to public transport, which may lead to

### NEW VIEW

excessive pressure on services without yielding much benefit," it said and informed the court that it has sought views of public transport providers on this issue.

Salve had also said schoolchildren were the worst sufferers of the deterioration in ambient air quality and suggested closure of schools on 'red alert days', when the air quality nosedives. "Exposure

of school going children to higher level of pollution occurs only for limited period during travel, while Air Quality Index (AQI) is based on 24-hourly average standard and prolonged exposures. Moreover, most schools are closed for winter breaks (when the air quality becomes worse)," it said.

The ministry of road transport and highways said that "it is high time that the pollution control authorities conduct studies for apportionment of causes of pollution in habitations including Delhi. All increase of pollution is always ascribed to automobiles based on studies done overseas".

### THINK POST-MILLENNIUM

Money which is not spent on costly, ineffective CO2 cuts can be used to fund programmes that are guaranteed to improve lives.



## To Tackle Climate Change, We Need Better Technology



Bjorn Lomborg

Climate change is certainly one of the most highly-profiled issues of the 21st century so far. The UN secretary-general argues that it is "an existential challenge for the whole human race." On the other hand, when 5 million people were asked by the UN what they saw as most important, climate change came at the bottom of the list of 17 issues: way below healthcare, education, corruption, nutrition and water—and even below phone and Internet access.

This is astonishing, particularly given the consensus that climate change is real and happening. Are people right to be sceptical about current policies?

The Copenhagen Consensus, my think tank, has asked teams of expert economists to analyse all the options facing humanity—from health and education to violence, water and global warming—to estimate where we can do the most good for our money first. This matters, because the UN is about to set its next set of targets for the world from 2015-2030. Like the Millennium Development Goals, set 15 years ago, these targets will determine where trillions of dollars will be spent. In order to make progress, we can't afford to pour money into projects that pay back less than we put in. Likewise, we can't afford not to focus on projects that will do immense amounts of good.

Economist Isabel Galiana has written the main paper on climate change and comes to a conclusion which is sure to be controversial: that present policies designed to reduce emissions of greenhouse gases are failing and cannot be effective until better technology is available. Despite the Kyoto Protocol and many national initiatives, the fact is that emissions have increased by almost half since 1990 and will continue to increase for many decades to come.

In stark contrast, the UN and many national governments focus on committing to keep the average temperature rise below 2°C above pre-industrial times. But there is a big problem: there is no realistic chance of keeping to this limit with current trends in fossil fuel use. To do this, emissions would have to peak and then be drastically

ly cut with some technology capturing CO2, liquefying it and injecting it deep underground. But this technology on the vast scale needed doesn't exist yet. Moreover, solar and wind, though very popular, will even in 2035 contribute just a tiny fraction of global energy needs.

The upshot is that pursuing this 2°C target is very costly and not guaranteed to be successful. Estimating all the economic, social and environmental costs and benefits are difficult, but one thing is clear: the programme would cost much more than the benefits it would bring. In the meantime, that money could have been used to improve people's welfare in much more cost-effective programmes.

Galiana suggests that investing 0.5% of global GDP, which would be around \$80 billion for India, into development of better energy technology would be a much better use of money. This could be funded with a slowly rising carbon tax (giving businesses an incentive to cut emissions but not telling them how to do it) and could give a payback of \$11 for every dollar spent. Galiana also suggests the world should spend 0.65% of GDP for adaptation, essentially helping many nations cope better with specific climate impacts. Every dollar spent will likely do more than \$2 of social good.

Another economist who has contributed his perspective, Robert Mendelsohn, points out that the cost of action on climate change rises rapidly as the targets get tougher. Keeping average temperature rises below 5°C might cost about \$19 trillion, but aiming for a 2°C target would cost ten times as much.

Much better, then, to target a maximum of, say, 3°C rise, which will cost about \$40 trillion but avoid most damages. If we insist on 2°C, we will pay an extra \$80,000 billion dollars, but only prevent a stream of \$100 billion damages that begins in 70-90 years. Moreover, all of these estimates assume cost-effective climate policies, whereas in real life they have often become many times more expensive.

Climate change is a big issue and cannot be ignored. But we need to take the emotion away and look at the facts; otherwise it will be the world's poorest that will suffer. Money which is not spent on costly ineffective CO2 cuts can be used to fund programmes which are guaranteed to improve their lives.

The author is Director of the Copenhagen Consensus Center  
NEXT WEEK: Gender Equality

The Times of India, Delhi dated January 09, 2015

## DMRC bicycle scheme for green cause

Tania Tikoo | TNN

New Delhi: Delhi Metro on Thursday announced a unique initiative under which commuters will be able to rent a bicycle from a residential area to reach the nearest Metro station and the vice versa. The scheme has been launched to provide pollution-free last-mile connectivity to Metro commuters.

The "public bicycle sharing" scheme is aimed at promoting the cause of "clean and green India". The facility was inaugurated at Saket Metro station. A commuter will be able to rent a bicycle from the nearby Neb Sarai locality and park it at Saket Metro station. DMRC is planning to launch the drive at Hauz Khas, Akshardham, MG Road, Dwarka



PEDAL POWER

Sector 14 and Shastri Park Metro stations.

It will involve software-driven automation and will be a cashless transaction, said a DMRC official. Commuters can operate the bicycles at multiple places with the help of a rechargeable smart card. The

users have to pay just Rs 10 an hour.

Keeping the security aspect in mind, the rental facility will be only be provided only after a detailed verification of the traveller. The interested commuters will have to fill an easy form giving their basic details. The form will be available at all the cycle shelters or can be downloaded from www.greenolution.in. The facility will remain operational from 8am till 8pm in summers, while the winter timings will be from 8am till 7pm. However on Sundays, the service will be available only till 4pm.

DMRC already has three stands at Saket, Hauz Khas and Akshardham with 18 cycles each while the Neb Sarai shelter houses 20 cycles. DMRC has been running a similar service at the Vishwavidyalaya Metro station for the past six years.



The Times of India, Delhi dated  
January 09, 2015

# 'Report does not give pollutant details'

Sources pointed out that the MoEF report talks about PM in general, not drawing a difference between PM10 and PM2.5. The latter is universally considered to be the more harmful of the two,

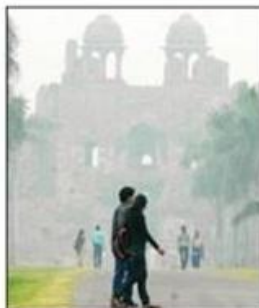
## TOI AGAINST POLLUTION

and its levels are considered when drawing up policy.

Questioning the intent behind MoEF's submission, the Centre for Science and Environment accused the ministry of trying to scuttle the role of vehicles in Delhi's rising

air pollution "at the behest of automobile companies as combating pollution today requires tough measures to restrain cars and encourage public transport".

The IITM report, titled 'Emissions inventory of anthropogenic PM2.5 and PM10 in Delhi during Commonwealth Games 2010' and authored by Saroj Kumar Sahu, Gufran Beig and Neha S Parkhi says, "The present estimated wind blown dust is more than the total estimation from all other sources and more than four folds in comparison to transport emission. The resuspended dust is associated with the vehicular movement on the road and is directly proportional to the number of ve-



HAZY PICTURE

hicle, its weight and speed as well as the amount of dust on roads." It also states that vehicles are the likely cause for even this. "It is likely to be more serious in a city like Delhi due to more vehicles...H-

ence the transport sector which has direct contribution through fossil fuel combustion and indirect related to road condition provide the key to better air quality in NCRD if properly mitigated."

Anumita Roychowdhury, who heads CSE's clean air campaign, said, "MoEF has only cited the PM10 inventory, which is the coarse particles. Their limited study, which looked at PM 2.5 levels, was withdrawn by NEERI as it was based on a flawed methodology and ended up blaming cooking LPG for 61% of PM2.5 in Delhi."

Even after stating the government has implemented the SC order on relocation of polluting industries, the re-

port claims that industry and power plants are still responsible for 78% of nitrogen oxides and 95.4% of sulphur dioxide in the capital. Point is, even dust becomes the carrier for emissions."

A study carried out by CSE has found that on national holidays when traffic volume is less, pollution is lower. "For instance, on Republic day of 2013, PM2.5 levels in RK Puram declined compared to the previous day from 244 microgramme per cum to 153 microgramme per cum and again rose to 178 microgramme per cum on January 27 and to 345 microgramme per cum by January 28. Similar trends were observed elsewhere," said Roychowdhury.

Deccan Chronicle, Hyderabad  
dated January 12, 2015

# Cut carbon emission: Ban to PM

## ■ UN Secretary General wants India to set target to cut emission

Gandhinagar, Jan. 11: United Nations' Secretary General Ban Ki-moon on Sunday asked India to set an ambitious target to cut down carbon emissions, saying it is in a unique position to lead sustainability, energy efficiency and fight against climate change.

"India should come out with an ambitious target to cut down carbon emissions," he said addressing the "Vibrant Gujarat Summit."

His call came after the recent announcement by China and the US to cut down carbon emissions and failed climate change talks among various countries during a UN summit in September 2014.

Mr Ban, who is attending the Vibrant Gujarat Summit for the first time, began his speech in Gujarati while greeting the audience and said he was glad to be here.

"I wish India will play a full role in this mission for social security, health care and environment," Mr Ban said, adding, "In July, Addis Ababa will hold a conference to find solutions to fund development agenda of the world. This will pave the way for inclusive growth and action against climate change, and India will be playing a huge role in it." — PTI



Ease of doing business in India is a prime concern for you and for us. I assure you that we are working very seriously on these issues. We want to make them not only easier than earlier; not only easier than the rest; but we want to make them the easiest

— NARENDRA MODI, Prime Minister

UN Secretary-General Ban Ki-moon greets PM Narendra Modi during a meeting at Gandhinagar in Gujarat on Sunday. — PTI

## PM vows stable tax regime

DC CORRESPONDENT  
with agency inputs  
NEW DELHI/  
GANDHINAGAR, JAN. 11

Addressing audience that included US secretary of state John Kerry, UN Secretary-General Ban Ki-moon and top global and domestic CEOs, Prime Minister Narendra Modi said that the ease of doing business in India was a key concern for his government. "We want to make them not only easier than earlier; not only easier than the rest; but we want to make them the easiest," he said.

Addressing investors' concerns, the PM said, "We are trying to complete the circle of economic reforms speedily. We are keen to see our policies are predictable. We are clear that our tax regime should be stable."

He also brushed aside the criticism that nothing was happening on the ground, and stressed: "We are not only making commitments and announcements. We are also backing them up with concrete action," he added.

## 'Sabka saath sabka vikas' impresses Kerry

DC CORRESPONDENT  
with agency inputs  
NEW DELHI/  
GANDHINAGAR, JAN. 11

Setting a positive tone for US President Barack Obama's visit, secretary of state John Kerry on Sunday said it is the perfect time to tap "incredible possibilities" between India and the US, as he praised Prime Minister Narendra Modi saying his initiatives like

'Make in India' will be a win-win situation for the world.

Mr. Kerry also said he has been very impressed with his 'Sabka Saath, Sabka Vikas' campaign and suggested emulating this "pretty good slogan" at the global as well as at Indo-US levels.

After attending Vibrant Gujarat Summit, Mr. Kerry also met Mr. Modi and discussed the visit of Mr. Obama, who will

be the chief guest for Republic Day celebrations on January 26.

Mr. Obama, who will be the first US President to be the Republic Day chief guest and also the first to visit India twice while in office, will hold wide-ranging discussions with Mr. Modi and the two sides are expected to sign a slew of agreements to bolster defence, economic and strategic ties.



The Economic Times, Delhi dated January 12, 2015

**From India to the World** PM hard-sells country as the next big opportunity to US Secy of State John Kerry, UN Secretary-General Ban Ki-moon and global industry bosses

# Modi Transforms Vibrant Gujarat into Vibrant India

Our Bureau

Gandhinagar: Prime Minister Narendra Modi said India is getting ready to take a "quantum leap", elevating the Vibrant Gujarat Summit he founded as chief minister in 2003 into a platform to hard-sell India as the next big opportunity to statesmen such as US Secretary of State John Kerry and UN Secretary-General Ban Ki-moon, and industry bosses from across the globe.

"We will be available to hold your hands whenever you need us. You will find us standing with you in your journey," Modi said at the inauguration on Sunday. The audience included the cream of India Inc such as Mukesh Ambani and brother Anil,

Gautam Adani, Shashi Ruia and other business leaders who have built empires in Gujarat.

Modi assured the huge gathering an enabling and constantly improving policy framework and spoke of his nine-month-old government's reforms vision. "My government is committed to create a policy environment that is predictable, transparent and fair," adding that it was working to ensure faster and more inclusive growth.

He spoke about a "level playing field" to make India a manufacturing hub, adding that the government has put the focus on building infrastructure through public and private investments. He lingered on the Mars orbiter mission, and compared its frugal cost to that of the recent Hollywood blockbuster *Interstellar*.

Vibrant Gujarat, which had been conceived by Modi as a means of drumming up investment in the state, also became the stage on which he recast himself as a progressive, business-friendly leader.

Kerry Praises Initiatives ►► 15



**JEST IN TIME:** PM Narendra Modi shares a lighter moment with US Secretary of State John Kerry at the summit in Gandhinagar on Sunday

## WOOLING INVESTORS

We will be available to hold your hands whenever you need us. You will find us standing with you in your journey

**NARENDRA MODI**  
Prime Minister



## ON CLEAN ENERGY

(Gujarat) has long been a cultural crossover to the world. Today, it can also be a crossroad for a new era of sustainable development

**BAN KI-MOON**  
UN Secretary-General

## ON MODI'S SLOGAN

I was very taken by PM Modi's campaign (slogan) — Sabka saath, sabka vikas ... That sounds like a pretty good slogan for all of us to adopt

**JOHN KERRY**  
US Secretary of State

# Kerry Praises Initiatives

►► From Page 1

On Sunday, Modi did not disappoint those who came to listen to his plans to transform the economy in a speech devoted to Destination India. While the English address marked a break from his usual impromptu style, he started by paying tribute to those killed in the recent terrorist attacks in Paris.

It was as clear a signal as any that Vibrant Gujarat had taken on a global feel. Richard Rekhy, KPMG's India chief, had tweeted earlier that with Modi as PM, Vibrant Gujarat could become Vibrant India in the coming years.

Kerry praised the various initiatives announced by Modi since he took office. "It was very taken during PM Modi's campaign (slogan) — Sabka saath, sabka vikas — participation of all for development of all. That sounds like a pretty good slogan for all of us to adopt, and if we adopt it, we can get the job done."

The visit by Kerry is an attempt by the US to further economic ties and create a positive atmosphere ahead of President Barack Obama's visit later this month. Kerry and Modi hugged each other, signalling the new warmth in ties between the two countries.

Kerry later termed the impending India visit by the US president as an "amazing opportunity."

When his time came to speak, Kerry called it a "magical moment", adding: "I fear everything has been said, but not everybody has said," he said in jest as the Prime Minister awaited his turn.

In his 45-minute speech, which he laced with



phrases in Hindi, Modi said the government was working towards a single-window clearance mechanism at the central and state levels, adding that it wants to address the lingering concern of ease of doing business in India.

The country ranks 142 out of 189 in the World Bank's latest Ease of Doing Business Index. Modi wants India to rise into the top 50.

On January 13, the organisers will decide on the future of Vibrant Gujarat. Rekhy and others expect the event to now take on a national dimension. After all, Gujarat seems to be well set. As chief minister Anandiben Patel put it: "Fortunately, we don't have to worry whether we are on the right path or not. We have to just keep up the pace and accelerate it."

The Times of India, Delhi dated January 14, 2015

# 'India key to Paris climate talks'

TIMES NEWS NETWORK

**New Delhi:** UN secretary general Ban Ki-moon on Tuesday asked India to take a leadership role in reaching a "meaningful" climate change pact in Paris later this year.

"I count on the leadership of India in our ongoing efforts to address the climate change issues ... I expect as one of the most critically important member-states of the UN and as one of the fastest growing economies, India should be responsible to address climate change so that they will soon have universal and meaningful climate change agreement in Paris in December," Ban Ki-moon said.

**"I count on the leadership of India in our ongoing efforts to address the climate change issues"**

**BAN KI-MOON**  
UN secretary general

His remarks came while he visited India's first 'Net Zero Energy' consuming building — Indira Paryavaran Bhawan — which is constructed in such a way that it can meet most of its annual energy requirements through solar power.

Environment minister Prakash Javadekar showcased the secretary general the salient

features of the green building, which has India's largest rooftop solar panel. In fact, Ban has expressed desire to see the green building when Javadekar had last met him during the UN climate conference in Lima in December and explained to him the features of the 'Paryavaran Bhawan' from where his ministry works. It is located in Delhi's Jor Bagh.

The building, which was dedicated to the nation by the PM Manmohan Singh earlier last year, is focused on increasing the efficiency of resource like energy, water and materials while minimizing the impact of the building on human habitat and environment.



*The Times of India, Delhi dated  
January 14, 2015*

## Soon, a powerful, cheaper battery for electric cars

**Toronto:** A next-generation cheaper, lighter and more powerful rechargeable battery for electric vehicles is one step closer to reality.

The discovery of a material that maintains a rechargeable sulphur cathode helps to overcome a primary hurdle to building a lithium-sulphur (Li-S) battery.

Such a battery can theoretically power an electric car three times further than current lithium-ion batteries for the same weight, at a much lower cost, researchers said.

"This is a major step forward and brings the lithium-sulphur battery one step closer to reality," said chemistry professor Linda Nazar from the University of Waterloo.

In theory, sulphur can provide a competitive cathode material to lithium cobalt oxide in current lithium-ion cells. Sulphur as a battery material is extremely abundant, relatively light and very cheap.

Unfortunately, the sulphur cathode exhausts itself after only a few cycles because the sulphur dissolves into the electrolyte solution as it is



© Rainer Holz/Corbis  
**LONGER, GREENER DRIVES**

reduced by incoming electrons to form polysulphides. Nazar's group originally thought that porous carbons or graphenes could stabilize the polysulphides by physically trapping them.

But in an unexpected twist, they discovered metal oxides could be the key. The researchers found that nanosheets of manganese dioxide (MnO<sub>2</sub>) work even better than titanium oxides. "You have to focus on the fundamental understanding of the phenomenon before you can develop new, advanced materials," said Nazar. **PT**

*The Economic Times, Delhi  
dated January 14, 2015*

## No Ordinance for Green Laws: Minister

Urmi.Goswami@timesgroup.com

**New Delhi:** Environment minister Prakash Javadekar has made it clear that changes to environment and forest-related laws will not be introduced in the form of ordinances. The minister said that he hoped to have the draft amendments ready for introduction in the forthcoming Budget session of Parliament.

"We are now studying the recommendations of the TSR Subramanian Committee. We have not completed our study or consulting on the report, so how can we finalise the changes that may be required. And (we) will hold consultations to decide on the changes that are required in the environment-related laws," Javadekar said, stressing that there was no ordinance in the works for the environment-related laws. The environment minister welcomed the efforts by the parliamentary standing committee on environment and science and technology. "I look forward to their suggestions on the committee's recommendations and we will consider the standing committee's views seriously," Javadekar said.

The standing committee held its first hearing on the report last Friday, and has been accepting written submissions as well. Congress leader and former minister



**We are now studying the recommendations of the TSR Subramanian Committee...And (we) will hold consultations to decide on the changes that are required in the environment-related laws**

**PRAKASH JAVADEKAR**  
Environment minister

ter Ashwani Kumar, who heads the committee, said nine leading civil society organisations working in the environment

sector, including the Delhi-based Centre for Science and Environment, and Teri, had met the committee. Experts, including Asad Rahmani of the BHNS, tiger expert Ullas Karanth and environmental lawyer Ritwick Dutta also met the standing committee.

Javadekar's comments came close on the heels of the apprehensions expressed by civil society organisations that the government may be keen to dilute environmental laws and norms. "The Subramanian Committee has submitted a report, which we have accepted for consideration. The acceptance is for consideration and not in totality and we are now discussing it. It is now in the public domain. We want some good suggestions," Kumar said.

He explained that the committee took up the report for discussion as there was "disquiet" among many environmentalists. "These are important recommendations and have been debated in the media for the last few days. It was but natural that the committee had to know what these recommendations were and what will be its impact on environment. Many people are of the view, which has come out through the media reports, that these recommendations can weaken the environmental laws. That is why it was important for us to discuss them," Kumar said.

*The Times of India, Delhi dated  
January 15, 2015*

## Train that chugs on CNG launched

TIMES NEWS NETWORK

**New Delhi:** In a significant step towards adopting green fuel, the railways has launched its first CNG train. Railway minister Suresh Prabhu flagged off the train, run on dual fuel system — diesel and CNG — on the Rewari-Rohtak section of northern zone.

An official said introduction of CNG trains will reduce greenhouse gas emission and also cut the transporter's fuel bill by reducing use of diesel.

The minister, who has opened a separate environment directorate in the railway board, has stressed on the use

of alternative fuel, including use of solar and wind power, to reduce dependence on conventional energy.

The railways has modified the 1,400 HP engine to run on dual fuel through fumigation technology.

The passenger train would consume over 20% of CNG, covering a distance of 81km in about two hours. "Gradually, CNG usage will be increased to around 50%. Currently, test trials are being conducted for increased usage of CNG," said an official.

A senior official said there are plans to run more such CNG trains to reduce diesel consumption.



The Economic Times, Delhi dated January 15, 2015

# Soon, Darkness to Fall on This Light

Govt push to LED bulbs starts bringing down prices; industry phasing out tungsten bulbs



SALAM

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**New Delhi:** How many Indians will it take to change a light bulb? Answer: Very soon, none, provided the light bulb is the old-fashioned, tungsten filament kind. Because the traditional light bulb, also called the incandescent or Edison bulb, is finally dying in India, some years after its death was announced in the West, in China and in Latin American countries such as Brazil and Venezuela.

This year will see the death of 100-watt bulbs, as production will stop; 60-watt bulbs will die in 2016, and 40-watt bulbs in 2017. That's the plan India's lighting industry is working on, according to Sunil Sikka, president of the 68-company Electric Lamp & Component Manufacturers Association (ELCOMA).

India still has around 700 million Edi-

son bulbs in use and LED bulbs account for only ₹1,780 crore of the ₹12,000-crore lighting business. But experts predict by 2020, this old-fashioned lighting option will be all but gone. Demand for old-fashioned bulbs is stagnant for two years, indicating that a change is already underway as

**LED bulbs are 10 times more energy efficient than Edison bulbs, and they last 3-7 years**

CFL and LED bulbs have been making their entry into higher-income households.

But in a price-conscious country with millions of low-income households, a big phase-out of the cheap 'yellow' bulb needed a big push. And that is

now happening — a massive government order for LED bulbs for 100 cities.

**LED Wave has Started in Delhi ►► 18**

## LED Wave has Started in Delhi

►► From Page 1

LED bulbs are 10 times more efficient in terms of energy usage than Edison bulbs. They last 3-7 years, compared with the 1,000-hour life-span for Edison bulbs. LED bulbs are better than CFL bulbs, too, and that's the reason rich and emerging economies have been pushing for adoption of LED bulbs.

The LED bulb operation has already started in Delhi — 500,000 street lights will be replaced with LED bulbs in the Capital. There are also plans to install LED bulbs in 100 districts every year.

Official plans are to provide two LED bulbs to each household at the cost of

₹10 — the same price as that of a 60-watt yellow bulb — and then add a monthly charge of ₹10 to household power bills for a year to recoup the subsidy.

This pricing fiat for LED bulbs was necessary to kickstart the process since the price difference pre-government order for LED bulbs was huge — ₹10 for a 60-watt yellow bulb vs ₹350-400 for a 5-watt LED bulb.

Now, however, the scale of the government order has led to a sharp fall in production costs and therefore wholesale price. Retail price, industry says, is also coming down and will fall sharply in the near future.

"In past one year, prices have tumbled 30-40%, which is unusual and this downward curve will continue

in the years to come," NTL Lemnis Chief Marketing Officer Sandip Singh said. Bajaj Electricals, which is launching seven LED lighting products by this April, expects a steep reduction in their cost. Industry expects a 5-watt LED bulb to retail at less than ₹300 soon, and a continuous fall in prices thereafter.

Bureau of Energy Efficiency (BEE) Chief Ajay Mathur says when the scale of production sharply brings down prices for retail consumers, his department will come out with star labels for LED lamps too, just as there are ratings for refrigerators and televisions.

Mathur says Puducherry was the first city where BEE changed 750,000

bulbs. At that time, a 7-watt LED bulb with a 7-year warranty was priced at ₹310. Andhra Pradesh replicated this in Guntur for which 20 lakh bulbs were procured and the price fell to ₹204.

"We have just finished the third tender for 30 lakh bulbs and the price has fallen to ₹149. We're now in the same range as CFLs. This is the wholesale price. With the price coming down for the retail consumer, we (BEE) need to provide some degree of confidence that it is worth it," he said.

For consumers, the attraction for LED is that even if retail prices remain above that of incandescent bulbs, the savings in power bills more than make up for the higher initial outlay.



The Economic Times, Delhi dated January 15, 2015

**BRAINSTORMING ON PACT** PM Narendra Modi's January 19 meeting will be the first formal gathering of the council since its reconstitution in November '14

# PM to Meet Climate Experts' Council Before Obama Visit

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**New Delhi:** Prime Minister Narendra Modi plans to hold a meeting with his climate experts' council on January 19 ahead of US President Barack Obama's visit to India.

This will be the first formal meeting of Prime Minister's Council on Climate Change since it was reconstituted in early November 2014. The council is expected to assess domestic measures being taken, planned and proposed to address climate change, including efforts to avoid increase in emissions that is reducing amount of carbon produced per dollar of GDP and measures to adapt to climate change.

Discussions of the panel, which will focus on areas in which India could partner with the US to deal with climate change, will form the basis of discussions between Prime Minister Narendra Modi and President Barack Obama.

Obama is expected to work out an agreement on climate change with Prime Minister Modi that will help India address its development goals in a manner that doesn't dramatically increase the amount of carbon that India will produce.

The two sides are expected to focus on renewable energy, particularly solar energy, in which India has announced the ambitious plan of adding 100GW of capacity by 2022. Clean energy technology and other climate-friendly technologies are an area of interest for India.

### Climate Experts' Agenda

- Assessment of domestic measures being taken on the cards
- Planning, proposal to address climate change and adapt to it
- Renewable energy, particularly solar energy, an area of interest

**EFFORTS TO AVOID EMISSION INCREASE, CUT IN CARBON PRODUCED /\$ GDP**

**FOCUS ON AREAS IN WHICH INDIA COULD PARTNER WITH THE US**

**Obama to work out an agreement for India to balance progress**

Tie-ups is improving rural electrification, access to energy likely

PM, Obama to discuss fracking, HFC phaseout, green tech

Another area for probable concrete partnerships is improving rural electrification and access to energy in unserved areas. The US is mindful of India's development priorities, which preclude it from eschewing the more expensive energy sourced from renewable sources over less expensive fossil-fuel based power.

India is the world's largest producer of biomass energy, third-largest solar and fourth-largest wind energy producer. The Modi-Obama agreement on climate change is expected to focus on a funding and technology transfer framework that will help India augment its renewable energy portfolio and improve rural electrification. The proposed climate agreement will facilitate investment in renewable energy.

Already US-based solar companies such as SunEdison have announced plans for investing in both solar power producing

plants and solar manufacturing facilities. The Modi-Obama agreement is expected to facilitate more such investments.

Energy efficiency is an important part of the US efforts to address climate change. India already has an aggressive energy efficiency programme. The two leaders are expected to increase joint efforts in this area, particularly on green buildings and fuel efficiency. Besides focusing on clean energy technologies, Modi and Obama are also expected to chalk out partnerships on technologies related to clean coal, such as carbon capture and storage.

Officials indicated there could be discussions on fracking, with which the US has had success. Another area where the existing partnership between the two will be addressed relates to the phasing out of refrigerant gases like hydrofluorocarbons (HFCs) and the use of climate friendly options with low global warming potential.

India, the fourth largest emitter country, is crucial to ensuring a new global compact on climate change is inked in Paris at the end of the year.

While the agreement between India and the US will not be on the scale of the US-China climate agreement, the US hopes that it will help India reduce the rate at which its carbon emissions rise as it develops.

# 'India Crucial for Success of Climate Pact'

UK says India needs to avoid a coal-powered rise in energy usage

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**New Delhi:** With the top three polluters — China, the US and the European Union — making it clear that they intend to sign on to the new climate agreement to be finalised in Paris in December, the focus is now on India. Like the US, the British government too is reaching out to India, identifying areas, particularly technology, to help India move away from depending on coal for its growing energy needs.

India maintains that while it is the third-largest emitter of carbon, in real terms its total emissions and its share of global emissions is low.

The country's per capita emission is at 1.7 tonnes and it accounts for about 6% of global emissions, compared to China's share of 29% and the US at 15%. However, the general thinking is that India's participation in the global effort to reduce emissions is central, especially as India's emissions are set to rise as it develops economically. Sir David King, the UK government's special representative to the foreign secretary on climate change, is clear that India's participation is crucial for any successful and meaningful agreement in Paris. "As we go forward, in terms of carbon dioxide emissions, there are three important players — China, US and India. If these three players are not involved in reducing or limiting growth of carbon emission then it will not be possible to be on track to limiting temperature rise to 2 degrees Celsius above pre-industrial levels. If you look at growth in energy usage between now and 2020, it is largely from

China and India. So India is a critically important player," King told ET.

The International Energy Agency in its most recent assessment said that growth in energy usage will come mostly from China and India. Much of this growth will be fuelled by coal. According to the IEA, coal use for energy in China will rise till 2020, and thereafter it will be driven by India. The government's announcement that it will double coal production to meet rising energy needs, even as it increases the renewable energy portfolio, bears out the IEA assessment.

India maintains that in real terms its total emissions and its share of global emissions is low. Kings says that partnerships with India need to be forged to avoid a coal-powered rise in energy usage. "Small and large storage for energy produced from renewable

energy, smart grids, are among the areas where the technology partnerships will need to be put in place. And to my mind, India is the country where the technology roll out is most likely to occur," King said, explaining that the huge unmet need of the Indian population could drive the scale up of the technology roll out and cost reduction. "The desertified areas of Rajasthan are large enough for producing solar power to meet a large proportion of India's energy needs. The challenge is storing the power. Given the scale, it is the most likely scenario for rolling out technology."



The Economic Times, Delhi dated January 20, 2015

## Falling Oil Prices Not All That Bad for Environment: Climate Experts

Cheaper crude will make exploration non-viable in places like Arctic region, deep sea

Urmi.Goswami@timesgroup.com

**New Delhi:** The sharp fall in oil prices has boosted sales of fuel-guzzling SUVs and in some cases eased pressure to improve public transport, but some climate experts also see a positive side as cheap crude has made exploration of new oil reserves in challenging regions non-viable.

The Intergovernmental Panel for Climate Change in its latest report said the world needs to leave all unexplored fossil fuels in the ground to slow down global warming – a goal that is now being achieved ironically by cheap oil. Experts say that the current low price, which though temporary, has meant that the more difficult and costly explorations – be in the Arctic region, or the deep sea – have now been abandoned.

“The drop of oil prices has both positive and negative impacts on efforts to tackle climate change and renewable energy development. One positive impact is that it makes exploring for hard-to-access oil, such as in the Arctic and the deep sea, not economically viable, making them stranded assets and very risky. If we want to win the fight against climate change, the first thing we need to do is stop looking for new fossil fuel resources,” said Wael Hmaidan, international director of Climate Action Network, a coalition of

civil society organisations. The energy sector, which accounts for the large part of carbon emissions, is a crucial plank in the efforts to address global warming and climate change. Here the news is a good one; in part it is because oil is not a major player in the power generation mix. “The use of oil as a fuel for power generation has decreased substantially over the past decades. Today, it accounts for under 5%



**According to a report by IRENA, the prices of solar photovoltaic in 2014 were 75% lower than the prices in 2009**

of the global electricity supply which is down from 25% in the early seventies. Hence a decrease in oil prices does not substantially alter renewable energy competitiveness within the power sector,” said Adnan Z Amin, director-general of IRENA, an inter-governmental agency charged with the promotion of renewable energy.

But isn't just low share of oil that explains why climate experts remain largely unperturbed by the low prices – the real source of their optimism is the falling costs of renewable sources of energy.

According to a report by IRENA, the prices of solar photovoltaic in 2014 were 75% lower than the prices in 2009, and between 2010 and 2014, the total installed costs of utility-scale photovoltaic systems have

fallen by anywhere between 29% and 65%. For India, which is planning to increase its solar energy capacities by fivefold to 100GW by 2022, this is good news. It is for this reason that Amin goes a step further to stress that this current low prices for oil – there was a similar situation in 2008 – only serves to underscore the volatility of the oil and fossil fuel prices. By contrast, the IRENA boss points to the steadily falling prices of the renewable sources. Experts say that the low oil prices may mean reviving gas-based power plants, but that would be a mistake.

“Low oil prices would improve the competitiveness for gas-based generation. But to plan assets on the basis of the current level of oil prices would be a mistake. Because this is a temporary situation, and when the price of oil rises, and it will, so will the cost of gas-based energy. Renewable sources are more stable in terms of price and the technology is more predictable now that it has ever been,” said Dolf Gielen, director, IRENA innovation and technology centre. Also, the transportation sector realises that low oil prices will not last forever.

“Auto manufacturers know that the low prices of oil are not going to last. I don't see any reaction from the auto industry moving away from building more efficient cars,” said Sven Teske, a renewable energy expert.

## Govt to Focus on Solar & Other Green Sources of Energy: Modi

Says countries should join hands to develop cutting-edge research in solar energy

Our Bureau

**New Delhi:** At the first meeting of the reconstituted Prime Minister's Council on Climate Change held on Monday, Prime Minister Narendra Modi reiterated his government's intent to focus on solar and other “green” sources of energy. The prime minister suggested that the idea of creating a consortium of nations with the greatest solar energy potential. Additionally, the meeting also laid the ground work for a mission mode for harnessing wind energy and aggressively moving forward on waste to energy.

Prime Minister Modi's stress on green energy was clear, when he suggested that the focus on tackling climate change should not be limited to emissions and reductions in the amount of carbon alone. Instead, he suggested that more needs to be done to focus on clean energy generation, energy conservation and energy efficiency.

The prime minister's focus on clean energy comes a week



Narendra Modi

ahead of US President Barack Obama's visit to India. Though the visit was not discussed explicitly, the indications are clear that two leaders will focus on deepening the partnership in the areas of clean energy, and energy efficiency. According to the official statement released after meeting, the prime minister in his address to the council, said that India and other countries will solar power potential should join hands for innova-

tion and cutting-edge research that would reduce the cost of solar energy, making it more accessible to people.

Environment minister Prakash Javadekar briefed the council about India's role in the Lima climate talks. The minister said that the discussion was mainly on reviewing the national and state climate action plans, with expert member of council giving their views. The council also discussed plans for enhancing action particularly in the agriculture sector. In a departure from past practice, it was decided efforts to address climate change in agriculture would include a component that would focus on reducing emissions in the agriculture sector, particularly methane emissions. In international negotiations, India has always insisted that adapting to climate change was the primary focus in the agriculture sector. This is a big departure.

The council deliberated on focusing on the impact of climate change on health and assessing the readiness to deal with the adverse impacts on

health. This will be a new focus area under the National Action Plan on Climate Change. Besides wind and waste to energy, which will be two new initiatives under the national action plan, the council also considered another initiative focused on the coastal management. A threat assessment of the impact of climate change on the 7,000 km coastline and the livelihoods of the 300 million people dependent on the coast will be undertaken. This could mean amending the Coastal Regulatory Zone Notification, 2011.

Apart from Javadekar, the meeting was attended by external affairs minister Sushma Swaraj, finance minister Arun Jaitley, urban development minister Venkaiah Naidu, water resources minister Uma Bharti, agriculture minister Radha Mohan Singh, power minister Piyush Goyal. The meeting was also attended by experts like RK Pachauri, Nitin Desai, Ajay Mathur, JM Mauskar, Chandrashekar Dasgupta and other members of the council.



The Times of India, Delhi dated  
January 21, 2015

# ₹1.2L cr solar boost for energy, jobless

## Subsidies Will Make Tariff Affordable

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**New Delhi:** The government is working on a Rs 1.2 lakh crore scheme to set up 20,000MW solar power projects, or a fifth of the total solar power capacity envisaged by 2021-22, through qualified unemployed or under-employed youth in the next five years.

Sources said the scheme is part of the government's design to ramp up solar power capacity to 1,00,000MW by 2021-22. The Centre is to extend an assistance of Rs 16,050 crore to help keep power tariff from solar plants set up under this scheme affordable for state utilities.

Those who have a BTech, MBA or MCom degree, are not older than 35 years and do not have a job or are under-employed, can apply for a project either on their own or in partnership with companies and societies.

State governments willing to join the scheme can

### SUNNY SIDE UP

#### WHO QUALIFIES AS UNEMPLOYED YOUTH

► Preferably those registered with government employment exchange

► Do not have permanent state or central govt job

► Have a private sector job with salary of less than ₹50,000 a month

► Those working with government, private or PSU, but not in line with qualification. Would have to quit after qualifying as solar entrepreneur

► Self-employed individual with income less than Rs 10 lakh per annum



Unemployed youth can have more than 26% but less than 51% equity in promoter company

Unemployed youth cannot dilute stake below 26% at least three years after commissioning of the project

approach the renewable energy ministry outlining how much capacity is left in their grid for handling solar power. The spare capacity is to be identified at the level of substations, or points that would receive power from the solar plants.

The projects are then allocated on the basis of spare capacity or demand indicated by each state. The states then invite application from eligible developers, with first priority to unemployed youth. Village panchayats

or municipal bodies get the next preference.

In case any leftover capacity is to be allotted to independent power producers, unemployed youth must hold more than 26% but less than 51% equity in such a company. The unemployed youth would get to share revenue earned from the solar project in proportion to their holding in the company.

For the full report, log on to [www.timesofindia.com](http://www.timesofindia.com)

Deccan Chronicle, Hyderabad dated January  
21, 2015

## Plastic, sanitary waste being burnt

COREENA SUARES | DC  
HYDERABAD, JAN. 20

The city is accumulating mountains of sanitary fluid-soaked non-biodegradable waste.

Sanitary waste includes menstrual pads, baby diapers, incontinent diapers, and used cotton. Ramky, the contractor appointed by the GHMC at the permanent dumping yard at Jawaharnagar, does not dispose sanitary waste in a scientific manner.

Hyderabad, on a normal day, generates 3,500 metric tonnes of garbage. Around 10-15 per cent of this is sanitary waste.

If a woman menstruates for 33 years (between the ages of 12 and 45) and uses about 20-25 pads per cycle, she ends up throwing away 8,000-10,000 pads in her lifetime. Which means a single woman generates about 125-150 kg of sanitary waste in her lifetime.

As per the rules by the Pollution Control Board, sanitary waste should be classified as biomedical waste under the Bio-Medical Waste (Management and Handling) Rules, 1998. It has to be buried in a landfill under a

thick layer of clay, lined with high-density polyethylene and should have no contact with soil and ground water.

But the current contractor has no process of segregating the non-biodegradable waste. It is treated with other plastic waste and is allegedly burnt for quick disposal, emitting dangerous toxins.

Disposable sanitary pads are mostly made of polypropylene (plastic fleece) and cannot be recycled. An official from a manufacturing company said pads are made of wood pulp padding, absorbent polymers and a plastic-based gel.

The GHMC says daily collection of such waste from households may not be feasible. "GHMC regularly monitors Jawaharnagar. We ensure that no garbage is burnt and is disposed of as per the guidelines of the PCB. Segregating sanitary waste from the other household waste is a task."

Ramky was served a notice by the GHMC recently following complaints of foul smell by locals. It is being alleged that Ramky is burning plastic waste with sanitary waste.

## IICT makes organic LED technology

DC CORRESPONDENT  
HYDERABAD, JAN 20

Imagine a wall which can turn into a television, but can be operated with power from a small solar cell. Or the windscreen of your car that can turn into a television when powered just by the car battery. All these are futuristic gadgets based on the phosphorescent 'organic' LED technology. And now scientists from the Hyderabad-based Indian Institute of Chemical Technology (IICT) have made a breakthrough in realising a simple and low-cost model of an organic LED that has a high power and luminescence efficiency.

Current technology makes use of inorganic LEDs, while organic LEDs are in development and limited production. However, phosphorescent organic LEDs are a futuristic technology that many researchers around the world are working on. These have the major advantage of extremely high energy efficiency.

"Organic LEDs are very light weight. Their power

efficiency is also very high but the struggle now is get that up. Light from organic LEDs is like moonlight. We always prefer moonlight to sunlight, isn't it?" Dr V. Jayathirtha Rao, chief scientist and head of Crop Protection Division at IICT said. His group has made a breakthrough in devising a simple organic LED module that has a high luminescence and power efficiency.

Dr Jayathirtha Rao said his group achieved a luminescence efficiency of 34 per cent and a power efficiency of 22 per cent.

IICT scientists' model focuses on the harvest of inactive 'triplet excitons' that are formed when electricity is passed through the organic material. Other scientists, around the world, have achieved higher efficiencies of organic LED materials, but their processes have been much more expensive. "These can be powered up with very low voltage, say 10 Volts. So you can have organic LED screens in cars. A small solar cell can power an organic LED television at home," he said.



The Times of India, Delhi dated January 23, 2015

# Climate is Right for Indo-US Green pact to Come Through

## Environmentally Conscious

India will be stressing on its commitment to climate change

But domestic manufacturing clause is a contentious issue

Climate agreement unlikely to be similar to US-China one

Both govts stress on technological and financial partnership

Greater access to electricity the focus, on low carbon path

Our effort is to help India overcome the financial delta; on how to ensure that the investments in clean energy are available and possible

US Official

100GW of solar power planned by India for 2022

\$100 billion investments expected to be required

Mandatory domestic manufacturing component for clean energy high on agenda

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**New Delhi:** Climate change will figure prominently in talks between Prime Minister Narendra Modi and President Barack Obama on Sunday, as they discuss India's mandatory domestic manufacturing component for clean energy even as a deal similar to the high-profile US-China agreement is unlikely, officials said.

The domestic manufacturing clause is a contentious issue, according to a US official, who said the two sides are likely to work out a compromise arrangement at best. The US has filed a complaint at the World Trade Organisation on India's mandatory domestic production component for solar panels. The Modi government, on the other hand, is keen to boost local manufacturing under its 'Make in India' programme. "The Indian government is aware of our views. However, how this issue is discussed between the two leaders remains to be seen," said Navroz Dubash, senior fellow at the Delhi-based Centre for Policy Research.

Manish Bapna, MD of WRI, a

Washington-based think tank, said, "The trade question is an important one for the US. There could be a relaxation in the domestic manufacturing policy for the US in return for much more substantial investment and technology."

Pointing to the advantages of a resolution on this issue of domestic manufacturing component, Raymond Vickering, who served as assistant secretary of commerce for trade development in the Clinton administration, said "There is a WTO complaint on this. A resolution will mean withdrawing the complaint and that will add to the goodwill."

A senior US official said it is unlikely that there will be a climate agreement similar to the US-China one in November 2014. "Agreements with different countries should not be copies. Every country has its own circumstances."

An Indian official acknowledged, "Negotiations for the November climate agreement went on for almost two years. There is nothing like that between India and the US." However, the official added that climate change is important for both Obama and Modi.

The Modi-Obama deal will also give India another opportunity to stress its commitment to tackle climate change. "India has been judged less by what it does and more by what it says," said Navroz Dubash, senior fellow at the Delhi-based Centre for Policy Research.

The Times of India, Delhi dated  
January 24, 2015

# US eyes climate deal as return gift

Ahead Of Paris Talks, Obama Eager To Clinch At Least A China-Like Pact

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## WARMING UP

➤ US President will want to clinch a climate change agreement with India ahead of the December 11 Paris meet

➤ At meet, 195 countries are scheduled to find ways to curb the fossil-fuel gases imperiling earth's climate system

➤ A climate deal clinched with China last month might offer a template for a US-India agreement

➤ As part of the agreement, Washington agreed to reduce its emissions by 26% to 28% below its 2005 level by 2025



➤ China agreed to increase the share of non-fossil fuels in primary energy consumption to 20% by 2030

➤ India has a far smaller carbon footprint per capita than China and a minuscule one compared to the US

successful international climate negotiation (in Paris) unless all major emitters are coming to the table."

"And so the President will have a chance to review with Prime Minister Modi what the US is committed to doing, what India is considering doing in this space, and then how we can work together in the global context to bring about a successful conclusion to those negotiations," they added, providing an implicit sense of an imminent climate change agreement with India.

"Our most on front burner issue is cooperation on clean energy and climate change...and the US, China, and India are key to this," White House NSC Senior Director Phil Reiner said.

Under a deal clinched

with China last month that might offer a template for a US-India agreement, Washington agreed to reduce its emissions by 26% to 28% below its 2005 level by 2025, and China has made a non-specific commitment to achieve peak of carbon emissions around 2030, and to increase the share of non-fossil fuels in primary energy consumption to around 20% by 2030.

Washington appears confident it can persuade New Delhi to commit to a similar deal although India has a far smaller carbon footprint per capita than China and a minuscule one compared to the US, which is the world's biggest polluter. The

White House appears particularly confident it can do business with Modi after a breakthrough with India last September on what had been an impasse on the Trade Facilitation Agreement within the WTO.

With commerce secretary Penny Pritzker and US trade representative Mike

Froman penciled to accompany the President, the officials said there's both the "specific advocacy" that Washington will do on behalf of US businesses to advance exports and US job growth and also address a range of trade impediments.

Establishing deeper defence ties, including cooperation in the Asia Pacific and more broadly, and "hot button" regional issues including counterterrorism cooperation will also be part of the talks agenda, they said.

"People have long looked at this relationship and seen the fundamentals in place for a really, really

close partnership, and yet it's been a challenge in translating that into outcomes," Rhodes reflected, adding, "The President will want to speak to how do we tap into the energy and support in both countries for the relationship and turn that into positive progress on the issues that matter in people's lives."



# Nukes, warming pushing us closer to doomsday

Global Catastrophe Very Probable, Say Scientists

Tom Bowden

The end of the world has come a lot closer in the past three years, with every single person now in danger as climate change and nuclear weapons pose an escalating threat, according to the scientists behind the Doomsday Clock, a symbolic measure which counts down to armageddon.

They moved the minute-hand of their 68-year-old concept clock forward by two minutes on Friday, showing a time of three minutes to 12, to reflect the fact that the "probability of global catastrophe is very high".

"Today, unchecked climate change and a nuclear arms race resulting from modernization of huge arsenals pose extraordinary and undeniable threats to the continued existence of humanity," said Kennette Benedict, executive director of the Bulletin of the Atomic Scientists in Chicago, the group of scientists which set the clock.

"And world leaders have failed to act with the speed or on the scale required to protect citizens from potential catastrophe. These failures potentially endanger every person on Earth," she added.

Although the clock is essentially a barometer, it is set by a team that includes 17 Nobel Prize winners and is taken very seriously.

The committee pointed out that greenhouse gas emissions



**TIME BOMB:** Experts have moved the Doomsday clock, a 68-year-old concept clock counting down to armageddon, ahead by 2 minutes

have soared by 50% since 1990, while more than £660 billion of investment floods into fossil fuel infrastructure every year.

"The resulting climate change will harm millions and threaten key ecological systems on which civilization relies," said committee member Richard Somerville.

The report also raised considerable concerns about nuclear weapons. "Since the end of the Cold War, there has been a cautious optimism about the ability of nuclear weapon states to keep the nuclear arms race in check," said Sharon Squassoni, a member of the clock committee. "That optimism has essentially evaporated in the face of two

trends: sweeping nuclear weapon modernization programmes and a disarmament machinery that has ground to a halt."

The clock was established in 1947, with a debut time of 7 minutes to 12, after the atomic bombs hit Hiroshima and Nagasaki. The latest change is the 19th time the minute hand has been moved — sometimes forward and sometimes backwards — most recently in 2012 when it was pushed forward by a minute, again on concerns about climate change and nuclear arms. The last time the clock read three minutes to midnight was in 1983 when "US-Soviet relations were at their iciest". THE INDEPENDENT



*The Times of India, Delhi dated  
January 24, 2015*

## Peak pollution was high even after showers: NGO

TIMES NEWS NETWORK

**New Delhi:** Ahead of the US President Barack Obama's visit to Delhi, Greenpeace India, an environmental NGO tracked air pollution levels at various locations in Delhi which he is likely to visit. Greenpeace campaigners used a portable air quality monitoring device, PDR-1500, bought from US. Greenpeace's reality check of PM2.5 levels on Friday revealed that peak air pollution levels spiked to alarming levels even after the rain on Thursday helped wash out the pollutants and the 24-hour average came down.

"Exposure to fine particulate matter pollution is the largest environmental health risk in the world, upping the risk of lung cancer, stroke, heart disease, chronic respiratory diseases, lower respiratory infections and asthma. PM2.5 is estimated to have been responsible for over three million premature

### REALITY CHECK

Source: Greenpeace India

PM2.5 data on January 23, 2015 on locations along Obama's route	Location	Max	Avg
TIME OF DATA COLLECTION 7.20-10.20am, Jan 23, 2015 Each location monitored for 5 minutes	Janpath	264	220
	Hyderabad House	239	233
	Connaught Place	208	202
	Copernicus Marg	221	199
	Rajghat	229	210
	Lodhi Garden	211	189

UNIT OF MEASUREMENT | micrograms/cubic metre

DEVICE USED | PDR1500 (Manufacturer: Thermo Scientific)

deaths in 2010," Greenpeace's statement on Friday said. It also referred to The International Agency for Research on Cancer which classified particulate matter pollution as carcinogenic to humans in 2013, and designated it as a "leading environmental cause of cancer deaths".

Unreliable data from government agencies has led to individual researchers and advocacy groups using battery-operated portable de-

vices that measure people's personal exposure to air pollution. "Delhi has been breathing extremely poor air this winter with daily PM2.5 averages peaking to 320 micrograms per cubic metres, six times the Indian safety standard and 14 times that of the World Health Organization's. I hope the government recognizes the urgency to act and safeguard the health of citizens," Aishwarya Madineni of Greenpeace India said.

## Soon, new emission norms for vehicles

### Move To Promote Ethanol-Blended Alternative Fuel

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**New Delhi:** In its move to push higher use of alternative fuels, India will soon notify the emission standards for vehicles that can ply on 85-95% ethanol-blended fuel. This will pave way for the manufacturing of new engines that can use cleaner fuel and Indian vehicle testing agencies will give 'type approval' certificates.

The vehicle manufacturers will define the level of ethanol blend which will be displayed on vehicles by putting a clearly visible sticker, unlike CNG vehicles which cannot be identified quickly.

The road transport ministry has issued a draft notification setting emission standards for flexi-fuel ethanol (E85) and ethanol (ED95) vehicles. E85 is commonly used by flexible-fuel vehicles (FFV) in the United States and Europe.

Ethanol is a cleaner fuel and burns more completely than petrol and it is derived from sugarcane juice and molasses.

"The newly manufactured petrol vehicles fitted with spark ignition engine compatible to run on petrol or



a mixture of petrol and ethanol up to 85% ethanol blend (E85) shall be type approved as per prevailing petrol emission norms...The newly manufactured ethanol vehicle with gross vehicle weight above 3.5 tonnes compatible to run on 95% ethanol (ED95) shall be type approved as per prevailing diesel emission norms," the draft notification said.

Buses and trucks fall under the category of vehicles that weigh more than 3.5 tonnes. "After incorporating suggestions and objections, we will notify the new rule. The focus is to bring in new technology and facilitate the approval mechanism that will help reduce pollution and cut our dependence on petrol and diesel," a ministry official said.

The apex advisory body on setting vehicle standards - CMVR-TSC - in its last meeting also took up the issue of facilitating introduction and manufacturing of bio-CNG vehicles.

At present, only one 100% ethanol-fuelled bus is operating in Nagpur, which happens to be the parliamentary constituency of transport minister Nitin Gadkari.

*The Times of India, Delhi dated  
January 25, 2015*

*The Times of India, Delhi dated  
January 25, 2015*

## Hotel near IGI 'sealed' for not treating waste

TIMES NEWS NETWORK

**New Delhi:** Delhi Pollution Control Committee has issued a closure notice to Taurus Hotel, near IGI Airport. The hotel was allegedly discharging untreated waste water. It did not have an effluent treatment plant (ETP) which is a must for hotels with more than 20 rooms.

After receiving a closure order last month, the hotel had appealed to NGT to revoke it. But on Friday, the green tribunal directed DPCC to go ahead with the closure.

DPCC's lawyer confirmed that on Monday, the hotel had been "sealed" temporarily, until it complies with Delhi Pollution Control Committee's directions. The member secretary of DPCC, Kulnand Joshi, was present during the hearing of Taurus Hotel's application on Friday and submitted that it has withdrawn an order of revoking the closure direction that was issued earlier because they found that the hotel continued to discharge "untreated waste water."

"They are at liberty to proceed in accordance with law and in the event of non-cooperation by the applicant, the Sub-Divisional Magistrate and Station House Officer concerned shall provide all assistance to them in accordance with law," the tribunal bench headed by chairperson Swatanter Kumar said.

The lawyer representing the hotel said, "An effluent treatment plant has been installed and it is working now. We have also applied for the requisite permissions to operate borewells." Taurus Hotel has 84 rooms and mainly caters to business travellers.

In 2013, National Green Tribunal had issued closure notices to as many as 34 restaurants in Hauz Khas Village for not having consent to operate from DPCC and for not treating effluents. They were allowed to reopen after they installed effluent treatment plants.

*The Times of India, Delhi dated  
January 25, 2015*

# Panel to devise simple ways to map pollution

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**New Delhi:** Central Pollution Control Board (CPCB) – country's main pollution watchdog – has set up a panel to develop easy-to-understand 'Standard Operating Procedures' for evaluation of the impact of polluted air, water and land/soil on human health, flora and fauna in the 'severely' polluted areas.

The SOPs will help the state pollution control boards (SPCBs) to have readily available "health impact-related data" at various platforms which can be disseminated along with air, water and soil pollution index for all the industrial clusters.

India has 43 industrial clusters which are classified as 'critically polluted areas' and 32 clusters as 'severely polluted areas' on the basis of a comprehensive environmental pollution index. But the country does not have simplified and uniform SOPs for evaluation of various health-affecting factors of pollution.

The SOPs will help the state and central pollution watchdogs to come out with complete information in a simple format. The easy to understand data will help the common man understand the implications of these pollutants easily.

It will not only create awareness but also help planners and policy-makers in taking up various anti-pollution measures in polluted areas. The working

## HEALTH SURVEY

➤ **SOPs will lay the ground for health impact survey** in polluted industrial clusters

➤ **CPCB had in collaboration with IIT Delhi in 2009** carried out **comprehensive environmental assessment in 88 major industrial clusters** across the country, taking into account air, surface water and ground water quality parameters (Comprehensive Environment Pollution Index)

## CLASSIFICATION

**43** Industrial clusters classified as critically polluted areas

**32** Industrial clusters as severely polluted areas

**13** Industrial clusters as polluted areas

group has been asked to submit its report by February 13.

The decision to set up the working group was taken after meeting of CPCB's technical review committee on Thursday. Subsequently, CPCB chairman Susheel Kumar issued an office memorandum on Friday, announcing constitution of the 12-member working group under the chairmanship of the director general of health services Jagdish Prasad.

The working group will also identify agencies for each state that can collect and collate the data required for the assessment.

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