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Business Sustainability News

International

Four out of five UK children 'not connected to nature'

Research from the RSPB measures the extent to which children are in touch with the natural world

By Adam Vaughan, *theguardian.com*



Young boys play on a tree on Hampstead Heath, London. Four out of five children in the UK are not adequately 'connected to nature', survey finds. Photograph: Gregory Wrona /Alamy

Two young boys are putting the finishing touches to their twig-lined den, next to a welly-clad girl who has discovered a toad hiding by a tree. Several children are busy fishing for worms, while others are scooping up bird feathers as part of their treasure hunt.

Yet these children, playing at a "forest school" in a south-east London park, are an endangered species, according to the first ever national measurement of the extent to which children are in touch with the natural world. The three-year research project by the RSPB, published on Wednesday, shows that according to the conservation group's scoring system, four out of five children in the UK are not adequately "connected to nature".

The study, which saw 1,200 children aged 8-12 years questioned on how strongly they agreed or disagreed with 16 statements such as "I enjoy touching animals and plants", "being outdoors makes me happy" and "humans are part of the natural world", suggests that girls have a better connection with nature than boys. It also found children in London had a stronger connection than those in Wales.

The study follows a major stock-take of the state of Britain's nature, published, which

found that the majority of UK species are declining, and one in three have halved in number in the past five decades. Conservationists linked the decline in wildlife to the disconnect between children and the natural world. "Nature is in trouble, and children's connection to nature is closely linked to this," said Dr Mike Clarke, the RSPB's chief executive.

He added: "This report is groundbreaking stuff. Millions of people are increasingly worried that today's children have less contact with nature than ever before, but until now there has been no robust scientific attempt to measure and track connection to nature among children in the UK, which means the problem hasn't been given the attention it deserves."

Hugh Dames, who runs the forest school in Mayow park in Lewisham, was not too surprised by the findings. "I've had children who hated to get their hands dirty, who are frightened by wood lice. But by the end of just one session, they're happily playing in the mud, looking for worms and creepy crawlies."

Dames said he had been inspired by his previous work with schools and thinking about what he wanted to teach his daughter upon becoming a father 18 months ago. "If they [children] understand nature, they will value it and will take more care of it when they get older. If you're not engaged with it, you're not going to feel any need to safeguard it. I think outdoor learning is the only way to do that," he said.

The RSPB team worked with researchers at the University of Essex to devise a meaningful way of defining a connection to nature, concluding in the report that it was "enjoyment of nature; having empathy for creatures; having a sense of oneness with nature; and having a sense of responsibility for the environment."

Based on the polling, they then ranked a child's connection to nature on a scale of the lowest, -2, to the highest, +2, and considered 1.5 a "realistic and achievable" target based on children who visit RSPB nature reserves. The percentage of UK children over the 1.5 score was 21%, while girls were at 27% compared to boys at 16%. Scotland had the highest percentage over 1.5, at 27%, falling to 25% in Northern Ireland, 24% in London, 21% in England and 13% in Wales.

Suzanne Welch, education manager at the RSPB, said she could only speculate on the reasons behind the surprising finding that Welsh children were less connected than those in London. "Might it be that there are lot of accessible green spaces in London? Children in the countryside can be quite isolated with small local roads and no pavements. Access might be quite difficult in rural areas." She said that more work was needed to find out why, but she said it showed "just being in the countryside doesn't make you connected to nature."



Child playing in a stream in a forest in autumn. Photograph: Zak Waters /Alamy

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Global warming can have a positive side, says Owen Paterson

Secretary of state for environment, food and rural affairs, says global warming could allow food to be grown further north

By Rajeev Syal, theguardian.com



Owen Paterson's comments came after the IPCC found that within two or three decades the world will face nearly inevitable warming of more than 2 degrees. Photograph: Dominic Lipinski/PA

The cabinet minister responsible for fighting the effects of climate change claimed there would be advantages to an increase in temperature predicted by the United Nations including fewer people dying of cold in winter and the growth of certain crops further north.

Owen Paterson told a fringe meeting at the Conservative party conference on Sunday night that predictions by scientists – that there could be major increases in temperature resulting in melting ice caps and worldwide flooding – should not be seen as entirely negative.

His comments came after the Intergovernmental Panel on Climate Change found last week that within two or three decades the world will face nearly inevitable warming of more than 2 degrees, resulting in rising sea levels, heatwaves, droughts and extreme weather.

Asked at a fringe meeting organised by the RSPB if the report proved that the climate is "broken", Paterson said:

"People get very emotional about this subject and I think we should just accept that the climate has been changing for centuries.

"I think the relief of this latest report is that it shows a really quite modest increase, half of which has already happened. They are talking one to two and a half degrees.

"Remember that for humans, the biggest cause of death is cold in winter, far bigger than heat in summer. It would also lead to longer growing seasons and you could extend growing a little further north into some of the colder areas.

"I actually see this report as something we need to take seriously but I am rather relieved that it is not as catastrophic in its forecast as we had been led to believe early on and what it is saying is something we can adapt to over time and we are very good as a race at adapting," he said.

Paterson's views were taken to task by Guy Newey, head of environment and energy at the Policy Exchange thinktank.

"The point that the climate has been changing for centuries understates the size of the problem that we are facing and the size of the action we need to overcome it. We really have no idea of knowing what is going to happen in terms of temperature. The risk is really very scary ... I worry that some of the language that Owen uses - that we can actually wait and see what happens - is a big risk," he replied, to applause from the audience.

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100 Million Solar Heating & Cooling Systems in the US, That's the Goal

SustainableBusiness.com News

When we hear about the huge growth of solar installations in the US, the talk is mostly about solar PV, but there's enormous potential in solar thermal - used for heating and cooling.

Currently, there's 9 gigawatts (GW) of solar thermal installed in the US, 1 GW less than solar PV.

In fact, the national discussion on clean energy revolves around electricity and transportation, leaving out the biggest source of energy consumption - heating and cooling homes and buildings.

Almost half (44%) of America's energy consumption comes from heating (hot water and space heating) and cooling, which costs some \$270 billion a year.

Right now, the US is on track to have 75 GW of solar thermal by 2050, installing 30,000 systems a year. But the Solar Energy Industries Association (SEIA) has created a roadmap that would result in 100 MW by 2025 and 300 MW by 2050, when there would be 100 million installations.



At that level, solar thermal would supply 8% of US heating and cooling demand. It's already the most efficient renewable energy technology and has the quickest payback - costing as little as 6 cents per kilowatt hour.

100 million systems sounds like a lot to us too, but SEIA and partner BEAM Engineering say it's feasible. It would replace the need for 64 coal plants, save Americans \$61 billion in energy costs and create over 50,000 jobs.

"Part of our challenge is to do a better job of educating policymakers - at both the state and federal level - about the enormous benefits solar heating and cooling provides to American consumers and businesses, as well as to the U.S. economy," says Rhone Resch, CEO of SEIA.

Besides raising awareness on the part of homeowners and businesses, and incentives through tax credits, thermal solar would significantly advance in these ways:

Include solar thermal in Renewable Portfolio Standards, as New Hampshire has done, or states could implement new Solar Thermal standards.

The Department of Energy could advance the technology through R&D as it's doing for solar PV under the SunShot Initiative.

Solar thermal systems could also be required on new buildings. Israel, Spain and Portugal have national mandates and Hawaii requires them on new homes.

Many countries have adopted solar thermal much more aggressively than the US, which ranks 36th in the world, relative to its population. The vast majority are in China (152 GW) and Europe (39.3 GW).

Here's the roadmap:

Website: www.seia.org/research-resources/solar-heating-cooling-energy-secure-future

[<Source>](#)

More than 90% of people in European cities breathe dangerous air, study finds

Countries have downplayed hazards of air pollution despite evidence that it leads to 430,000 shortened lives a year

By John Vidal, theguardian.com



Power plants are just one of the sources of pollutants identified by the European Environment Agency report. Photograph: Juergen Schwarz/Getty Images

More than 90% of people living in European cities breathe air that the UN's World Health Organisation says leads to respiratory problems, heart disease and shortened lives, according to a study published on Tuesday.

But because EU legal limits or targets for some pollutants still lag well behind UN recommendations,

most countries have been able to downplay the hazards of dirty air despite evidence that it leads to 430,000 shortened lives in Europe every year and costs governments tens of billions of pounds in hospital admissions.

According to the European Environment Agency (EEA) study, the past 10 years have seen a steady decline in the emissions of most air pollutants, leading to "acceptable" levels across the continent for carbon monoxide and lead. "Nevertheless, road transport, industry, power plants and farming continue to emit significant amounts of pollutants ... which leads to acid rain, loss of biodiversity, reduction of visibility and damage to materials and buildings," says the report.

EU environment commissioner, Janez Potočnik, suggested he was ready to take countries to the European courts and fine them for consistently failing to meet targets. "Air quality is a central concern for many people. Surveys show that a large majority of citizens understand well the impact of air quality on health and are asking public authorities to take action at EU, national and local levels, even in times of austerity and hardship. I am ready to respond to these concerns through the commission's upcoming air policy preview," he said.

Potočnik was backed by EEA director, Hans Bruyninckx. "Large parts of the population do not live in a healthy environment, according to current standards. To get on to a sustainable path, Europe will have to be ambitious and go beyond current legislation."

The difference between WHO recommendations and EU legal limits is seen most starkly with particulate matter, a pollutant made up of tiny particles of dust, dirt and soot emitted from cars and factories, and low-level ozone, a dangerous gas formed by the reaction of sunlight with some pollutants. The WHO suggests 85-98% of Europe's urban population is exposed to dangerous levels of both but the EU says only 14-31% of people are exposed. Countries, including Britain, have consistently argued that Europe should not raise air pollution standards and have actively tried to delay implementing EU legal limits to avoid having to remove cars from roads or force industry to invest in better technology.

The study found that emissions had not reduced as much as expected in the past 10 years. "There have been several success stories in cutting emissions of air pollutants – for example, sulphur dioxide emissions from power plants, industry and transport have been reduced over the last decade, reducing exposure. Phasing out leaded petrol has also reduced concentrations of lead, found to affect neurological development.

"But Europe's air pollution problem is far from solved. Two specific pollutants, particulate matter and ground-level ozone, continue to be a source of breathing problems, cardiovascular disease and shortened lives. New scientific findings show that human health can be harmed by lower concentrations of air pollution than previously thought," says the report.

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Tips:

Now almost every person knows about limited environmental resources, green house gas emissions, pollution, climate change, but most of the people think that they themselves can do nothing for it. We are sure if we change our habits and make efforts it will certainly reduce our ecological footprint. Keeping this in mind we provide some tips in every edition of this newsletter, with the hope that at least some people will adopt them. We appeal every responsible citizen not to only practice but convince others to practice these.

- **Maximize the use of daylight and avoid artificial lighting for illuminating the office and/ or home.**
- **Re-use the plastic bags you have brought with grocery or clothing etc. There are innumerable uses for them, from picking up pet curb to using them as trash bags in home.**
- **For more energy efficiency, install the garage wall light switch with a motion sensor control. The light will come on when someone enters the garage and go off more quickly, automatically.**
- **It takes a lot of energy to make new containers, paper products and packaging. Be diligent in recycling all your newspapers, cans, bottles, plastics, cardboard and other materials.**
- **Use separators in the cooker to cook more items simultaneously. Also ensure that rubber gasket is proper and there is no leakage from cooker.**
- **Install solar Photovoltaic (PV) systems to harness energy from the sun.**
- **If you are going to install water heater or replace you electric water heater, switch to solar water heater.**
- **The technology is changing rapidly now LED lamps have come which are even more energy efficient. LED bulbs are lit solely by the movement of electrons. Unlike incandescents, they have no filament that will burn out; and unlike CFLs, they contain no mercury or other toxic substances. Proponents say LEDs can last some 60 times longer than incandescents and 10 times longer than CFLs.**

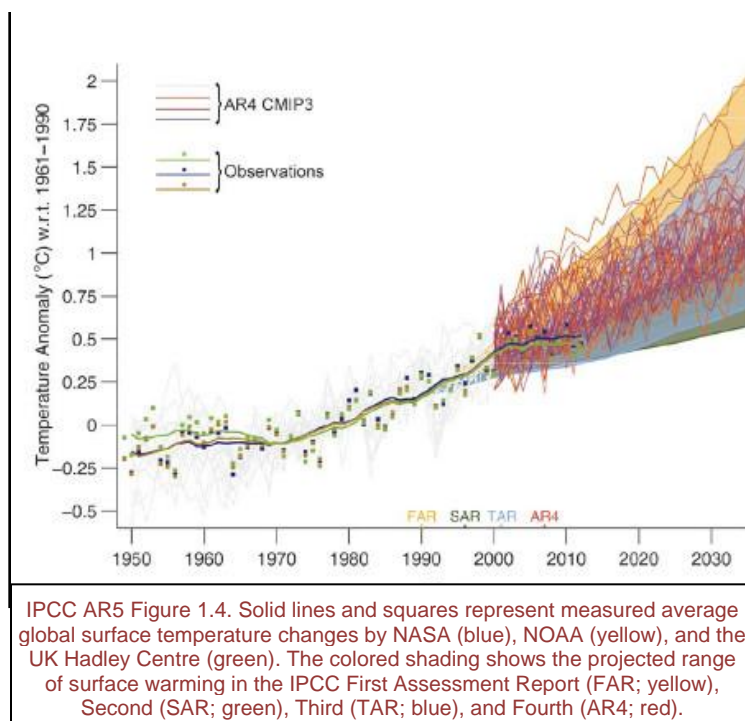
IPCC model global warming projections have done much better than you think

Global warming since 1990 has fallen within the range of IPCC climate model projections



Models that simulate the Earth's climate are constantly improving

The figure below from the 2013 Intergovernmental Panel on Climate Change (IPCC) report compares the global surface warming projections made in the 1990, 1995, 2001, and 2007 IPCC reports to the temperature measurements.



Since 1990, global surface temperatures have warmed at a rate of about 0.15°C per decade, within the range of model projections of about 0.10 to 0.35°C per decade. As the IPCC notes,

"global climate models generally simulate global temperatures that compare well with observations over climate timescales ... The 1990–2012 data have been shown to be consistent with the [1990 IPCC report] projections, and not consistent with zero trend from 1990 ... the trend in globally-averaged surface temperatures falls within the range of the previous IPCC projections."

What about the Naysayers?

In the weeks and months leading up to the publication of the final 2013 IPCC report, there has been a flood of opinion articles in blogs and the mainstream media claiming that the models used by the IPCC have dramatically over-predicted global warming and thus are a failure. This narrative clearly conflicts with the IPCC model-data comparison figure shown above, so what's going on?

These mistaken climate contrarian articles have all suffered from some combination of the following errors.

1) Publicizing the flawed draft IPCC model-data comparison figure

Late last year, an early draft of the IPCC report was leaked, including the first draft version of the figure shown above. The first version of the graph had some flaws, including a significant one immediately noted by statistician and climate blogger Tamino.

"The flaw is this: all the series (both projections and observations) are aligned at 1990. But observations include random year-to-year fluctuations, whereas the projections do not because the average of multiple models averages those out ... the projections should be aligned to the value due to the existing trend in observations at 1990.

Aligning the projections with a single extra-hot year makes the projections seem too hot, so observations are too cool by comparison."

In the draft version of the IPCC figure, it was simply a visual illusion that the surface temperature data *appeared* to be warming less slowly than the model projections, even though the measured temperature trend fell within the range of model simulations. Obviously this mistake was subsequently corrected.

This illustrates why it's a bad idea to publicize material in draft form, which by definition is a work in progress. That didn't stop Fox News, Ross McKittrick in the Financial Post, Roger Pielke Jr., the Heartland Institute, and Anthony Watts from declaring premature and unwarranted victory on behalf of climate contrarians based on the faulty draft figure.

2) Ignoring the range of model simulations

A single model run simulates just one possible future climate outcome. In reality, there are an infinite number of possible outcomes, depending on how various factors like greenhouse gas emissions and natural climate variability change. This is why climate modelers don't make predictions; they make projections, which say in scenario 'x', the climate will change in 'y' fashion. The shaded regions in the IPCC figure represent the range of outcomes from all of these individual climate model simulations.

The IPCC also illustrates the "multi-model mean," which averages together all of the individual model simulation runs. This average makes for an easy comparison with the observational data; however, there's no reason to believe the climate will follow that average path, especially in the short-term. If natural factors act to amplify human-caused global surface warming, as they did in the 1990s, the climate is likely to warm faster than the model average in the short-term. If natural factors act to dampen global surface warming, as they have in the 2000s, the climate is likely to warm more slowly than the model average.

When many model simulations are averaged together, the random natural variability in the individual model runs cancel out, and the steady human-caused global warming trend remains left over. But in reality the climate behaves like a single model simulation run, not like the average of all model runs.

This is why it's important to retain the shaded range of individual model runs, unlike Bjorn Lomborg in *The Australian*, Judith Curry in *The Australian*, Benny Peiser at GWPF, Roger Pielke Jr., David Rose in the *Mail on Sunday* (copied by Hayley Dixon in *The Telegraph*), and *Der Spiegel*, all of whom only considered the model average.

This group all made an additional related third error as well.

3) Cherry Picking

Most claims that the IPCC models have failed are based on surface temperature changes over the past 15 years (1998–2012). During that period, temperatures have risen about 50 percent more slowly than the multi-model average, but have remained within the range of individual model simulation runs.

However, 1998 represented an abnormally hot year at the Earth's surface due to one of the strongest El Niño events of the 20th century. Thus it represents a poor choice of a starting date to analyze the surface warming trend (selectively choosing convenient start and/or end points is also known as 'cherry picking').

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Study links low birth-weight to air pollution and traffic

By Sarah Boseley, health editor, for *The Guardian*



Exhaust fumes. Photograph: Peter Macdiarmid/Getty Images

Babies born to mothers who live in areas with air pollution and dense traffic are more likely to have a low birthweight and smaller head circumference, according to a large European study.

The researchers, who included a team from the UK, found that babies were smaller even in areas with relatively low levels of air pollution, well below the limits considered acceptable in European Union guidance.

For every increase of 5 micrograms per cubic metre in exposure to fine particulate matter during pregnancy, the risk of low birth-weight in the baby rose by 18%.

Although they cannot establish from this research that air pollution is the cause of low birth-weight, the authors of the study, published in the *Lancet* respiratory medicine journal, believe the link is strong enough to demand action.

"Our findings suggest that a substantial proportion of cases of low birth-weight at term could be prevented in Europe if urban air pollution, particularly fine particulate matter, was reduced," said lead author Dr Marie Pedersen from the Centre for Research in Environmental Epidemiology in Barcelona.

Low birth-weight in babies is a concern, because it often predicts poorer health as children and later as adults. A small head circumference could indicate problems with neuro-development.

The research pooled the results of studies from 12 countries in Europe, involving more than 74,000 women who gave birth between 1994 and 2011, living in a range of different settings, from inner-city to semi rural. One of the biggest cohorts, involving 11,000 women, was from Bradford.

Dr John Wright, director of the Bradford Institute for Health Research and chief investigator of the ongoing Born in Bradford study which is following the lives of more than 13,000 families, said the findings allowed for other aspects of the women's lives that could have led to smaller birth-weight babies.

"There tends to be social patterning – poor people tend to live in inner-city areas where there is more road traffic and poorer diet," he said. But the study had achieved "very rich data collection" on the lives of the mothers, and was able to allow for other issues that could affect the baby's development, such as smoking. Mothers who smoked had a higher likelihood of a low birth-weight baby than those who did not, but only a minority smoke, whereas everybody is affected by air pollution in the area where they live.

Wright said the study made the case for regulatory intervention. "You can stop smoking and drink less alcohol and get more physical exercise. Pregnant women do this really well. But for air pollution there is nothing much you can do. This is a classic example of public health policy-making that needs to happen."

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How can I make sure my recycling isn't incinerated?

By Lucy Siegle, for *The Observer*



Lucy Siegle: 'Recycling surpassed our pastime of shovelling stinking rubbish into landfill – an unappealing aspect of our mining heritage.'

Photograph: Alamy

Never let it be said that I don't know how to enjoy myself. Two weeks ago I was at the nation's biggest exhibition dedicated to municipal waste. The hall was full of big kit and startling innovation, the sort of thing that makes the Great Exhibition look a bit lacklustre. I was surrounded by leviathan machinery for crushing, sorting or burning our discards, all attempting to entice local authorities and waste companies to buy in. But to which, recycling or incineration? The industry seemed split down the middle.

It is annoying that the UK has a patchwork of systems – some refuse is commingled (i.e., thrown together in a box), some separated. The Campaign for Real Recycling (realrecycling.org.uk) says that separated streams are better – the recyclate is less likely to be contaminated, therefore offering material that can be sold worldwide.

Your best bet is to follow that "Reduce, reuse and recycle" mantra (the one the Wombles taught us). And recycle as much as possible, very precisely. It's easy – the boxes are well labelled and it only takes minutes.

Superficially our 2012 rubbish figures look good. Recycling surpassed our pastime of shovelling stinking rubbish into landfill – an unappealing aspect of our mining heritage – so that 43% was recycled, 34% landfilled and 21% incinerated. Achieving this required herculean effort on behalf of just about everyone, plus an escalator tax system which makes it uneconomic to landfill. Well done, everyone! Except that this is not quite good enough. Our rate of improvement dropped last year, leading to fears it could flatline.

Meanwhile England's 23 incinerators (70 others are rumoured to be in the pipeline) are waiting to capitalise on any recycling apathy. And while we've become obsessed about the evils of landfills, the atmospheric equivalent, skyfill, gets little air time.

I won't go into the much-disputed incineration here. New-age incinerators have been billed as cleaner and greener, able to turn trash into energy and rebranded "energy from waste facilities" or "energy recovery units". But incineration could impede recycling, diverting rubbish to keep these expensive operations functioning.

Recycling's best defence is to keep up the noise about recycling, to assert that after reduce or reuse this remains the smart, green way to go. Or we could devolve this task once again to the Wombles – they've been signed up for a new 26-part series.

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Climate change: Indigenous Australians 'face disproportionate harm'

By Oliver Milman, for *theguardian.com*



Indigenous children on the outskirts of Alice Springs in the Northern Territory. Photograph: AAP/Marianna Massey

Indigenous Australians face "disproportionate" harm from climate change, according to a leaked report from the Intergovernmental Panel on Climate Change.

The second IPCC report, which is due to be released next March, also warns that climate change could swamp \$226bn worth of coastal property via sea level rises and cause the number of heatwave-related deaths in Sydney to triple by the end of the century.

It says there is "high agreement" among scientists that Indigenous peoples will face significant challenges from heat stress, extreme weather events and heightened rates of disease by 2100.

"Little adaptation of Indigenous communities to climate change is apparent to date," the report says.

A sharp increase in heatwaves will impact the broader Australian population, especially older people, through heat-related deaths and hospitalisations. In Sydney, the number of deaths caused by heatwaves is expected to triple from 2.5 deaths for every 100,000 people to 7.4 deaths for every 100,000 people by 2100.

Water and food-borne diseases are projected to increase, with up to 870,000 new cases of bacterial gastroenteritis by 2100. But the IPCC warns there is minimal scientific consensus when it comes to specific disease projections and their link to climate change.

Australia is set to suffer financial as well as human loss, with the IPCC saying sea-level rise is a "significant risk" to the country because of the heavy population skew towards coastal cities and towns.

A rise of 1.1m would affect assets worth \$226bn, according to the report, threatening 274,000 residential and 8,600 commercial buildings. Risks to road and rail infrastructure would "increase significantly" with a rise above 0.5m, the report indicates.

"While the magnitude of sea level rise during the 21st century remains uncertain, its persistence over many centuries implies that realisation of these risks is only a question of time," it says.

The leaking of the second IPCC report of three comes in the wake of the official release of the headline first report, which was unveiled in September. The initial document, a summation of the work of hundreds of climate scientists from around the world over the past five years, said there was a 95% certainty

that humans are responsible for most of the 0.89C rise in average temperatures since 1901.

Australia is set to experience a 6C rise in average temperatures on its hottest days, with the loss of many reptile, bird and mammal species, as well as the celebrated Kakadu wetlands.

Separate research published this week by Australian scientists shows that the impact of el Niño years will be exacerbated by climate change. El Niño is a periodic climate condition which causes warming of the ocean and shifting rainfall patterns in parts of the Pacific region. It can help drive extremely warm years, such as in 1998.

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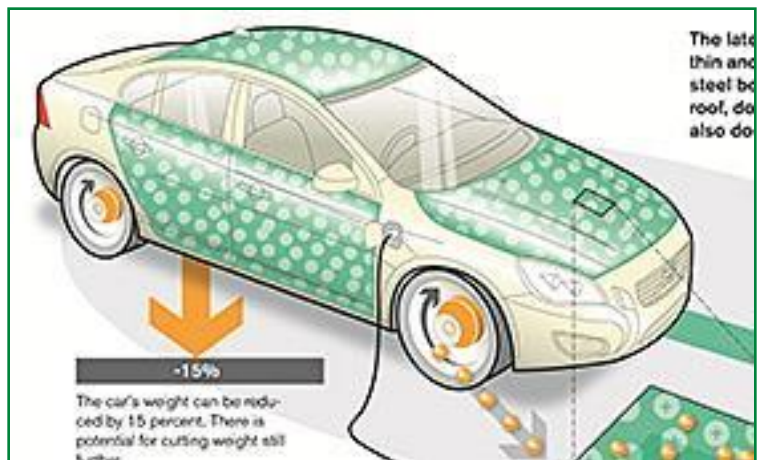
Green Technology Spotlight: Electric Cars Without the Battery

SustainableBusiness.com News

A technology Volvo is developing gives us some insight into the future of electric cars - while it's easy to focus on their disadvantages today, new materials will bring much more advanced vehicles in the future.

Since the battery is mainly what's holding electric vehicles back - including trucks and buses - that's what researchers are focused on. Big and bulky, it takes a lot of battery to compete on range with conventional cars, and it's even more challenging to achieve that at a reasonable price. And battery manufacturing is a pretty toxic affair.

Volvo sees a way to eliminate the battery by using a car's body panels as a source of power.



First, it builds a car's body panels out of lightweight (but very strong) carbon fiber. Then it infuses nano-sized batteries and super-capacitors into the panels.

This electrified skin charges faster than conventional batteries, and refreshes the charge as you drive through regenerative braking. It can still be plugged in to get a full charge, and results in a car that's 15% lighter and cost-effective to produce with about a 80-mile range, says Volvo.

Volvo has been working on the technology for over three years with other European tech companies at Imperial College, the site of other energy storage research. It's also useful for conventional cars - it can eliminate the need for the battery used in start/stop engine technology.

Another innovative Volvo technology is "I-See" software which cuts fuel consumption in trucks, basically by running them on auto-pilot.

The company is considered one of the top 3 sustainable brands by Swedish citizens.

[<Source>](#)

Latest Review of Science Reveals Oceans in Critical State

London – An international panel of marine scientists is demanding urgent remedies to halt ocean degradation based on findings that the rate, speed and impacts of change in the global ocean are greater, faster and more imminent than previously thought.

Results from the latest **International Programme on the State of the Ocean (IPSO)** / **IUCN** review of

science on anthropogenic stressors on the ocean go beyond the conclusion reached last week by the UN climate change panel, the **Intergovernmental Panel on Climate Change (IPCC)**, that the ocean is absorbing much of the warming and unprecedented levels of carbon dioxide and warn that the cumulative impact of this with other ocean stressors is far graver than previous estimates.



Decreasing oxygen levels in the ocean caused by climate change and nitrogen runoff, combined with other chemical pollution and rampant overfishing are undermining the ability of the ocean to withstand these so-called 'carbon perturbations', meaning its role as Earth's 'buffer' is seriously compromised.

Professor Alex Rogers of Somerville College, **University of Oxford**, and Scientific Director of IPSO, said, "The health of the ocean is spiraling downwards far more rapidly than we had thought. We are seeing greater change, happening faster, and the effects are more imminent than previously anticipated. The situation should be of the gravest concern to everyone since everyone will be affected by changes in the ability of the ocean to support life on Earth."

The findings, published in the peer-reviewed journal *Marine Pollution Bulletin*, are part of an ongoing assessment process overseen by IPSO, which brings together scientists from a range of marine disciplines. The body's previous 2011 report, which warned of the threat of 'globally significant' extinctions of marine species, received global media attention and has been cited in hearings at the United Nations, US Senate and European Parliament as well as the UK Parliament.

Among the latest assessments of factors affecting ocean health, the panel identified the following areas as of greatest cause for concern:

- **De-oxygenation:** The evidence is accumulating that the oxygen inventory of the ocean is progressively declining. Predictions for ocean oxygen content suggest a decline of between 1% and 7% by 2100. This is occurring in two ways: the broad trend of decreasing oxygen levels in tropical oceans and areas of the North Pacific over the last 50 years; and the dramatic increase in coastal hypoxia (low oxygen) associated with eutrophication. The former is caused by global warming, the second by increased nutrient runoff from agriculture and sewage.
- **Acidification:** If current levels of CO₂ release continue, we can expect extremely serious consequences for ocean life, and in turn food and coastal protection; at CO₂ concentrations of 450-500 ppm (projected in 2030-2050), erosion will exceed calcification in the coral reef building process, resulting in the extinction of some species and decline in biodiversity overall.
- **Warming:** As made clear by the IPCC, the ocean is taking the brunt of warming in the climate system, with direct and well-documented physical and biogeochemical consequences. The impacts which continued warming is projected to have in the decades to 2050 include: reduced

seasonal ice zones, including the disappearance of Arctic summer sea ice by ca. 2037; increasing stratification of ocean layers, leading to oxygen depletion; increased venting of the GHG methane from the Arctic seabed (a factor not considered by the IPCC); and increased incidence of anoxic and hypoxic (low oxygen) events.



- The **'deadly trio'** of the above three stressors – acidification, warming and deoxygenation – is seriously effecting how productive and efficient the ocean is, as temperatures, chemistry, surface stratification, nutrient and oxygen supply are all implicated, meaning that many organisms will find themselves in unsuitable environments. These impacts will have cascading consequences for marine biology, including altered food web dynamics and the expansion of pathogens.
- Continued **overfishing** is serving to further undermine the resilience of ocean systems, and contrary to some claims, despite some improvements largely in developed regions, fisheries management is still failing to halt the decline of key species and damage to the ecosystems on which marine life depends. In 2012, the **UN FAO** determined that 70% of world fish populations are unsustainably exploited, of which 30% have biomass collapsed to less than 10% of unfished levels. A recent global assessment of compliance with Article 7 (fishery management) of the **1995 FAO Code of Conduct for Responsible Fisheries**, awarded 60% of countries a "fail" grade, and saw no country identified as being overall "good".

As a matter of urgency, the marine scientists say that world governments must:

- Reduce global CO₂ emissions to limit temperature rise to less than 2°C, or below 450 CO₂e. Current targets for carbon emission reductions are insufficient in terms of ensuring coral reef survival and other biological effects of acidification, especially as there is a time-lag of several decades between atmospheric CO₂ and CO₂ dissolved in the ocean. Potential knock-on effects of climate change in the ocean, such as methane release from melting permafrost and coral dieback mean the consequences for human and ocean life could be even worse than presently calculated.
- Ensure effective implementation of community- and ecosystem-based management, favouring small-scale fisheries. Examples of broad-scale measures include introducing true co-management with resource adjacent communities, eliminating harmful subsidies that drive overcapacity, protection of vulnerable marine ecosystems, banning the most destructive fishing gear, and combating IUU (Illegal, Unreported and Unregulated) fishing.
- Build a global infrastructure for high seas governance that is fit-for-purpose. Most importantly, secure a new implementing agreement for the conservation and sustainable use of biodiversity in areas beyond national jurisdiction under the auspices of **UNCLOS (United Nations Convention on the Law of the Sea)**.
- The **IUCN's Professor Dan Laffoley** said, "What these latest reports make absolutely clear is that deferring action will increase costs in the future and lead to even greater, perhaps irreversible, losses. The UN climate report confirmed that the ocean is bearing the brunt of human-induced changes to our planet. These findings give us more cause for alarm – but also a roadmap for action. We must use it."

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How Philips is transforming its business model for sustainability

By Oliver Balch, *for theguardian.com*



If Philips is to remain competitive in the future, it'll require the company to continually adapt to the huge macro trends that it faces. Photograph: Philips

One of the first things Frans van Houten did on taking over as chief executive at Philips two years ago was to set the 122 year old company on a new strategic course. If successful, his five year Accelerate! programme will see the Dutch-based multinational begin to look like a different business. Expect it to have a greater presence in fast-growth emerging markets, a larger slice of the business-to-business market, a leaner inventory and a fatter innovation pipeline.

All are eminently sensible steps. Indeed, if you were to throw a team of strategy professors into a darkened room, these are exactly the kind of growth-orientated measures you'd expect them to suggest. But, like all businesses, Philips doesn't operate in a darkened room. Equally important in its strategic thinking, therefore, are the external mega trends unfolding in the 100 plus markets where it operates.

Climate change and its impacts on energy security, the world's increasingly aging population, the growth of the middle-classes in emerging markets, new diet and lifestyle trends giving rise to health issues such as obesity and heart disease: all are global factors that are impinging in one way or another on Philips' core markets – namely, lighting, healthcare and consumer lifestyle.

Pre-empting future change

The pivotal theme that connects all the dots here is sustainability, says Henk de Bruin. Maybe you'd expect him to say that. As chief sustainability officer at Philips, it's his job to flag up the importance of social and environmental issues. Corporate-wide, the company has pledged to improve the lives of three billion people on the planet by 2025. By 2015, its goal is for half of total sales to be 'green' (at present, the proportion stands at 47%). Nor is it entirely new. Philips set its first sustainability standards back in 1994.

Despite past progress, De Bruin doesn't deny that much remains to be done. If Philips is to remain competitive in the future, it'll require the company to continually adapt to the huge macro trends that it faces. Some strategic tinkering here and there won't cut it. What's needed is a systems-level shift across the entire business.

Those at the top of the tree at Philips seem to get that. Moreover, in the circular economy, they have a concept on which they can hang the company's future transformation. In its simplest form, the idea revolves around "decoupling of material use and energy consumption from economic growth", De Bruin explains. The implications from a business process perspective are profound. Out the window goes the traditional, linear approach to resource use: namely, extract it, use it and then dump it. Instead, management focus turns to principles such as re-manufacturing, refurbishment and reuse.

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Climate change: are companies prepared for the impact?

By Laura Paddison, *for theguardian.com*



Companies are failing to consider the impact of their supply chains when measuring and managing emissions. Photograph: Bei Feng/EPA

Companies are unprepared for the risks posed by climate change and are failing to properly engage their supply chain when it comes to managing their environmental impact, according to a new report.

CDP's FTSE 350 Climate Change Report attempts to shine a spotlight on companies' preparations for the global impact of climate change. Of the 350 companies surveyed, the majority report on climate change risks and opportunities – although a worrying 13% don't. Furthermore, of those that do report, only a small number (14%) are taking a long-term view and planning for the next 10 years or more.

The report also highlighted a gap when it comes to acknowledgement of international impacts of climate change. Even though 69% of respondent companies have international operations, nearly half (48%) are failing to work with their supply chains on emissions or climate change at all.

This report follows on the heels of the IPCC report and its stark conclusions on the expected impacts of climate change. So are companies waking up to the need to embed climate change risks into their business plans or are many keeping their eyes tightly shut? And what should companies be doing to ensure that they take their whole value chain into account when measuring their climate impact?

We asked experts to give their views. We would love it if you could add your comments below to broaden to the debate.

Dr Celine Herweijer: partner, sustainability & climate change, PwC



Photograph: PwC

The globalisation of our supply chains and asset base has shortened the distance between headline disasters and our High Streets. Record losses have been racked up over recent years in the wake of increasingly frequent extreme weather events.

In addition, our research shows that UK business is more exposed overseas than at home. The Thai floods in 2011 wiped over £1.6bn off Lloyds of London's books and restricted the availability of some electronic goods. The coming decades are expected to see major shifts in the frequency, severity and distribution of extreme weather events and climate conditions.

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First US Solar Plant That Stores Energy Is Online in Arizona

SustainableBusiness.com News



It's a watershed moment for US solar this week as the Solana Solar Concentrating Plant comes online in Arizona - the first time a solar plant is producing energy at night.

Built by Spain-based Abengoa, molten salt technology stores the heat produced from

solar energy throughout the day and then releases it slowly at night. The plant can operate at full capacity for six hours after sunset, which coincides with peak demand in Arizona. Not bad - a solar plant that produces energy 18 hours a day!

Located about 70 miles southwest of Phoenix, Arizona Public Service Company is buying all the electricity from the 280 megawatt (MW) plant, which will serve 70,000 people.

With the addition of Solana, the utility has 750 MW of solar, enough to serve 185,000 homes.

The US is now home to two of the world's biggest concentrating solar plants. Last week, the Ivanpah came online in California - at 377 MW, it is the world's biggest concentrating solar plant.

The two plants use different concentrating solar technologies: Ivanpah uses solar tower technology and Solana uses parabolic solar.

How Solana Works

Solana is the world's biggest parabolic solar plant, consisting of 2700 long rectangular mirrors that track the sun during the day, focusing its heat on pipes. It heats synthetic oil inside the pipes to super-hot 735 degrees



Fahrenheit. The oil flows to steam boilers where it heats water to create steam. The steam drives two 140 MW turbines to produce electricity, much like a traditional power plant.

Super-heated oil is also sent to chambers that contain molten salt. When the sun goes down, the

molten salt keeps the fluid hot enough to create steam.

"With Solana's substantial thermal heat storage capacity, we can manage electrical output from the plant much more effectively than from other solar power sources," says Pat Dinkel of Arizona Power. "With photovoltaic technology, generated electricity needs to be used immediately or it's lost. Solana's technology extends the use of solar energy to produce power whenever our customers need it most, including evenings."

While most solar plants generate just 20% of their rated capacity over the course of a year, Solana reaches 38% because of its ability to store energy. But that's true only during the summer when the days are long. During winter, Solana will produce energy for only 8 hours, two hours less than a solar PV system would, according to Arizona Public Service Company.

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Climate change is happening, so don't shoot the messenger

By Andrew Simms, for *theguardian.com*



Wrong priorities? Labour leader Ed Miliband announced last week that he would freeze energy bills if elected. Photograph: Graeme Robertson for the Guardian

Emperor Hu Hai of the Qin dynasty in ancient China had an aide killed when he tried to tell the emperor his power was ebbing away. There was an uprising against his brutal reign. It's one of history's earlier known examples of shooting the

messenger. No one likes uncomfortable news and we can go to extraordinary lengths to avoid or suppress it.

When it comes to conveying messages about climate change all kinds of things can happen to the messengers, few of them pleasant. As a Greenpeace activist you might have a Russian gun shoved in your face at sea. Concerned members of the British public worried about fracking might experience violent arrest. Scientists presenting the world with an extraordinary consensus on climatic upheaval find themselves subjected by the media to a standard of evidence that it would be unthinkable to apply to, say, economists.

These are the whistleblowers who provide essential but unwelcome feedback on why a system is failing.

The 95% certainty given by the Intergovernmental Panel on Climate Change (IPCC) on human-driven warming sits oddly against the recent Oxford University study that found that around 80% of media stories on climate change focus on uncertainties.

The day before publication of the summary of the IPCC report, the BBC website centred [a long story on views of climate sceptics](#). As news websites go, the BBC's is among the most used and influential globally.

However well journalistically intended, stories like that helped make scepticism a dominant narrative in reporting. On the day of publication of the IPCC findings, the opening questions from interviewers were often about the certainty of the science - with scepticism the unspoken or explicit reference point.

To non-expert (i.e., most) viewers and readers, the creation of apparent balance between two positions communicates that there are two strongly held views that you might equally choose between.

Minor past errors in IPCC reports, which bore no relation to the fundamental mechanisms and reality of global warming, were repeatedly raised in such a way that implied they questioned the very basis of the science. This would be odd because understanding of the basic chemistry of warming hasn't changed for well over a century. But unless this point is clarified explicitly - and typically it isn't - an extraordinary scientific consensus can appear to be mere opinion, something you can take or leave. Inaction moulders in such equivocation.

Where the economy - the thing driving climate upheaval - is concerned, reporting follows a very different logic. Economics is a far, far messier business than climate science. Projections from the most deferentially treated organisations are commonly wildly, not mildly, at odds with subsequent reality.

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Design and the circular economy: toasters that won't be binned

After looking at how a chair manufacturer redesigned its products with their future life in mind, one company decided to apply the same thinking to the toaster

By Rich Gilbert, *Guardian Professional*



There is no point designing a product for disassembly if it will end up in a shredder. Photograph: The Agency of Design

The Agency of Design embarked on a project a few years ago called Design out Waste. Excited by ideas of cradle-to-cradle systems and industrial ecology, we identified electrical products as our target.

Reality hit when we visited an electrical product recycling centre. Whole products were dumped by lorries, thrown on a conveyor belt and dropped through an industrial shredder, emerging as 1cm square flakes on the other side. While steel and aluminium could be separated, plastics were mixed and resulted in a low-grade output. The most valuable output is the circuit boards, which are separated and passed on to a smelter to capture a tiny fraction of precious metal, while the bulk goes to waste.

We had started the project thinking we would come up with all sorts of clever design solutions, but this visit revealed the truth: there is no point designing a product for disassembly if it will end up in a shredder. It highlighted the division between manufacturer and recycler. Even with the best design for end-of-life, there is no financial motivation for the manufacturer to change when only the recycler will profit. The manufacturer's primary motivation is to design for quick and cheap assembly.

Shortly after, we met with Orangebox, an office chair manufacturer which offers to remove old chairs from a company before delivering new sets. Primarily, this was to offer a better service to customers, but it had a big knock-on effect. Orangebox started disassembling old chairs to recover and sell materials. It was taking an employee 45 minutes to take the chair apart, however, and the labour cost was wiping out the value of recovered materials. Orangebox's design priorities changed and its next chair, The Ara, could be pulled apart by hand; materials were standardised and the next life of the product had been planned.

These were simple design changes that made material easy to recover and process and, most crucially, the manufacturer was getting its product back. These design changes would have made no difference in the collective model of waste recycling witnessed at the recycling centre, but by taking products back, Orangebox was motivated to recover material value as quickly and cleanly as possible. The solution was in concurrently designing products and systems. Designing a product without an understanding of where it will end up is useless.

We wanted to see how we could apply this thinking to electrical products. We had seen from the recycling centres that anything smaller than the diameter of a household bin is unlikely to get recycled, so we decided to design toasters, a simple everyday product. We named our toasters the Realist, the Pragmatist and the Optimist.

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Tackling climate change: Copenhagen's sustainable city design

Global warming poses a real threat to cities but planners in the Danish capital are taking visionary steps to ensure its resilience – and success – as far ahead as 2100

By Elisabeth Braw, *Guardian Professional*

Visualise the world in 2050: convex streets that collect water from superstorms and pocket parks that absorb heat and can be turned into reservoirs. Welcome to Copenhagen, where planners are preparing the city for the effects of climate change several generations from now.

"We've looked at how climate change will affect Copenhagen in the long-term future", says Lykke Leonardsen. "For Copenhagen, the most serious effect of climate change will be increased precipitation, so we've developed a plan that addresses how to catch all the rainwater in the city." Leonardsen, a city planner, belongs to the 10-person team working solely on long-term climate change adaptation, planning ahead to the year 2100.

Like any city located by the sea, Copenhagen will face particular danger as sea levels rise and superstorms hit coastal areas with greater frequency. "In adapting to climate change, cities can choose either grey or green infrastructure," says professor Stuart Gaffin, a research scientist at the Center for Climate Systems Research at Columbia University, who also advises the New York City government on climate change adaptation. "Grey infrastructure means building walls and barriers. In New York's case, we'd lose Long Island if we went for the grey option. The green option, which has growing support, includes green roofs, green streets that will capture storm water, and pavements that allow water to percolate through."



Copenhagen faces particular danger as sea levels rise and superstorms hit coastal areas with greater frequency. Photograph: Kontraframe

That's the option Copenhagen has chosen. Leonardsen's team envisions lowering the level of a local lake, thereby freeing space around its shores. This space will then be turned into a park, with playgrounds and running paths. When a superstorm hits, the lake and its surrounding park will be used for water storage.

And those convex streets? They are main thoroughfares designed by Copenhagen's city planners to capture water from storms and flooding and direct it to the harbour. Copenhagen in 2050 will also feature smaller streets with plenty of trees, which will slow anticipated flooding "so not everything comes bursting into the cloudburst boulevards at the same time", Leonardsen explains. Pocket parks will absorb heat and can be turned into water storage during weather emergencies. In addition to storms, flooding and rising sea levels, heatwaves are the most dramatic scenario facing cities as climate change worsens.

If all goes according to plan, Copenhagen's sustainable climate change adaptation plan – which recently won the Index Design Award – will be completed by 2033. To be sure, Danish city planners operate in an enviable setup, where politicians and local residents alike support sustainable climate change adaptation and are willing to commit the funds required.

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Fracking produces annual toxic wastewater enough to flood Washington DC

By Suzanne Goldenberg, for *theguardian.com*



Wastewater evaporation pits from gas drilling and fracking in Pinedale area in Wyoming. Photograph: Ted Wood/Corbis

Fracking in America generated 280bn US gallons of toxic wastewater last year – enough to flood all of Washington DC beneath a 22ft deep toxic lagoon, a new report out on Thursday found.

The report from campaign group Environment America said America's transformation into an energy superpower was exacting growing costs on the environment.

"Our analysis shows that damage from fracking is widespread and occurs on a scale unimagined just a few years ago," the report, *Fracking by the Numbers*, said.

The full extent of the damage posed by fracking to air and water quality had yet to emerge, the report said.

But it concluded: "Even the limited data that are currently available, however, paint an increasingly clear picture of the damage that fracking has done to our environment and health."

A number of recent studies have highlighted the negative consequences of horizontal drilling and hydraulic fracturing, which have unlocked vast reservoirs of oil and natural gas from rock formations.

There have been instances of contaminated wells and streams, as well as evidence of methane releases along the production chain.

The Environment America report highlights another growing area of concern – the safe disposal of the billions of gallons of wastewater that are returned to the surface along with oil and gas when wells are fracked.

The authors said they relied on data from industry and state environmental regulators to compile their report.

More than 80,000 wells have been drilled or permitted in 17 states since 2005.

It can take 2m to 9m gallons of water mixed with sand and chemicals to frack a single well. The report said the drilling industry had used 250bn gallons of fresh water since 2005. Much of that returns to the surface, however, along with naturally occurring radium and bromides, and concerns are growing about those effects on the environment.

A study published this week by researchers at Duke University found new evidence of radiation risks from drilling wastewater. The researchers said sediment samples collected downstream from a treatment plant in western

Pennsylvania showed radium concentrations 200 times above normal.

The Environment America study said wastewater pits have been known to fail, such as in New Mexico where there were more than 420 instances of contamination, and that treatment plants were not entirely effective.

"Fracking wastewater discharged at treatment plants can cause a different problem for drinking water: when bromide in the wastewater mixes with chlorine (often used at drinking water treatment plants), it produces trihalomethanes, chemicals that cause cancer and increase the risk of reproductive or developmental health problems," the report said.

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Walmart Turns Green Roofs Into Research Labs

SustainableBusiness.com News

Walmart and Oregon's Portland State University are working together on research to advance the use of green roofs.

Over the next two years, researchers from the University's Green Building



Research Lab will collect data from the largest green roof in Portland, which just happens to be on a Walmart store.

Scores of sensors and a weather station will be deployed on a 40,000 square foot green roof being installed

on Walmart's new Hayden Meadows store.

The green roof is being installed in three sections, each designed to test various kinds of green roof design, such as materials and soil depth. The rest of the roof - 52,000 square feet - is a white, cool roof, which will also be monitored to compare how it performs. Sensors will detect surface temperature, water flow and building operations.

Researchers are also collecting data from Walmart's biggest green roof - a 70,000-square-foot "EcoGarden" in Chicago. Comparing the two will result in a comprehensive view of green roof performance in various climate conditions.

"The data we collect will help the green building industry improve upon the many benefits provided by green roofs - from reducing heat island effects to improving overall building performance," says David Sailor, director of Portland State's Green Building Research Lab. "This research project will lead to better green roof design for buildings around the world."

Research is being conducted with partners, such as the City of Portland's Bureau of Environmental Services, which will measure stormwater runoff; consulting firm Cadmus Group will monitor the performance of rooftop air conditioning units; and the Audubon Society of Portland will conduct bird count surveys to contribute to the habitat monitoring aspect of the study.

Portland, Oregon's Ecoroof Incentive Program, launched in 2008, funds up to \$5 per square foot for green roofs on businesses and residences.

The Green Roof business is growing rapidly, expected to reach a \$7 billion market by 2017, according to Lux Research. Green roofs have many benefits - they provide thermal and acoustic insulation, remove airborne pollutants, help manage stormwater, absorb carbon dioxide and provide habitat for birds, bees and other beneficial insects.

[<Source>](#)

Don't forget water in the true cost of biobased packaging

By Libby Bernick

The additional 3 billion middle-class consumers expected by 2030 presents one of today's greatest challenges, but they also provide one of the business community's greatest financial opportunities.



Against the backdrop of an increasingly resource-constrained world and volatile commodity prices, business as usual is not an option. The scalable, resource-efficient business models of the future will balance increased consumer demand with successful

management of natural capital dependencies.

The growing adoption of biobased materials is one response to the challenge of depleting resources. Now estimated around \$2.6 billion, the biobased industry is growing by approximately 15 percent annually. This feedstock provides a renewable source of raw materials and energy, which may help to offer businesses greater long-term environmental and economic stability.

But what is the true cost of producing bio-based materials? Trucost decided to find out.

A deeper dive

Groups such as the Society for the Commercial Development of Industrial BioTechnology have formed to share best practices on biobased materials, connect companies and suppliers, and speed the launch of exciting new technologies. Successful commercialization of these technologies implies there will be widespread use of biobased materials, either as "drop in" raw materials or through wholesale transformation of existing technologies.

Because the majority of costs are currently found in the processing life stages of these materials, there is a great opportunity for biobased materials to be competitive or even fall below petroleum-based products as adoption increases.

Trucost recently developed a true cost of packaging optimization tool by investigating the current and future economic and natural capital costs of a variety of raw materials, including common biobased feedstock. We used this data to examine how biotechnology companies can understand and communicate the environmental benefits of biobased packaging materials. As you will see, not all bioplastics are created equal; the type of crop grown, farming location and methods used have varying impacts on environmental footprints and supply chain resilience. This, of course, has financial implications for successful commercialization, especially when considering scale-up and long-term use.

Accounting for natural capital in biobased plastics

Natural capital accounting allows a company, or investor in a new technology, to measure the net environmental benefit of a biobased technology or product and then communicate this performance in easy-to-understand business terms. This approach also allows a company to quantify risks, such as the possible raw material pass-through costs associated with water.

Trucost's natural capital valuation first measures life-cycle-based environmental performance and then applies a financial cost to estimate these impacts in business terms. For this analysis, we looked at greenhouse gas (carbon) and water costs involved in producing plastics made from petroleum-

based PET, corn and sugar cane. This particular analysis covered the production and processing lifetimes of these raw materials.

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For insurers, climate risk is becoming a matter of policy

By Joel Makower

Let's suspend any putative "debate" over climate change and simply look at the reality of today's weather: it's changing, and not for the better. There have



been, and will continue to be, more severe storms, floods, droughts, hurricanes and wildfires. In short, and from a business perspective: more costly disruption.

Business disruption means such things as the unavailability or price spikes of key commodities or supplies, damage to company or key suppliers' manufacturing

facilities, loss of power to run facilities, shortages of fuel to power company and employee vehicles, and destruction of key parts or inventory. Oh, and the fact that your customers and employees may be in dire straits. Any of these things could put a company on the ropes financially — and possibly out of business. So, the companies that insure businesses for business disruption would be focused like a laser on the impacts of increasingly unstable weather, right?

Well, maybe.

It's certainly a topic of discussion, as I learned at last month's Climate Week events in New York. There was a succession of conversations, meetings and press events featuring companies, policy makers and others eager to strut their climate cred. And more than a few of them actually had some.

I was particularly interested in the subject of business insurance against climate risk: how insurance companies are pushing their corporate clients (as well as municipal ones) to protect themselves financially against severe weather and other manifestations of a changing climate. It's a topic I've been covering for years. (Here, for example.)

This is no small matter. Case in point: Floods in Thailand in 2011 wreaked havoc on several industries, causing more than \$45 billion in economic damages and losses due to flooding, according to the World Bank. The manufacturing sector took the biggest hit, since seven major industrial estates (groupings or industrial facilities in a synergistic manner) were inundated by as much 10 feet of water during the floods. Disruptions to manufacturing supply chains affected regional automobile production and caused a global shortage of computer disk drives, which lasted through much of 2012.

These things hit insurers hard. Zurich Insurance Group, the biggest Swiss insurer, downgraded its revenue targets after "natural catastrophe losses cut second-quarter profit by 27 percent," reported Insurance Journal in August. And it's not just hurricanes. Strong thunderstorms and rain across the greater Toronto metropolitan region in July caused significant flooding and power outages to the tune of US\$1.41 billion, about half of which was covered by insurance, according to The Royal Gazette.

"Nowhere in the world is the rising number of annual natural catastrophes more evident than in North America," according to Severe Weather in North America, a 2012 report (download) published by reinsurance giant Munich Re, which insures other insurers, thereby limiting the loss any single insurer would experience in case of disaster. "This increase is entirely attributable to weather events, as there has been a negative trend for geophysical events."

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How Del Monte is measuring the next food evolution

By Jennifer Inez Ward



When it comes to the use of food metrics, Del Monte Foods is on full tilt.

Thanks to pressing sustainability needs and limited natural resources, increasing reliance upon metrics for the food and agriculture sector is gaining ground in the United States. Helping to lead the

way is Del Monte Foods, which is using detailed metrics to measure the effectiveness of everything from energy to water to waste.

During a discussion at the GreenBiz VERGE SF 2013 event last week, experts including Robin Connell, manager of sustainability programs at Del Monte Foods, discussed how the use of food metrics is expanding among companies and growers. Food metrics are data-driven measurement tools that can help companies and suppliers reduce waste, improve air quality and effectively manage water use.

"If you want to solve the world's very urgent, very pressing ecological challenges, the food system has to be a part of the solution," said panel moderator Jonathan Kaplan, the NRDC's food and agriculture program director. "Any way you cut it, food and agriculture is big. It's the elephant in the room."

The potential implications of using food metrics in the industry is huge. Worldwide, agriculture uses about 70 percent of fresh water supplies. Globally, up to 75 billion tons of topsoil are eroded every year.

"We have to figure out how to grow more food with fewer resources," Kaplan said.

One innovator that has embraced effective sustainability metrics is Del Monte Foods.

As one of the biggest U.S. producers and distributors of canned fruits and vegetables, Del Monte's sustainability policies and actions are watched closely.

In 2012, the San Francisco-based company had year-end sales of \$3.7 billion. "It's really important to continue the pattern of what we've done at Del Monte," Connell said. "We still produce our own seeds, for the most part, we've done a lot in integrated pest management, and this [food metrics] is the next evolution in sustainability."

Image of tomato with measuring tape by mashe via Shutterstock

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Geothermal Finally Gets a Really Big Project ... in Africa

SustainableBusiness.com News

When it comes to geothermal energy, most of what we hear about are roadblocks that need to be cleared for the industry to expand, or smallish projects going forward.

Starting next year, however, Reykjavik Geothermal will begin drilling tests in Ethiopia, where it plans to develop as much as 1 gigawatt (GW) of geothermal energy over the next decade.

Ethiopia's Corbetti Caldera area is considered one of the top geothermal resources in the world - part of East Africa's Great Rift Valley, which spans eight countries. It has the potential for an estimated 20 GW of geothermal.



The first 10 megawatts (MW) of power comes online in 2015, followed by an additional 100 MW in 2016 and the full 500 MW by 2018. A second phase would double that amount.

Reykjavik Geothermal will be the first independent power producer in Ethiopia. The company plans to invest \$4 billion in the project, which will also be financed by equity investments led by US investors. Ethiopian Electric Power Corp. will purchase all the energy under a 25-year contract.

"The Corbetti Project will be one of the lowest cost and most technologically advanced geothermal facilities in the world. Our goal is to transfer geothermal knowledge and expertise from Iceland to build a long term geothermal industry in Ethiopia," says Gudmundur Thoroddsson, CEO of Reykjavik Geothermal.

"Africa needs to transform, and energy is at the center of that transformation," Ethiopia's Prime Minister Hailemariam Desalegn said at the announcement in New York. "My vision is that over the next 30 years we will need to harness as much as 80,000 MW of hydro, geothermal, wind and solar power, not just for Ethiopia, but for our neighboring countries as well. This cannot be done by public investment alone; we will need to partner with the private sector to bring in significant private investment going forward. From that perspective, this 1,000 MW project with Reykjavik Geothermal is not that large - but it's a great start. What Africa needs now is not just aid, but trade and investment."

"The Corbetti Project is a new model for developing large scale power projects in Africa," says Miheret Debebe, CEO of Ethiopian Electric. "The project combines the considerable expertise for electrical power generation of Ethiopia, with the geothermal technical knowledge of Iceland and the financial and structuring expertise of the United States. This project will set a new benchmark for large scale projects financed by the private sector and will help Ethiopia unleash its full energy potential."

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How to make sustainability ideas stick

By Thomas Vinson and Jennifer Lasseter

What makes one idea or project "stick" and another disappear?

It's a question we have asked for years as we track the progress of companies who have invested in our Pollution Prevention Lean Principles workshops. At the end of every workshop we see people walking out with a solid plan and motivation to get it done. A year later we follow up and, while some have transformed their company, others have made no changes.

During the training, participants assess potential projects by carefully considering technical, economic and risk factors. They develop a plan to



reduce waste and save money and a strategy to sell the project to management and gain employee support. Even with this degree of research and planning, too many companies fail to implement the project.

What was missing?

This summer we followed up with workshop attendees to find out which were successful and which needed help. We found that a successful project has three elements:

1. It improves the company's core business processes
2. It engages employees and management
3. The project has a "cool" factor, or something that makes it memorable

Improving a company's core business processes

Reducing waste can improve the efficiency of core business processes and lead to big savings. Two companies we worked with were able to reduce tons of hazardous waste and increase profitability. One Houston-area specialty chemical facility began using leftover chemicals from previously blended batches in new batches, reducing more than eight tons per year of hazardous waste and saving \$235,000 annually.

Similarly, a test laboratory reduced waste by three tons per year and saved about \$20,000 annually on solvents and expired chemicals through modification of the lab's analytical equipment and centralized purchasing.

Engaging employees and management

Involving leaders throughout a company is a key factor for success. An engineer for a paint manufacturer we worked with tried for several years to find a use and reuse option for large quantities of a byproduct with marginal success. Projects like this can be quite complex and often require many people from inside and outside the company to coordinate the effort. Making any significant change requires enlisting help at all levels.

Coordination between the plant engineer and corporate sustainability office made it happen. They found enough end-users of their byproduct to divert more than 3,000 tons per year of material from the landfill with combined savings and earnings of more than \$350,000 annually.

The 'cool' factor

One community college's green chemistry program had both multi-level cooperation and something that made it "cool."

A faculty member's idea about green chemistry lab experiments took off when supported by the environmental health and safety (EHS) coordinator. Faculty and staff worked together to implement a standardized lab curriculum that cut hazardous waste by about half. All of these levels were engaged because the project had a cool factor which called for students to switch to soft drinks in chemistry lab experiments in place of toxic, heavy-metal chemicals.

Sticky notes image by Peter Zvonar via Shutterstock.

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Fuel Cell Vehicles Get Big Push in California, Germany

SustainableBusiness.com News

While the average person has yet to embrace hybrids, much less electric cars, some policy makers and car manufacturers are planning for their biggest bet of all - fuel cell cars that run on hydrogen.

Last month, California's legislature passed a bill (AB 8) that appropriates \$2 billion to continue incentives for purchases of low-carbon vehicles through 2023 for cars, trucks, buses and construction equipment.

Included in the bill is \$20 million a year to build a state-wide network of hydrogen fueling stations, following through on former Governor Arnold Schwarzenegger's vision of a Hydrogen Highway. The goal is to install at least 100 hydrogen stations in the next few years.

Currently, just 10 hydrogen stations in the US are open to the public, nine of which are in California and one is in South Carolina.

We're not sure if BMW uses that South Carolina hydrogen station, but all of BMW's 230 forklifts run on hydrogen at its manufacturing plant there. BMW switched out lead acid batteries for fuel cells made by Plug Power. Among many others, the biggest Coca-Cola bottler in the US uses hydrogen-powered forklifts.

Read our article, World's First Tri-Generation Fuel Cell Commissioned in California.

The legislation will create tens of thousands of jobs in California's clean transportation tech industry and set us on a course to meet our clean air and climate goals," says John Boesel, CEO of CALSTART.

Two other recently passed pieces of legislation make electric cars much easier to charge. It requires most new buildings to have charging stations and makes it possible for people to charge their cars at any of them.

Germany Too

Meanwhile in Germany, Daimler is joining with five oil companies and industrial gas producers to form "H2 Mobility." Partners are Shell Hydrogen, Total, OMV, Air Liquide and Linde.

The group says it will invest \$500 million to build 400 hydrogen fueling stations by 2023 in Germany. The first 100 will be ready within four years, up from just 15 now. "By 2023 there should be more hydrogen filling stations than conventional ones on the autobahn today," says Thomas Weber, head of R&D for Daimler. The goal is for a hydrogen station every 56 miles.

Daimler is betting that fuel cell cars are the "final" clean car solution. Within five years, it plans to introduce fuel cell cars that cost about the same as a diesel-hybrid does today - about \$71,000. About 200 Mercedes B-Class F-Cell cars are currently on the road.

Over the summer, GM and Honda announced they will jointly develop fuel cell technologies. They plan to share suppliers and build on each others' technologies to bring down the cost of fuel cell cars in the 2020 time frame. The end result will be a common powertrain with standard components that can build toward economies of scale.

They also plan to work with local governments and other stakeholders to expand the network of hydrogen stations, which cost about \$1 million each to build.

[<ReadMore>](#)

Let's be honest – the global warming debate isn't about science

By Dana Nuccitelli, for *theguardian.com*



Anti-carbon tax protesters in Canberra, motivated by politics, not science. Photograph: Torsten Blackwood/AFP/Getty

The 2013 Intergovernmental Panel on Climate Change (IPCC) report states with 95 percent confidence that humans have caused most, and probably all of the rapid global warming over the past 60 years. Approximately 97 percent of climate experts and peer-reviewed climate science studies agree.

There are of course open questions yet to be answered by climate scientists – precisely how sensitive the climate is to the increased greenhouse effect, for example. But even in a best case, low sensitivity scenario, we're headed for dangerously rapid climate change if we continue on our current business as usual path. And the worst case scenario, which is just as likely as the best case scenario, would mean we're headed for a global catastrophe.

The IPCC warns that if we want to avoid very dangerous climate change, we're on track to blow through our allowed carbon budget in as little as two to three decades if we continue on our current path of relying on fossil fuels. If we're lucky and the low sensitivity scenario is accurate, perhaps we'll have an extra decade or two, but even in this best case scenario, we're on an unsustainable climate path.

Politically biased media climate coverage is not a coincidence

The scientific evidence is what it is, and it has no political bias. The same is not true of the media outlets that cover the topic. It's not a coincidence that politically conservative tabloids and newspapers like the Daily Mail, Telegraph, Australian, and Wall Street Journal spend a disproportionate amount of time amplifying the voices of the less than 3 percent of climate contrarian scientists, as well as many non-scientist contrarians.

It's certainly not the case that David Rose has some brilliant insight into the state of climate science that climate scientists don't have. He and his fellow climate contrarians simply approach the question backwards. They start from their political ideological opposition to climate solutions and work backwards, seeking out cherry picked evidence to justify their predetermined conclusions, thus ignoring the 97 percent of inconvenient scientific evidence. This climate contrarianism ideological bias is illustrated in a new study, summarized by Graham Readfearn:

"if you're a conservative who believes the world runs best when businesses operate in a "free market" with little government interference, then the chances are you don't think human-caused climate change represents a significant risk to human civilisation."

Let's debate the solutions

Even if you're not convinced by the scientific evidence, you should support taking action to mitigate global warming. What if you're wrong, as the body of

scientific evidence indicates is the case? There is unquestionably a possible scenario in which our greenhouse gas emissions cause harmful and potentially catastrophic climate damages.

I know what contrarians are thinking – what if I'm wrong, and we end up wasting money deploying green technologies, cleaning the air and water and transitioning away from limited fossil fuel resources in the process? That's why we need everyone helping to craft the best possible solutions to maximize the economic benefit of this inevitable transition.

Take the USA as a prime example. The Obama Administration recognizes the need to reduce greenhouse gas emissions, but Republicans in Congress refuse to even consider any climate legislation. As a result, government greenhouse gas regulations are the only available option. From an economic perspective, it's far from an ideal solution, but because the Republican Party won't participate in crafting better legislation, we're forced to implement less than ideal solutions.

The situation in Australia and Canada is even worse, with politically conservative parties running the governments and refusing to take any action to achieve serious greenhouse gas emissions reductions. The new Australian Prime Minister has even vowed to eliminate Australia's carbon pricing system.

Are you a supporter of the free market? Then advocate for allowing the free market solve the problem by pricing greenhouse gas emissions. The debate should be about how to best achieve greenhouse gas emissions reductions with maximum economic benefit.

[Source](#)

Macy's Adds Fuel Cells In Addition to Solar

SustainableBusiness.com News

Renewable energy use probably isn't what you think about when you shop at Macy's, but the company ranks 6th in the US for corporate use of solar.

Over the summer, Macy's added fuel cells to run an online fulfillment center in Cheshire, Connecticut. Bloom Energy's fuel cells will provide base load energy and will also ensure continuous power in the event of outages. A solar system on the roof comes online next month.

"This Macy's project is one of our first business continuity projects in the northeast, an area hard hit by grid outage events over the last few years," says Bill Thayer, executive vice president of Sales for Bloom Energy. "The Bloom solution will help meet Macy's corporate sustainability goals as well as provide reliable power to keep critical business operations and the facility up and running during disruptive events."

The Clean Energy Finance and Investment Authority of Connecticut (CEFIA) assisted with a \$900,000 grant for the \$5.1 million, 600 kilowatt project.



Macy's has cut energy consumption 37% of the past decade through efficient HVAC, switching to LEDs and energy management systems. "We have really deep commitment to sustainability, whether it involves installing more efficient lighting, solar panels or in this case, a fuel cell," Peter Longo, president of Macy's Logistics and Operations, told *New Haven Register*.

The company has almost 21 megawatts of solar installed at more than 30 stores across the US. Much of that is through power purchase agreements - it buys the energy from SunPower solar systems installed on-site. SunPower also conducts its energy efficiency upgrades.

[Source](#)

Nike, Walmart and Unilever explore the future of fuels

By Felicity Carus, for *theguardian.com*



A UPS delivery van. By the end of 2014, the company will have the most extensive LNG (liquefied natural gas) fleet in the US. Photograph: Mark Richardson/Alamy

Barack Obama's Climate Action Plan, announced in June, stirred environmental campaigners and energy executives around the world. At the Copenhagen summit in 2009, the US president pledged that by 2020 America would reduce its greenhouse gas emissions 17% below 2005 levels.

A dampened economy and the switch to natural gas for electric power generation in the meantime are doing the job of cutting GHGs more effectively than any policy or mandate, with carbon emissions at a 20-year low. However, rising emissions in transportation, which already account for 28% of the economy's greenhouse gases, could put those climate targets out of reach.

Globally, the picture is even more critical as world energy consumption is set to rise by 40% by 2030. "That's like creating an entirely new additional energy industry the size of the one we have today, which is mind-boggling," says Eric Olson, senior vice president at Business for Social Responsibility (BSR) in San Francisco.

Driving online deliveries, fresh produce and all the other goods that criss-cross the US already accounts for 17.5% of the country's total transportation CO2 emissions. Despite standards on fuel efficiency for heavy vehicles, miles travelled and energy consumption are projected to grow faster than any other mode of transport, from 241bn vehicle miles in 2007 to 363bn miles in 2035, according to the Energy Information Agency. Meanwhile, fuel efficiency is only expected to increase from 6mpg in 2007 to 7mpg in 2035.

Creating a greener freight sector

During the past year, BSR has convened the Future of Fuels Forum, comprising 184 fleet operators, energy producers, retailers, truck makers, oil companies and environmental advocates to develop a roadmap towards a more sustainable freight sector. Companies include an A-list of leaders in corporate sustainability (Nike, Walmart, Unilever and Coca-Cola) and more controversial categories in fossil fuels such as BP, Shell and Suncor, a Canadian company specialising in oil sands. UPS, Volvo, GE Foundation and the US Department of Defence have also joined the forum.

"Collectively, these companies and society are driving a likely explosion of demand," he says. "This conversation wasn't taking place anywhere else. So the companies that have spearheaded this programme have already made sustainability commitments. It's a long list and as big as our guys are, they're nowhere near a majority of the market. That's something we need to build to."

BSR will this month convene a stakeholder forum in Washington and an all-day workshop at the non-profit's annual conference in San Francisco in November.

Instead of pure carbon reductions, the initiative is aimed at a holistic approach to more sustainable fuel usage through technology development, efficiency as

the first "fuel" of choice and a price on carbon.

An energy mix

Oil, natural gas, biofuels and electric vehicles seem like obvious "alternatives" but none of those fuels can achieve sustainable solutions alone, says Olsen.

"The one certainty we do have about the future mix is that we will continue to have a diversified portfolio of energy," he says. "Nobody is suggesting that there is any one source, no matter how clean, that can address all of our needs."

[<ReadMore>](#)

Renewable Energy Surpasses Gas in 2015

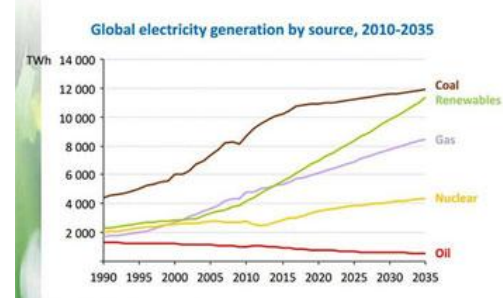
SustainableBusiness.com News

This graph shows projections from the International Energy Agency and as you can see, renewable energy is about to take off to historic highs.

It shows renewable energy growing faster than natural gas around 2015 and almost catching up with coal in 2035.

While it may be surprising that coal is still king that far in the future, that will likely change as countries get much more serious about climate change long before that.

Although Europe used more coal during the "unusual" cold temperatures last winter, the trend is down again. About 28 gigawatts (GW) of coal plants are



slated to close by 2020, while the EU has commitments for 161 GW of new renewable energy capacity by then.

New coal plants that have recently come online in the EU are vastly more efficient and few additional

plants are planned beyond 2015.

China Gets Tough

Even China recently set a national limit on coal consumption - no more than 65% of energy use by 2017, as part of its new, tougher plan to address air pollution (it used 66.8% last year).

Last month, Beijing announced it will cut coal use in half from 2012 levels over the next five years, dropping it to less than 10% of the city's energy mix.

China's new five-year action plan commits to more renewables, nuclear and gas, while cutting dependence on coal. The new national target for non-fossil fuel energy is 13% by 2017 (changed from 15% by 2020). Last year, non-fossil fuels supplied 11.4% of energy.

The country has hit the limits of acceptable levels of pollution in exchange for growth. Companies are even having a hard time enticing executives to relocate there because of it.

The plan sets specific goals for pollution reduction for every city - with targets for 35 pollutants, and an accelerated monitoring program that includes a published list of the top 10 and worst 10 cities for air pollution each month.

Old, polluting plants will be closed in the next couple of years and new ones won't be allowed for industries that face over-capacity.

Heavily-polluting motor vehicles will be banned by 2017 and new fuel economy standards will be accelerated.

[<ReadMore>](#)

World's Largest Solar Concentrating Plant Comes Online

SustainableBusiness.com News

The world's largest concentrating solar plant is now sending electricity to the grid from California's Mohave Desert - Ivanpah Solar Electric Generating System.

Spread out over 3,500 acres, the 377 megawatt (MW) project will supply electricity to 140,000 households in California each year, and more than twice that during peak hours of the day.

The electricity is being sold under a long term power purchase agreement to California utilities, PG&E and Southern California Edison, helping them meet California's Renewable Portfolio Standard of 33% renewable energy by 2020.

Each of three units has a 459-foot high tower containing water that's heated by the circular array of 170,000 mirrors (heliostats) that surround it, tracking the sun throughout the day. When water in the tower is heated, it produces steam which spins turbines that produce electricity. Water consumption is minimized by using a technique called dry cooling to condense steam, important in a desert.

At peak construction, the project employed about 2725 people (more than would be needed to build the Keystone pipeline).

Imagine seeing this in the desert:



months, after which the entire project comes online.

This is BrightSource Energy's first commercial project, which proves its concentrating tower technology. NRG is the lead investor and Google is a major investor in the \$2.2 billion project. Bechtel is charged with engineering, procurement, construction and commissioning. The project received a \$1.6 billion loan guarantee from the Department of Energy and sits on public land leased from the Department of Interior.

Construction started in 2010, but two of three units were temporarily halted because of concerns about endangered tortoise habitat.

"Ivanpah is the showcase project for BrightSource's power tower technology and technical expertise. Validation at this scale demonstrates the viability of our technology as BrightSource increases focus on international markets and applications for concentrating solar power," says David Ramm, Chair of BrightSource. Last year, Brightsource raised another \$80 million, bringing its total to about \$615 million.

An even bigger concentrating solar plant begins construction this year, the 500 MW Palen Solar Electric Generating System in Riverside, California. Its two towers will be much higher - 750-feet tall. It is being built by Brightsource and Abengoa.

Solar tower technology requires less land than solar PV because heliostats can be very close together, and it also cuts water use by half.

Rather than scraping the land of all vegetation, the solar field can be built

around the natural contours of the land, retaining native vegetation under the mirrors, and avoiding areas of sensitive vegetation. Heliostats sit on poles placed directly into the ground without concrete foundations.

[<Source>](#)

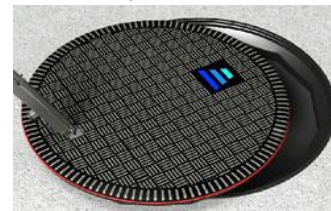
Latest Push to Unplug Electric Vehicles

SustainableBusiness.com News

In the latest attempt to commercialize technology that can cut the cord for electric vehicle (EV) drivers, a former Army Captain thinks he has the answer. NY-based HEVO wants to turn the ubiquitous manhole cover into a wireless charger for electric cars.

"I was looking down and saw a manhole cover and thought, that's the ticket. There are no cords, no hazards. Everything can be underneath the manhole cover," founder Jeremy McCool told *Wired*.

If his concept takes off, drivers could charge their cars on city streets, in parking lots and garages, and even while they drive on highways - no cord or plug needed.



that aren't in use.

"It works the way a tuning fork would," McCool told *Fast Company*. The charge consists of two coils: one connected to the grid in the manhole cover, and the other on the electric vehicle. When the car runs over the manhole, the coils conduct a "handshake," and the manhole delivers a charge on that frequency to the car.

When McCool returned from Iraq five years ago, he vowed to help the US get off fossil fuels. He got a \$25,000 grant from the Department of Veterans Affairs and was accepted by NYC ACRE, the city's new incubator for cleantech startups. NYU-Poly, one of the partners at the incubator is helping HEVO develop the technology.



He's applied for a \$250,000 grant from the NY State Energy Research and Development Authority (NYSERDA) for the testing phase.

McCool hopes his prototype charging station will debut early next year at NYC's Washington Square Park. He says he has commitments for pilot fleet programs from City Harvest, Walgreens, PepsiCo and others. Trucks would charge at Green Loading Zones, permanent charging areas at regular pick-up and drop-off points.

Another start-up, Solar Roadways, achieves the same goals using solar panels embedded in the road or parking lots. Car Charging Group (OTCBB:CCGI) has two patents related to dematerializing the charging process: one embeds wireless charging technology in the ground and the other puts it in what looks like a parking bumper.

Nissan, Volkswagen, Audi, Toyota and Mitsubishi are among about a dozen companies developing wireless chargers, not to mention Volvo's technology, which eliminates the battery altogether.

Whichever technology wins in the end, drivers will eventually be able to charge while parked and driving, and pay for the service wirelessly and automatically.

[<Source>](#)

India Announces World's Largest Solar Plant By Far

SustainableBusiness.com News

Update 10/8/13:

Below we say that India's auction on 750 MW of solar has been delayed. The government is now calling for bids (due Nov. 29) in the first national auction since 2011. Lowest bidders win and will receive as much as 30% of project costs from government grants.

Included is a controversial requirement for local content for half of the 750 MW. Opponents say that will raise the cost and lower the quality of projects because of India's very young solar industry.

India's government made a stunning announcement - it plans to build the world's largest solar plant that dwarfs anything constructed so far.

Imagine one solar plant that can provide power to 3 million Americans - that is what India has in mind.

A 4 gigawatt (GW) solar plant spread over 23,000 acres in Rajasthan (which borders Pakistan) would be four times bigger than the 10 largest US plants combined. For comparison, the biggest project in the world is under construction - the 579 MW Antelope Valley plant in California.

"Being the first project of this scale anywhere in the world this project is expected to set a trend for large scale solar power development in the world," says India's government.



India's biggest solar park:

The first gigawatt would come online in 2016 and other phases would be implemented based on that success. Skeptics question whether a plant of this size can be completed in just three years.

A joint venture among five government-owned utilities, the Sambhar Ultra Mega Green Solar Power Project would produce the same amount of power as four coal plants that are under construction. In addition to helping the country reduce dependence on coal, that much solar would be a boon in India, where 100,000 people die each year from coal plant pollution.

Building such a massive solar project is intended to help bring solar prices in line with coal, but because the government requires more expensive "low carbon" forms of coal, even India's biggest coal company is turning to solar. Solar is already competitive with diesel and is expected to achieve parity with coal between 2016-2018.

Funding could come from India's recently approved Corporate Responsibility law, which requires all large companies to kick in 2% of annual net profits for socially responsible projects.

Grid improvements will be necessary to incorporate this much solar, which the government embarked on last week through a Smart City partnership with IBM.

This massive project is completely separate from India's National Solar Mission, which is taking a hit from contradictory signals. 750 MW of projects have been delayed - and will be approved for auction soon - but there "appears to be no impediment to the announcement of grandiose new schemes," notes *CleanBiz.Asia*.

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Indian cities squeeze out cyclists

By Kavitha Rao, for *theguardian.com*



A man pushes his bicycle through floodwaters in Allahabad, India, as many areas in the state are inundated from prolonged monsoon rains. Photograph: Sanjay Kanodia/AFP/Getty Images

This week, Indian environmentalist Sunita Narain was hit by a car in New Delhi, while on her daily morning cycle ride. The intrepid Narain underwent nine hours of surgery, but still managed to get her message out, "Cyclists are being edged out of Indian cities to make way for cars."

Narain's accident has emphasised just how unsafe Indian cyclists are. Of course, it must be said that all drivers are unsafe in chaotic Indian traffic. It's just that cyclists are especially vulnerable. In an ironic tragedy, national cycling coach Ruma Chatterjee was killed this June in another hit and run, despite being part of a large and visible group. This month, Kolkata (formerly Calcutta), banned cyclists in its main streets, though they are still allowed to ride in bylanes, despite the fact that the cycle-happy city is the only one in India where cycles are used more than cars. The government claimed that it would reduce congestion in the city's jammed streets, while greens and cyclists protested.

But it's not greens who stand to suffer most from India's cycle-unfriendly streets. It is the poor. Most of India's lower class cannot afford any other form of transport. Buses are sporadic, autos expensive and cars out of the question. Most services essential to the middle and upper class - milk, newspapers, food deliveries, letters, lunchboxes - are usually delivered by cycles in many Indian cities. Security guards, couriers, plumbers, electricians and those who earn a daily wage - all the people that keep urban Indian homes running - often cycle to work.

Mumbai's famed dabbawallas (lunchbox delivery services) pick up lunchboxes on cycle rides that may involve carrying a fifty kilo load for over three hours. In rural areas, cycles may be the only form of transport, carrying everything from chickens to planks, all lashed on precariously. In the poor Indian state of Bihar, a government scheme to supply bicycles to girls has resulted in a 30% increase in school attendance, and has revolutionised education in the state. When floods and other national calamities hit, it is often the cycle that keeps going when buses and trains stop.

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Goldman and Deutsche back India Coal despite their environmental standards

By Marc Gunther, for *theguardian.com*



Four banks touting sustainability initiatives are underwriting a Coal India offering.
Photograph: Mukesh Gupta/REUTERS

If you're an investor seeking to profit from the coal industry and you're indifferent to the issues of climate change, forest destruction and human rights, **Bank of America, Goldman Sachs, Credit Suisse** and **Deutsche Bank** have a deal for you.

The four US and European banks, along with Indian investment banks **SBI Capital Markets, JM Financial** and **Kotak Mahindra Capital Co.**, are managing a share offering in **Coal India**, one of the world's biggest coal mining companies.

They're doing so despite Coal India's **dismal environmental record**, despite the climate impacts of burning coal, despite allegations that the **state-owned firm has run roughshod over tribal communities** and despite objections by the Sierra Club, Greenpeace and the Rainforest Action Network, as well as by Indian environmentalists.

They're also doing so despite their own rhetoric about sustainability and corporate responsibility:

Bank of America: "Bank of America has achieved many significant environmental milestones. In the future, we'll continue to use our expertise, capital and influence to drive change."

Goldman: "As a firm, we depend on strong and sustainable economies and communities to survive and thrive. We take seriously our responsibility for environmental and social stewardship."

Credit Suisse: "We are committed to sustainability. ... All employees of Credit Suisse bear responsibility for considering environmental and social issues in their professional activities and when taking business decisions."

Deutsche Bank: "We apply high environmental and social standards to our business to support a sustainable future."

Really?

Greenpeace and Rainforest Action Network together urged Bank of America, in particular, to steer clear of Coal India last month. Activists highlighted the issue at the bank's annual shareholder meeting.

As Ashish Fernandes, US-India advisor at Greenpeace, puts it:

"To have the bank persist with its partnership with Coal India leaves one with the impression that 'sustainability' is just a fancy word to CEO Brian Moynihan and his team."

Greenpeace India has published several well-sourced reports on Coal India that allege, among other things, that **coal-fired power plants cause 85,000 to 115,000 deaths** and many more serious illnesses annually in India; that **coal mining practices violate constitutional rights of forest dwellers** in rural states; that the company has failed to police its mines to eliminate child labor; and that **Coal India has overstated its reserves**, creating financial risks for

investors. It's difficult to know whether these charges are valid, but independent reporting in **The Guardian, The New York Times** and **The Economic Times of India** lends credence to at least some of the allegations.

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India's e-waste burden

By Leah Borromeo, for *theguardian.com*



Brigade Road, Bangalore. The city produces around 20,000 tonnes of e-waste per year and the figure's rising. Photograph: 19697.000000/Getty Images

The Indian city of Bangalore produces some 20,000 tonnes of e-waste per year, according to a report by Assocham, the Association of Chamber of Commerce and Industry of India. This figure is rising at a rate of 20% per year and the report's authors forecast the amount of computer waste across the country could increase by nearly 500% by 2020.

With a population of 8 million people, Bangalore has emerged as a global telecommunications and technology hub shouldering 40% of India's IT industry. Since the economic liberalisation of the 1990s, major international firms such as Infosys, Intel and Microsoft have opened bases there along with nearly 3,000 software firms, 35 hardware manufacturers and hundreds of other small scale businesses – turning this once lush farmland into India's Silicon Valley.

More than 500 Bangalore-based companies generate an annual revenue of over \$17bn (£10.5bn) – a healthy portion of India's \$85bn total tech-based export that started life as outsourcing and back-office centres. Have you ever phoned your mobile phone company and been put through someone in India? They may well have been in Bangalore.

The Karnataka State Pollution Control Board (KSPCB) set up a formal recycling system for e-waste to deal with Bangalore's growing tech dump. But awareness of the e-waste management and handling rules is poor.

Up to 90% of this waste is still handled through the informal sector – by firms who employ low-paid workers to process and incinerate e-waste. The people who do this are unaware of safety measures needed for the work. They release lead, mercury and other toxins into the air and use acids to extract precious metals from hardware. What can't be got out is unceremoniously dumped – letting pollutants seep into groundwater.

Hal Watts, a designer who trained at the Royal College of Art's sustainability wing, SustainRCA, has devised a bicycle-powered machine that separates valuable copper from electronics. Copper is used in all circuit boards and within most wires. Its ubiquity is what makes it a valuable commodity for people who scavenge through piles of e-waste and sell the copper on.

"All recycling technologies have been designed with large western recycling plants in mind," says Watts. "There is almost no equipment that is affordable enough for the informal recycling sector because no single recycler deals with enough waste to afford these large machines."

"The informal recycler breaks up waste, sells the copper to one guy, the plastic to another, the circuit boards to another etc. These guys amass their material and sell it to an exporter who then flogs it to a recycling plant often located in a developed country."

Countries such as Singapore, Belgium and Japan have smelting units that extract precious metals the human eye can't see.

Further up the recycling chain are start-ups like Karma Recycling. Based in New Delhi with a nationwide expansion plan to open a hub in Bangalore, Karma targets end users and consumers.

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Forthcoming Events

INDIAN SUSTAINABILITY CONGRESS

4th & 5th December, 2013

Bangalore

The **Indian Sustainability Congress - 2013** is being organized by **Foundation for Educational Excellence, Karnataka** on 4th and 5th of December, 2013. It will also host an exclusive Exhibition for two full days i.e. on the 4 - 5 of December at Vivanta by Taj at Bangalore, parallel to the Conference and Awards. Indian Sustainability Congress intends to engage with the Departments of the Government of India, Government of Karnataka, International Organizations, Research Institutions and Associations working towards growth of Sustainable Technologies and Products. Various Indian and International Enterprises working in building the Sustainable Technologies and Products will exhibit and demonstrate their expertise in the area of Sustainability.

The purpose of the Indian Sustainability Congress is to exchange emerging ideas and explore Technologies towards protecting the environment and optimizing natural resources so as to achieve sustainable development and societal benefits through the generations. The congress will provide a common platform for engineers, researchers, innovators, practitioners, investors to interact and collaborate to achieve overall sustainability from a systems perspective, using engineering & technological innovations.

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The London Symposium on the Environment, Globalization and Sustainability

7 and 8 December 2013

LONDON, UK

London Symposium on the Environment, Globalization and Sustainability will be held on 7 and 8 December, 2013 at **THE OXFORD AND CAMBRIDGE CLUB, LONDON**. This interdisciplinary conference is an opportunity for scientists and policy makers to present papers and engage in discourse relevant to sustainability, human welfare and progress. The research topics include Politics of Climate Change, Energy and Ecology, Environmental Ethics, Trade Liberalization and Global Warming, Capitalism and Climate Change, Environmental Monitoring, Environmental Impact Analysis, Energy Policy Innovation, US, China and India etc. It is expected that delegates from various countries of Asia, Europe, Africa, Australia, etc will be participating in the conference.

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Forthcoming Events

Global Conference on Energy Security and Sustainability

11 & 12 December, 2013

New York, USA

The UN Conference titled **Global Conference on Energy Security and Sustainability** is being organized at UN head quarters in New York. The United Nation's declaration that 2014-2024 is *The Decade of Sustainable Energy for All* is a call to action for the international community across the wide spectrum of industry, governments, academia, and grassroots organizations. Global Energy Initiative, through the *Global Energy Conference on Energy Security and Sustainability*, seeks to provide a unique opportunity for this diverse array of stakeholders to convene and share vision and action for achieving *Sustainable Energy for All*. Global Energy Initiative's core mission of fighting energy poverty, protecting the environment, and mitigating the effects of climate change will serve as guiding principles for the *Global Conference on Energy Security and Sustainability*.

The attendees will include Government officials/diplomats, Industry leaders, Academics, NGO leaders and young professionals from all over the world. One of the unique aspects of the conference is that it will be comprehensively inclusive and will offer a forum for open discourse across sectors and groups. To that end, efforts will be made to provide equal representation and opportunities to developed and developing nations as well as to encourage traditional and renewal energy sectors to discuss and collaborate on shared strategies to facilitate a seamless transition from a fossil based global economy to a clean energy global economy.

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VII WAC 2013 UNIVERSAL CONFERENCE

11TH to 13TH December, 2013 NEW DELHI, INDIA

Realizing the need to unify diverse efforts being put forward by various individuals and organizations, Aqua Foundation is organizing VII World Aqua Congress on the topic of "Balancing Five Elements Strategically towards sustainability. The conference is taking place from 11th to 13th December, 2013 at India Habitat Centre, New Delhi. The chairman of the conference is Prof M.S. Swaminathan, Member of Parliament (Rajya Sabha), Emeritus Chairman, M.S. Swaminathan Research Foundation and the co-chairman is Dr. R. K. Pachauri, Director General, TERI.

This is the first ever conference, integrating all the basic building blocks of nature together. Conference aims to invite contributions from individuals, spiritual beings, scientists and researchers from a diverse background i.e. Water, Earth Sciences (geology, geophysics, geochemistry etc.), Agriculture, Air, Space sciences, Energy (hydro, thermal, nuclear, solar and other unconventional), traditional wisdom, enabling wholesome integrated discussion on sustainability. The themes of conference are Understanding Panch – Tatwa building blocks of Humans & the Universe, Integration for Sustainability, Earth- Understanding beyond soil, Water- Management & Integrated Approach, Air- The interconnectedness & approach for balance, Water, Energy & Food Security, Space- The losing battle and Reviving the traditional systems.

[<Brochure>](#)

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Forthcoming Events

International Conference on Environment & Energy (ICEE 2013)

16 – 17 December, 2013

Colombo, SRI LANKA

An “**International Conference on Environment and Energy**” is being organized at **Galadari Hotel Colombo, Sri Lanka** on 16th and 17th December 2013. In this conference presenters from various countries and different parts of world are expected to participate. Countries like Australia, Bahrain, Canada, China, France, Germany, India, Japan, Malaysia, Sri Lanka, US and UK feature amongst the participating countries.

Theme of the conference include very important subjects like Global environmental change and ecosystems management, Environmental restoration and ecological engineering, Environmental sustainability, Wastewater and Treatment, Air Pollution & Control and Solid Waste Management. This is the premier forum for the presentation of new advances and research results in the fields of Environment and Energy Systems. The conference is beneficial for environmental academics, practitioners, and other interested persons. This conference provides opportunities for the delegates to exchange new ideas and application experiences face to face, to establish business or research relations and to find global partners for future collaboration.

[<ReadMore>](#)

6th International Congress of Environmental Research (ICER-13)

19th to 21st December, 2013

AURANGABAD (Maharashtra)

Journal of Environmental Research and Development (JERAD), an International, Inter-disciplinary Research Journal of Natural Sciences, Technology, Social Sciences, Law and Management for Environment is organizing a conference “**6TH INTERNATIONAL CONGRESS OF ENVIRONMENTAL RESEARCH (ICER-13)**” in Aurangabad, Maharashtra during 19 – 21, December, 2013. The theme of the conference is Environmental Research, Planning and Management, there are various topics of interest under sub-themes: Technology, Physical Sciences, Life Sciences, Social Sciences and Law & Management.

[<ReadMore>](#)

*Deccan Chronicle, Hyderabad dated
September 26, 2013*

■ CSR spending to determine cos' ranking

CSR: Measure of goodness

New Delhi, Sept. 25: As India Inc gears up for mandatory CSR spending from the next fiscal, a new index is now in the works for ranking companies on the basis of their efforts and spending towards social welfare schemes.

The index, being prepared by the India Institute of Corporate Affairs and leading stock exchange BSE, would rank the companies in different bands and their performance would be monitored dynamically on the basis of their reporting of CSR (Corporate Social Responsibility) activities.

"The reporting time for CSR activity of corporate India would be financial year 14-15," Indian Institute of Corporate Affairs director general and CEO Bhaskar Chatterjee said at a seminar organised by Centre for Ethical Life and Leadership (CELL).

Asked when the CSR index would come into

A CSR index is in the working to rank 8,000 firms based on their efforts and spending towards social welfare activities.



THE JOY OF GIVING

Measuring points

- The proposed CSR Index would assess impact and performance of companies listed on the BSE in CSR activities.
- The CSR Index would be out within eight months i.e. after fiscal year 2014-15.

force, he said, "We are looking for a time frame of eight months or so after fiscal year 14-15."

Commenting on the CSR policy, S.Y. Quraishi former chief election commissioner of India and chairman of CELL said: "India's CSR Act is a landmark initiative, a first in the world, to involve the business in achieving national development goals together with the government and civil society." The proposed CSR Index would assess

impact and performance of companies listed on the BSE in CSR activities. It would also look at the performance of the companies who are mandated to spend two per cent of their profits on CSR activities as per the new Companies Act.

The performance of the companies in CSR areas would be combined with the market performance of companies for selection of companies and the Index would be sector neutral. —PTI

*The Times of India, Delhi dated
September 26, 2013*

1 of 5 sewage treatment plants non-operational

CLEANING THE MESS

- Discharge of untreated sewage is the most important water polluting source in India
- Out of 38,000 million litres per day (MLD) of sewage generated in cities and towns, treatment capacity exists for only 12,000 MLD



Status of municipal waste water generation and treatment capacity of metropolitan cities

- Among the metropolitan cities, Delhi has the highest capacity of sewage treatment (2,330 MLD) - 29% of total treatment capacity in metropolitan cities
- Delhi and Mumbai together have 55% of treatment capacity of metropolitan cities
- Treatment capacity meets the volume of sewage generation only in five cities—Hyderabad, Vadodara, Chennai, Ludhiana and Ahmedabad
- 27 cities have their treatment capacity less than 50% of sewage generation

Vishwa Mohan | TNN

New Delhi: Almost one-fifth of the centrally-funded sewage treatment plants in the country are "non-operational", leading to millions of litres of untreated water either seeping into the ground as potential pollutant of groundwater or being discharged into natural drainage systems and rivers every day.

Besides, performance of another nearly one-fifth of the 152 sewage treatment plants (STPs) was found to be unsatisfactory.

The findings are part of a report of the Central Pollution Control Board (CPCB) which conducted performance evaluation of sewage treatment plants. The report said, "Out of the 152 STPs, nine plants are under construction, 30 are non-operational and performance of 23 plants are not satisfactory."

The board, which made its report public on Tuesday, evaluated only those plants which were funded under the national river conservation plan of the ministry of environment and forests (MoEF). These plants are, however, being operated by local civic bodies.

Against the collective sewage treatment capacity of 4,716 million litres per day (MLD) of 152 STPs, these plants actually treat only 3,126 MLD of sewage with capacity utilization of 66%. The board found that the plants located in different states worked at different levels of efficiency.

"Close examination of the data indicates that the per cent 'capacity utilization' is maximum in the

states of Gujarat, Punjab, Haryana and Goa," the report said.

Noting that 80% of the water supplied for domestic use came back as waste water, the report said, "A significant volume of waste water is not subjected to any treatment and is ultimately discharged into surface water bodies leading to deterioration of water quality."

In order to protect water quality of rivers, the central government had established National River Conservation Directorate in the MoEF to provide technical and financial support to state governments for development of sewage treatment capacities of those municipalities which were discharging their waste water into natural water bodies.

Though the recent performance evaluation was restricted to 152 STPs having capacity to treat merely 4,716 MLD of sewage, the CPCB's previous reports may be recalled to show how Indian cities face huge shortage of sewage treatment capacity. The 2005-06 report (the last one which carried this study on status of municipal waste water generated in 35 metropolitan cities) showed that these cities generated 15,644 MLD of sewage. But these cities had sewage treatment capacity of only 8,040 MLD (51% of the total sewage).

The board had subsequently come out with a report in 2009-10 evaluating sewage treatment capacities of 498 Class-I cities having population more than one lakh as per 2001 census. This report had also presented a grim picture of sewage treatment capacity in the country.

The Times of India, Delhi dated September 26, 2013

City's greens are highly fragmented

Though Total Area Has Climbed To 20%, Forests Are Mostly On The Outskirts

Jayashree Nandi | TNN

New Delhi: The government has been congratulating itself on how Delhi's green cover has increased over the years from 1.48% in 1993 to about 20% in 2011. However, these forests are highly fragmented. Delhi has little islands of forest, especially in the fringe areas, but that doesn't help in enriching biodiversity or maintaining the health of the forests.

For 15 years the government hasn't fixed responsibility for Delhi's forests, and management of the Ridge has become extremely diluted between Delhi Development Authority (DDA), New Delhi Municipal Council (NDMC) and the municipal

corporations. The lack of clarity on which parts of Delhi are forest has led to several private and public projects encroaching on the Ridge. The National Green Tribunal pulled up the Delhi government recently for "creating an unmanageable situation" by not making clear which regions of the Ridge are being considered as forest area.

The Delhi forest department has just embarked on an exercise to finally demarcate forest land through remote sensing maps. But this may take long to complete. Ambiguity over Delhi's forest area may not resolve before the elections, as this may mean losing the vote bank of unauthorized colonies thriving inside forests.

"Delhi has done an excellent job by having good forest cover. But that is not an indicator for the health of the forests. The house sparrow, for instance, serves as a good indicator of the ecological qual-



ity. The fact that the rock pigeons have overtaken Delhi hints at an imbalance. We have to look at maintaining and securing native forests," says urban biodiversity expert Neeraj Khara. The government did declare the house sparrow as the state bird last year but did not do much to bring it back.

Delhi has also failed to capitalize on solar energy. According to a recent analysis by Greenpeace India, just 1% of Delhi's total power generation is solar. Delhi's performance on the renewable purchase obligation front is also abysmal. RPO is a government regulation that makes it obligatory for state electricity regulatory commissions to buy a certain percentage of electricity generated from renewable sources but Delhi met 0% of its target in 2012.

Things are slowly starting to move. A 100KW scheme for Vikas Bhawan has been commissioned, tendering has started for another 100KW project for Delhi secretariat. The government is also working on a 1MW pro-

ject which will be divided in two parts. One half of it—500KW—will be installed by Delhi Metro Rail Corporation (DMRC) on some of their stations, another 500KW will be installed by the environment department. But experts feel Delhi hasn't been ambitious enough and acted slow on renewable energy.

"The current policy lacks ambition. They want to add just 62MW in the next five years when the whole city is reeling under power crisis, and coal-based electricity is not only expensive but also limited," said Avishek Pratap, renewable energy campaigner, Greenpeace India. Delhi is one of the 14 cities that will get funds from the Centre to become a solar city.

N-waste to power US for 800 years?

Bill Gates-Led Project Plans A Reactor That Can Cut Risk Of N-Arms Proliferation

Matthew L. Wald

Bellevue (Washington): In a drab one-storey building here, set between an indoor tennis club and a home appliance showroom, dozens of engineers, physicists and nuclear experts are chasing a radical dream of Bill Gates.

The quest is for a new kind of nuclear reactor that would be fuelled by today's nuclear waste, supply all the electricity in the US for the next 800 years and, possibly, cut the risk of nuclear weapons proliferation around the world.

The people developing the reactor work for a start-up, TerraPower, led by Bill Gates and a fellow Microsoft billionaire, Nathan Myhrvold.

So far, it has raised tens of millions of dollars for the project, but building a prototype reactor could cost \$5 billion—a reason Gates is looking for a home for the demonstration plant in rich and energy-hungry China. "The hope is that we'll find a country, with China being the most likely, that would be able to build the demo plant," Gates said last year to energy expert Daniel Yergin. "If that happens, then the economics of this are better than the plants we have today."

Today's nuclear reactors run on concentrations of 3 to 5% uranium 235, an enriched

ATOMIC GOAL

Scientists are in quest for a new kind of nuclear reactor that would be fuelled by nuclear waste. Building a prototype reactor could cost \$5 billion

PLUS POINTS

- Countries would not need to enrich uranium in the quantities they do now, undercutting arguments that they have to have vast stores on hand for a civilian programme
- The new concept would also blunt the logic behind a second route to a bomb: recovering plutonium from spent reactor fuel, which is how most nuclear weapons are built. Since so much uranium 238 is available, there would be no reason to use that plutonium

fuel that leaves behind a pure, mostly natural waste, uranium 238. In today's reactors, some uranium 238 is converted to plutonium that is used as a small, supplemental fuel, but most of the plutonium is left behind as waste.

In contrast, the TerraPower reactor makes more pluto-

WORK IN PROGRESS

It is a very long-term bet and will likely take until at least 2030 to commercialize the technology

FLIP SIDE

It is a very long-term bet and will likely take until at least 2030 to commercialize the technology



REDUCING WASTE

► Today's nuclear reactors run on concentrations of 3-5% uranium 235, which leaves behind natural waste, uranium 238. Some uranium 238 is converted to plutonium that is used as a small, supplemental fuel,

but most of it is a waste

► In contrast, the new TerraPower reactor makes more plutonium from the uranium 238 for use as fuel. Thus, it can run almost entirely on uranium 238. It would need only a small amount of uranium 235

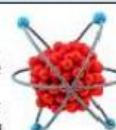
BIGGEST CHALLENGE

► Neutrons—the particles released when a uranium atom is split in a reactor—damage a reactor's metal parts. In today's reactors, the problem is manageable because the fuel stays in place for no more than six years and can stand the bombardment. But the TerraPower fuel is supposed to stay in place for 30 years

► Another problem is that when uranium is split, some of the fragments are gases. This is tolerable in current fuels, but no fuel could hold a 30-year accumulation

NOT THE ONLY ONE

General Atomics, which has decades of experience in nuclear power, is pursuing what it calls an "energy multiplier" reactor module on the same general principal. General Atomics, which is based in San Diego, would use helium, not sodium, potentially simplifying some problems



to enrich uranium in the quantities they do now, undercutting arguments that they have to have vast stores on hand for a civilian programme. TerraPower's concept would also blunt the logic behind a second route to a bomb: recovering plutonium from spent reactor fuel, which

is how most nuclear weapons are built. Since so much uranium 238 is available, there would be no reason to use that plutonium, TerraPower says.

But no one disputes that this is a long-term bet. Even optimists say it would take until 2030 to commercialize the technology. NYT/NEWS SERVICE

*Deccan Chronicle, Hyderabad dated
September 27, 2013*

The Times of India, Delhi dated September 27, 2013

Greens fight to save Kothaguda forest

DC CORRESPONDENT
HYDERABAD, SEPT. 26

In a fight to save the Kothaguda reserve forest area nearly 300 people from 16 welfare associations, Hyderabad Runners' Club, Aam Aadmi Party and the Botanical Gardens Walkers' Association held a protest outside the APPCB office on Thursday. Green Peace activists were also part of the protest.

It was the second protest to pressurise the State-Level Expert Appraisal Committee, which currently functions from the APPCB office, against giving an Environmental Clearance Certificate to the eco-tourism project at the Kothaguda reserve forest area. The protesters said they fear that the ₹6,000-crore project will be passed under pressure from those

with vested interests and political influence.

A.V. Reddy, general secretary of the Botanical Gardens Walkers' Association, said "When the project is in violation of the Environment Act, why is there a delay in taking a call on it? When even Jairam Ramesh has sidelined it, why are they (SLEAC) trying to revive it? The user agency has installed pillars, having felled about 5,235 trees."

However, Anji Reddy, the SLEAC chairman, said, "Every month, we meet... I am not sure how many more meetings are required... From the time the project was sanctioned until now, there have been changes in human habitat around the area. After evaluating all the aspects, the board will take a decision."

IPCC's climate report today

Vishwa Mohan | TNN

New Delhi: The much-awaited summary report of the UN's body on climate change will be released in Stockholm on Friday, answering a number of questions on the state of global warming, which will help policy makers across the world chart out their course of action before arriving at a new climate deal in Paris in 2015.

Have global temperatures risen due to climate change or have they actually come down as suggested by sceptics? How

much has it affected the sea level and is the Arctic ice pack shrinking? The summary report is likely to answer these questions.

Though two 'leaked' draft reports of this body — the Intergovernmental Panel on Climate Change (IPCC) — in the western media point at contradictory findings in terms of degrees of global warming, there is unanimity that the report will raise the "level of certainty" while concluding that humans are responsible for changes that warmed the ocean, melted

snow and ice, raised the global mean sea level and changed some climate extremes.

One of the leaked draft reports of the IPCC claimed that it was almost 95% certain that humans were responsible for global warming, as against 90%, which was stated in its last report in 2007. Some of the media reports have also said that the leaked drafts state that the warming is likely to be above 1.5 degrees Celsius and very likely to be below 6 degrees Celsius.

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

*The Times of India, Delhi dated
September 27, 2013*

Capital's air quality monitoring best

TIMES NEWS NETWORK

New Delhi: Bus ridership in Delhi has dropped from 60% in 2000 to 41% now. Every year, Delhi needs an area the size of 310 football fields for parking its vehicles. And Delhi has one of the highest particulate matter (PM10) levels in South Asia.

These are some of the findings of a recent Centre for Science and Environment (CSE) assessment of air pollution and policies of different cities in dealing with it. That gives you a comprehensive picture of the growing vehicular population and the resultant pollution. However, bus ridership may have been affected by the switch to Metro.

But it's not all gloomy. Delhi has the most robust, real-time air quality monitoring system which in many ways is far ahead of other cities.

The city has the largest capacity for continuous monitoring and reporting of tiny particles of less than 10 micron size (PM10) and less than 2.5 micron size (PM2.5), nitrogen oxide (NOx), sulphur dioxide (SO2), carbon monoxide (CO), ozone (O3), ammonia and air toxics,

NOT TOO GOOD, NOT TOO BAD

- Delhi has the **highest number of cycle trips**
- City needs an area the size of **310 football fields to park its vehicles**. Chennai needs space equivalent to 100 football fields, Chandigarh 58 and Bhubaneswar 30
- Delhi has one of the **highest exposures** to vehicular emissions in the world. Its **exposure quotient is 100 if**, next only to **Kolkata with 150 if in Asia**. (If is measured as grams of vehicle pollution inhaled per grams of vehicle pollution emitted)



What other cities are doing

- Mumbai has highest number of walk trips
- Small towns like Gangtok have taken steps like completely pedestrianizing the heart of the city
- Kolkata has banned cycles in certain parts

including benzene, xylene and toluene. It also reports data on toxics like polycyclic aromatic hydrocarbon (PAH), lead and nickel. It also provides historical data for the previous seven days with meteorological data, including wind speed and direction, ambient temperature, humidity and solar radiation. This helps both people and scientists keep track of everyday air pollution.

CSE has also commended

Delhi for reversing the cap on the number of auto-rickshaws. The Delhi government has managed to put auto-rickshaws on a GPS tracking system (still in the process) and the drivers are being issued smart cards for proper enforcement. Recently, the city prepared street design guidelines which incorporate vending zones, three-wheeler stops, road furniture and pedestrian-oriented lighting. The assess-

ment was released at a day-long discussion on Thursday with stakeholders and environment department representatives from across the country.

Sanjiv Kumar, environment secretary, Delhi, who made a brief presentation on Delhi's policies, said that the pollution problem in the capital cannot be tackled just by taking steps in Delhi. "Delhi is also bearing the impact of pollution from sources outside Delhi in NCR," he said.

Sanjiv Kumar said Delhi government's department of health is working on guidelines to brief people about the health impact of air pollution. "We are struggling with enforcement issues as a lot of non-commercial vehicles are entering Delhi from Gurgaon which also adds to air pollution," he said.

CSE executive director Sumita Narain said it's time that India is considered as one air shed. "It's time all cities and towns across India had Euro 4 fuel norms. Smoke plumes and wind factors affect the entire country. Why should some cities have clean fuel while others don't?" she asked.

*The Times of India,
Lucknow dated
September 27, 2013*

Workshop on e-waste mgmt

Lucknow: PHD Chambers of Commerce and Industry in association with the ministry of environment and forests organized a workshop on 'E-waste management- challenges, prospects and strategies' on Thursday at PHD house. Minister for state of science and technology Abhishek Mishra said that he would take up the issue of e-waste management with the top policy makers of the state.

The Times of India, Delhi dated September 27, 2013

World's first nanotube computer built

New Carbon-Based Transistors Use Less Energy & Run Faster Than Silicon Chips

Palo Alto (California): A group of Stanford researchers has moved a step closer to answering the question of what happens when silicon, the standard material in today's microelectronic circuits, reaches its fundamental limits for use in increasingly small transistors. In a paper in the journal *Nature* on Wednesday, the researchers reported that they had successfully built a working computer — albeit an extremely simple one — entirely from transistors fashioned from carbon nanotubes. The nanotubes have long held the promise of allowing smaller, faster and lower-powered computing, though they have proved difficult to work with.

The computer can right now perform only basic functions at speeds likened to a 1950s computer, but the tiny machine was hailed as a breakthrough in the search for an alternative to silicon transistors. Carbon nanotubes (CNTs) are rolled-up, single-layer sheets of carbon atoms — tens of thousands can fit into the width of a single human hair. They are pliable and have



BIG BOOST: The new technology raises hopes of future computers that are smaller, faster and more efficient

the highest strength-to-weight ratio of any known material. Silicon is a good semiconductor but cannot be reduced to such a thin layer. Experts believe the structure of CNTs may make them better at carrying currents — thus yielding transistors that are faster, more energy efficient and smaller than silicon.

"People have been talking about a new era of carbon nanotube electronics moving beyond silicon," said Stanford professor Subhasish Mitra, who led the research. "But there have been few demonstrations of complete digital systems using this exciting technology. Here is the proof."

The computer is just a few square millimetres in size and able to perform basic counting and number-sorting functions using 178 transistors each holding between 10 and 200 nanotubes. It runs at 1 kilohertz — a processing capacity millions of times

weaker than today's computers. The 178-transistor limit was due to the team using a university chip-making facility rather than an industrial process, meaning the computer could in theory be made much bigger and faster, a statement on the study said. The machine ran a basic operating system that allowed it to multitask and swap between the two processes, it added.

Mitra and his team had been able to deal with two inherent shortcomings of CNT transistors: the tubes do not always grow in perfectly straight lines, which means that mispositioned ones can cause a short circuit, while others changed form and couldn't be switched on and off. The team devised a method to burn up and eliminate the uncontrolled CNTs in a transistor and to bypass mispositioned ones. AGENCIES

'Global warming on, despite recent cool-off'

Amit Bhattacharya | TNN

New Delhi: That average global temperatures have hardly shown an increase in the past 15 years (1998-2012), is often used by climate change sceptics as proof that human-induced global warming threat is exaggerated. The IPCC's Summary for Policymakers report addresses the question directly, arguing that the current slowdown in global warming will not affect long-term rise in temperatures.

Global temperatures have on average risen by 0.12 degrees Celsius per decade since 1951 but the warming rate in the 1998-2012 period is considerably lower at 0.05 degrees C.

The report attributes a number of reasons for this slowdown. One, it says, 15 years is too short a period for making generalizations. "Due to natural variability, trends based on short records are very sensitive to the beginning and end dates and do not in general reflect long-term climate trends," it says.

"If you take away the first year — 1998, which was exceptionally hot because of a strong El Nino — the graph looks very different," says Krishna Achuta Rao of IIT Delhi, one of the lead authors of a forthcoming IPCC report. The report says the slowdown in warming since 1998 could be due to two factors. One, the Earth retained less heat during this period primarily due to volcanic eruptions and a downward phase in the 11-year solar cycle. And two, much of the energy generated by global warming went into the ocean.

The Times of India, Delhi dated September 28 2013



UN panel 95% sure humans causing global warming

Vishwa Mohan & Amit Bhattacharya | TNN

New Delhi: There is more certainty than ever before that earth is warming under "human influence", said a report compiled by the UN's Intergovernmental Panel on Climate Change (IPCC), warning that only "substantial and sustained reduction" of greenhouse gas emissions will limit the disaster of climate change.

IPCC raised the likelihood of human activities causing global warming from "very likely" in its 2007 report to "extremely likely" — moving from being 90% sure to 95%.

Releasing the Summary for Policymakers, the first part of its fifth assessment report in Stockholm on Friday, IPCC scientists said global warming had resulted in an average sea level rise of 19cm since 1901 and an increase in surface temperature by 0.85 degrees Celsius between 1880 and 2012. Compared to the fourth assessment report released in 2007, the report tones down its temperature rise projections for the end of this century from the earlier range of 1.1-6.4 degrees C to 0.3-4.8 degrees. But scientists associated with IPCC said the two ranges were not comparable as they were based on very different sets of scenarios.

In what may help India's position in climate negotiations, thereport put the blame for warming on the atmospheric concentration of carbon dioxide (CO2) more than methane, hydrofluorocarbons (HFC) and black carbon — which are present in smaller quantities in the air and exist for much shorter periods. Developed countries have been pressuring emerging nations such as India to cut

FOR WORLD

► Global warming is unequivocal. Many observed changes since 1950s **unprecedented over millennia**

► 1983-2012 period likely the **warmest in 1,400 years**. Global temp rise may exceed **1.5°C** by 2100

► 'Extremely likely' that **human influence** has been dominant cause of warming since 1950

► Oceans will continue to warm, **affecting circulation**

HEAT IS ON, MORE THAN EVER

► Alarming retreat of Arctic sea ice, north snow cover **down 11.7% per decade**

► **0.19m rise in sea level** during 1901-2010. By 2100, rise likely to be 0.26-0.98m

► Frequency & duration of **heat waves to increase**

FOR INDIA

► Monsoon winds likely to weaken, but **rain will intensify**. Monsoon season likely to **lengthen**

► Extreme rain may become **more intense & frequent**

'Cool-off doesn't change big picture'

The current slowdown in global warming will not affect long-term rise in temperatures, IPCC's Summary for Policymakers report says. Global temperatures have on average risen by 0.12 degrees Celsius per decade since 1951 but the warming rate in the 1998-2012 period is considerably lower at 0.05 degrees C. That average global temperatures have hardly shown an increase in the past 15 years (1998-2012), is often used by climate change sceptics as proof that human-induced global warming threat is exaggerated. **P 20**

► Main factor, P 20

emissions of these short-lived gases while the latter have been demanding the West undertake more meaningful cuts in CO2 levels. The issue is sure to be raised when policymakers from across the globe gather in Warsaw in November to discuss finer points of the report, which will be the basis of a new global climate deal in Paris in 2015.

The Times of India, Delhi dated September 30, 2013

'Planet racing towards 2°C temperature rise'

May Reach Tipping Point In 25 Yrs: IPCC

Subodh Varma
TIMES INSIGHT GROUP

The report issued on September 27 by the UN's Intergovernmental Panel on Climate Change (IPCC) may sound similar to the one issued five years ago—after all, it says that humanity is causing climate change, though with more certainty. But on two key aspects this report has categorically said what was never said before.

The first is that the carbon accumulation in the atmosphere and resulting global warming have blown away the 2 degrees Celsius tipping point that was earlier set. The present report says that to limit warming to a rise of 2 degrees Celsius above pre-industrial levels, 1,000 gigatons (trillion tonnes) is the upper limit of carbon dioxide that can be emitted. However, by 2011, we had already emitted 531 gigatons. That leaves very little wiggle room. According to climate change experts, the 1,000-gigaton limit may well be crossed in the next 25 years.

The world has 2,795 gigatons of carbon in the form of fossil fuels and reserves. Burning just 10% of these would take earth beyond the tipping point. That's the stark message coming from the IPCC report. The report makes the second categorical assertion regarding sea level



rise. It says that sea levels are projected to rise by 28-97cm by 2100. This is over 50% more than the previous projection of 18-58cm over the same period. This increase is because of better estimation methods and more observations. By the year 2300, it is projected that seas will be higher by up to a cataclysmic 3m.

Buried in the dense 'Summary for Policymakers', the report issued this week, is a series of future global scenarios. If you look at India, in the worst-case scenario, temperatures will rise by up to 4 degrees Celsius and rainfall will increase by up to 20% over most of the sub-continent. Coupled with a sea level rise along India's long coastline—on which are located Mumbai, Chennai and Kolkata—this spells a dire picture by the turn of this century. Of course, this is the worst-case scenario, in which carbon dioxide concentrations in the atmosphere have more than doubled from the present in the next 80-odd years.

How scientific and robust are the IPCC's statements and predictions? The process involved 9,200 scientific studies

reviewed by 1089 experts from 55 countries. They received 54,677 comments from scientists across the world. Over 2 million gigabytes of numerical data was analyzed before 209 authors put together the draft report. Then representatives of 186 countries went over it word by word.

Most scientists agree that the IPCC's reports are on the conservative side as they are forced to accommodate everybody, including governments that are wary of sounding too alarmist. In the present report, for instance, two observed facts leading to increasing carbon dioxide release are not fully taken aboard—the melting of permafrost and ocean acidification.

Scientists have observed that both these ongoing processes will cause an even greater amount of carbon dioxide to be released (or remain unabsorbed) than before. But these are not fully spelt out yet. Similarly, warming of the deep sea (beyond 700 feet) is also not fully described or accounted for as the IPCC stopped collecting evidence 6 months ago, in order to start the consultation process.

Solar power's moment under the Indian sun

Sushma UN | TNN

The Intergovernmental Panel on Climate Change has just said that humans are the largest contributors to climate change. Developing nations have for long been accused of emitting greenhouse gases, and with this, pressure on India to reduce emissions is going to mount further.

But the country is, in a small way doing its mite. Solar is today what it was a decade ago. From Punjab, and Gujarat to Karnataka and Andhra Pradesh, states are betting their shirts on solar power. Over the last three years, India has installed 1.8 gigawatt (GW) solar power plants, and the government is working on approving projects for 2.3GW more over the next six months.

State after state has attracted solar power companies as large as multinationals like SunEdison, Welspun Energy and Azure, and as disconnected from the energy sector as GRT Jewellers or Mohan Breweries. In 2010, the Centre launched Jawaharlal Nehru National Solar



India has installed 1.8 GW solar power plants over the last 3 years

Mission targeting 20,000 MW of solar power by 2022 in three phases. The country has just completed the first phase with 890 MW of solar power capacity, and the renewable energy ministry has submitted a note on the second phase to the Cabinet.

Gujarat, which was among the first to come out with a solar policy in 2009, has completed 800 MW of installations. Tamil Nadu, the state with second largest solar capacity, has a policy targeting 3000 MW by 2015. The state electricity utility will soon sign power purchase agreements with firms for projects worth 668 MW. Punjab is beginning to see some action with the state setting a target of 1000 MW. The tariffs are Rs8 a unit, higher than other states but then, Punjab isn't as sunny as Guja-

rat or Tamil Nadu. Karnataka is targeting 1000 MW by 2018, and has allotted projects for 115 MW at a tariff of Rs 5.50 per unit. Andhra has floated an open offer saying any company could put up a solar project if it is ready to sell power to the state for Rs 6.49 a unit. UP, MP and Odisha have jumped on the bandwagon. "Solar power is cheaper than it was two years ago. What now costs Rs 7 a unit was Rs 15 three years ago," said Santosh Kamath, an energy expert at KMPG.

It is not just setting up plants that has become easier; the ecosystem for the solar sector is in place. From manufacturing lines for solar cells to firms that design plants, every element of the sector has found a place in India. Costs have come down, companies have come in, and it is time for the government to enable a support system for solar power. "There has to be some stability in policy," Kamath said. Apart from incentives and subsidies, an environment for financing projects has to be enabled.

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

The Times of India, Delhi dated October 01, 2013

C R Park Puja shows the way: Immersion in tank

Takes Innovative Environment-Friendly Step After Consulting Priests To Refrain From Polluting Yamuna

Ayashree Nandi | TNN

New Delhi: It's a step that could go a long way in reducing the load of pollution in the Yamuna. Organisers of a Durga Puja in Chitranjan Park have decided against immersing the idols in the river this year. And, significantly, they have ensured that this is done with religious sanction.

Dakshinapoli Durga Puja Samiti (Pocket 52) will not give the goddess a send-off in the filthy river or water. Instead, they have installed huge steel tanks at the pandal to avoid polluting the river further. This, they believe, will "highlight the toxic pollution" caused by immersion of idols every year and can be a local, practical solution for hundreds of other



AN ECO-FRIENDLY GOODBYE: A tank being constructed for idol immersion

pandals in the city.

At the pandal site some people are seen working on three huge box-like structures. After five days

of puja fervour, beginning October 16, the committee will immerse six idols—Durga and Mahishashura; Ganesha and Lakshmi; and Kartik

and Saraswati in these 12ft long tanks. "Last year when we went to the Yamuna ghats to immerse the goddess, we realised how badly it's impacting the river. Toxic paint from thousands of pandals dissolves in the water and many solid elements like metal accessories and thermocol float in the water. When crores are being spent on rejuvenating the river, we should also do our bit," said Ashoke Bose, president of the Samiti. "We have been using non-toxic paint for our idols for a long time. This time we want to make sure her send-off is done in an environment-friendly manner," Bose added.

The committee also consulted priests from the area's Kali Mandir Society to make sure this kind of an immersion doesn't deviate from

the traditional rituals. "We make the idol of Durga with clay and our rituals say this clay has to go back to the earth. It has come from," explained the much-revered Muktipada Chakraborty, head priest of the Shiv Mandir temple complex, run by the Society. "That is the idea behind immersing her in the river—the clay goes back to the river bed. I think it will be great if we can do the immersion respectfully and properly inside the pandal premises. It is not a violation of the rituals. In fact, it makes the process more beautiful."

Environmentalists say if replicated in large numbers, this can help control river pollution during festivals. But the pandals need to ensure that untreated water of the

immersion is not discharged into sewers. "It's better if they discharge the water after treatment, if they have used toxic paint. It's good that pandals are taking responsibility," said Ravi Agarwal of environmental NGO Toxics Link. Heavy metals like lead in idols have a serious impact on water quality and metal decorations also choke the river.

According to Central Pollution Control Board guidelines, natural clay should be used for idol making rather than baked clay or plaster of Paris. Only water-soluble paint should be used for painting idols. Decorations, including clothes and jewellery, should be removed before immersion. Biodegradable material like flowers and fruits can be used later to make compost.

The Economic Times, Delhi dated October 02, 2013

Solar Startups Out to Illuminate Rural India

Numerous solar energy startups have come up with cost-effective & less toxic solutions to provide accessible power to villages

BISWARUP GOPTU
NEW DELHI

Numerous solar energy startups are delivering cheap and accessible power to rural India. These ventures have come up with solutions—ranging from solar off-grids to solar-powered home systems—that are not just cost-effective but also less toxic than traditional fuels like kerosene.

"In a country where large swathes of population have little or unreliable access to basic power, off grids is the solution," said Shyam Patra, 33, founder of Naturetech Infrastructure. The four-year-old, Lucknow-based startup provides electricity to more than 25 villages across Uttar Pradesh and Bihar by offering power directly to homes and micro and small enterprises.

"UP alone has 20 million rural households that have no access to electricity. Even if we choose to work only here, we will not be able to cover more than 10% of the market," Patra, formerly with infrastructure firms Lanco and GMR.

Naturetech's off-grid is installed un-

derground, with cables attached to households. Customers pay through a tamper-proof pre-paid meter. Consumers pay up to ₹150 a month for 24-hour electricity, almost half of what they spend on kerosene and diesel.

"The aim is to provide the last mile connectivity," Patra said, adding that he expects to install at least 10 more off-grids by the end of the year and earn revenue of ₹10 lakh by the end of the current fiscal.

Solar has for long been viewed as the energy source with the most potential to offer low-cost power, with policy support and plummeting prices of solar panels used to store power boosting entrepreneurial activity in the sector.

"That's had a big impact, because project capital expenditure is now much lower. In 2007, we sold power at ₹16 to ₹17 a unit in Punjab. Now they can look to sell it at ₹7 and ₹8," said Sanjeev Aggarwal, managing partner at Helion Venture Partners, an early investor in solar power company Azure Power.

The launch of the Jawaharri Nehrui National Solar Mission has also



Startups offer solutions ranging from solar off-grid to home systems

spurred startup activity. The target of 20,000 MW of grid-connected solar power by 2022 has led to increased domestic production of critical raw materials and components.

"It has been a big boon, we are seeing a lot of entrepreneurs enter the space, and who are bringing in the changes," said Karan Gupta, an investment manager at social venture capital fund Insitor Management.

Economies of scale will bring down costs and thereafter tariffs. We are very

bullish on this space," said Gupta said whose fund has invested in Lucknow-based startup, Mera Gaon Power.

"Power is so scarce in India that the situation provides us with massive opportunities," said Nikhil Jaisinghani, founder of Mera Gaon Power.

Born and raised in the US, Jaisinghani and his co-founder, Brian Shaad, both 38, quit their jobs with development agency USAID and Shell, respectively, to start Mera Gaon Power in 2010. The company currently serves the Sitapur district in UP, providing electricity to more than 600 villages that account for about 65,000 people.

"Our target is to reach 1,000 villages by end-2013," said Jaisinghani.

Mera Gaon Power's micro-grid system, which costs about ₹50,000, can be built and set up in a single day and the system can generate, store and distribute power, turning itself on and off automatically.

"We finance it for the consumer, offering them at seven hours of light and phone charging capacity. It is much more energy and cost efficient," Jaisinghani said. He, however, did not disclose Mera Gaon Power's top line projections for the fiscal 2014, but said monthly revenue is expected to be about ₹1.5 lakh for September.

In Kolkata, Onergy operates eight renewable energy centres and provides a range of products, from solar lanterns and solar home systems, to solar power installations, in the process, reaching about 700 villages.

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*Deccan Chronicle, Hyderabad dated
October 03, 2013*

Heavy metal contamination in city river

DC CORRESPONDENT
HYDERABAD, OCT. 2

It is not just air pollution that is threatening the city, even water and ground pollution are posing serious risks. Recent studies have shown high levels of heavy metal contamination in river basins around Hyderabad.

These contaminants can potentially get into the food chain. A recent study published by geologists found nitrate to be a common pollutant in surface water and groundwater in the agricultural areas in



neighbouring Nalgonda.

Studies have also shown heavy metal contamination in the Musi river

basin. The study by Dr K. Brindha and Dr L. Elango of the department of geology, Anna University,

found nitrate contamination to be above the permissible limit of 45 mg/l in about 242 square kilometres out of the total surveyed area of 724 square kilometres. The study attributed this high concentration to dumping of animal waste and sewage leakage.

Researchers also note that contaminants in soil can easily enter the food chain. The study said that nitrate was one of the major pollutants of groundwater. Studies by researchers from the Mahatma Gandhi Univer-

sity in Nalgonda had found high levels of contaminations due to heavy metals like arsenic, cobalt, chromium and so forth in the Chinnaeru river basin of Musi.

Inside the city as well, water samples tested by the Institute of Preventive Medicine have shown traces of bacteria and E-Coli time and again.

According to the last sample survey conducted by the IPM, about 17 drinking water samples found to be unsatisfactory out of a total of 188.

Deccan Chronicle, Hyderabad dated October 03, 2013

BREATHING ISSUES

Toxic gases choke city

AMAR TEJASWI | DC
HYDERABAD, OCT. 2

It is not just nitrogen oxides and particulate matter that causes pollution in the city. A new study claims to have found high levels of toxic benzene in Hyderabad's air. It says that the city now faces the challenge of a multi-pollutant crisis. And not just Hyderabad, but tier-II cities in the state such as Guntur and Vijayawada too are experiencing high levels of pollution.

The study was commissioned by the Centre for Science and Environment and studied pollution levels in major cities across the country. Although it didn't rank cities on the basis of pollution, it said Hyderabad is facing an unprecedented multi-pollutant crisis.

Levels of particulate matter in areas like Uppal, Balanagar, Charminar and its surrounding areas, and Paradise junction have been officially classified as 'critical,' while it remains 'extremely high' in other areas like Tarnaka.

Anumita Roy Chowdhury, executive director, CSE, who headed the study, said, "In several areas of Hyderabad, we found that levels of particulate matter exceeded the set standards. Levels of PM 2.5 are very high in many areas in the city." PM 2.5 is particulate matter with diameter less than 2.5 micrometres which can penetrate the exchange areas of the lungs.

Levels of toxic air pollutants like benzene are also high in the city. "We have noticed high levels of toxic gases like benzene in some parts of the city. It is multi-pollutant crisis for Hyderabad," Roy Chowdhury said.

TYPES OF AIR POLLUTANTS

Particulate Matter 10, PM 2.5

Mixture of small particles and liquid droplets can affect the lungs and the heart.

Nitrogen oxide, sulphur dioxide

The effects of nitrogen oxides are felt for 30 minutes to 24 hours even in case of a short-term exposure, while sulphur dioxide's short-term effects range from 5 minutes to 24 hours. Both have adverse respiratory effects.

Ground level Ozone

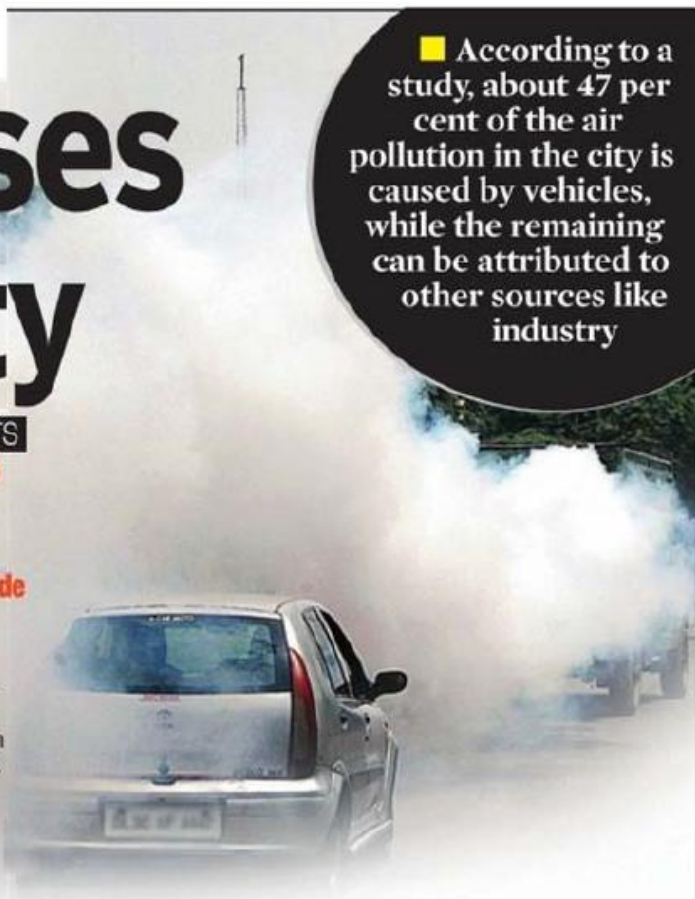
Breathing ozone can trigger a variety of health problems including chest pain, coughing, throat irritation, and congestion.

According to the study, about 47 per cent of the air pollution in the city is caused by vehicles, while the remaining can be attributed to other sources like industrial pollution. The report said that Hyderabad would need the area of about 100 football fields every year to create parking space for the inflating amount of vehicles.

Bad roads have also contributed to air pollution. The AP Pollution Control Board has recorded dust pollution levels to be 87 micrograms per cubic metre, exceeding the permissible level of 60 micrograms per cubic metre.

The study also said that smaller cities are now becoming more polluted. "We surveyed several smaller cities in South India and it is alarming to note that even these cities are now facing a crisis. Smaller cities like Guntur, Vijayawada, Salem, Dharwad and so forth are at the crossroads now," Ms Roy Chowdhury said.

■ According to a study, about 47 per cent of the air pollution in the city is caused by vehicles, while the remaining can be attributed to other sources like industry



The Times of India, Delhi dated October 03, 2013

Infra boost came at cost of greens

2010 Games Brought Road Widening, Relaying & Streetscaping Into Focus

Neha Lalchandani | TNN

New Delhi: Delhi has seen massive improvement in infrastructure in the past five years. The growth—largely spurred by the Commonwealth Games held in 2010—saw the government focus on widening and relaying of roads, streetscaping, construction of flyovers and building overbridges. Agencies have been criticized for corruption in these projects, especially those associated with the Games, and consequent loss of green cover but life is now a bit easier for the city's growing number of commuters.

In 2012, the municipal corporation handed over 820km of main roads to the public works department. PWD carried out improvement work on 600km. "The roads were in terrible condition when they came to us. We carried out resurfacing work, built drainage, footpaths and central verges and installed street lights and road signs. About 90% of this work is complete. In rural areas, there were very narrow, kuchcha roads. In northwest Delhi we are working on expanding these and providing drainage along them," said a senior PWD official.

For its original 430km road



SMOOTHER RIDE: Barapullah flyover, built amid controversy, is a boon to commuters

network, PWD conducted massive improvement works just before CWG. This largely included streetscaping and setting up of lights and road signs. Officials say construction of any more roads in Delhi is now impossible as there is no available land.

Several points of traffic congestion, like Outer Ring Road, Mukarba Chowk, Ghazi-pur and ITO Chungi, have seen tremendous relief with construction of flyovers and grade separators. In the past five years, PWD constructed 15 grade separators and flyovers. Of these, the Rao Tula Ram Marg flyover has been in news for the fact that the agency constructed only a single carriage-

way that actually exacerbated traffic woes. The Barapullah flyover was also made amid much controversy but, for



those commuting between south and east Delhi, the link comes as a major boon with commuters making the Sarai Kale Khan to INA trip in about 15 minutes. The grade separator at Mukarba is another lifesaver, especially for those travelling on the highway and accessing GT Karnal Road. The period also saw construction of more than 70 foot over-

bridges. A majority were created during the Games.

PWD claims, of the 18 major projects it completed within the last five years, it spent Rs 3,148 crore but the cost has already been recovered from savings accrued in terms of man-hours and fuel consumption. A report published by the agency says value of man-hours saved is Rs 11,403 crore and value of fuel savings is Rs 2,698 crore.

However, not all projects aimed for completion during this time have been successful. The Sarita Vihar underpass, started by Delhi Development Authority five years ago, is nowhere near completion. Officials say the fate of the project rests with Northern Rail-

way which is carrying out work in the area at present. The Signature Bridge at Wazirabad is another project that has been stuck for years.

The municipal corporation is facing its own troubles. The Rani Jhansi flyover was initiated sometime in the last five years but is nowhere near completion. Work on Pankha Road flyover also started in 2009 but is yet to be completed. Sources said that 41 parking lots were sanctioned but only three are ready and of these just one is functional.

Infrastructure work has also encountered its share of opposition. A major elevated road being constructed by PWD between Vikaspuri and Meera Bagh has been stuck due to protests by the green lobby. The matter is currently pending with the national green tribunal.

Another project that went to NGT was a road widening work at Vasant Kunj. Work of relaying roads and making footpaths endangered several hundred trees across the city when contractors cemented pavements around trees, going against an existing high court judgment. When the concrete was removed this year under an NGT order, several of these trees collapsed.

The Economic Times, Delhi dated October 08, 2013

CLIMATE CHANGE AND INDIA

Who's Looking at the Climate?

US, Europe and China have clear plans based on carbon budgets, the new currency of climate change talks. India does not, reports Hari Pulakkat

Why Carbon Budgets Matter...

WHAT IS A CARBON BUDGET?

SCIENTISTS AND policymakers want to restrict average temperature rise from preindustrial times to 2°C, and have arrived at the maximum levels of carbon we can emit—the carbon budget.

WHY IS IT SO IMPORTANT?

MOST POLITICAL conversation has been on annual increases in carbon dioxide emissions. The IPCC report switches it from annual emission levels to total carbon budget we are allowed to play with.

WHY DOES IT DRAW ATTENTION?

HISTORICAL emissions become important. The developed world has high historical emissions, and so any treaty will try to restrict their future emissions. This could hamper economic development.



WHAT IS IN IT FOR INDIA?

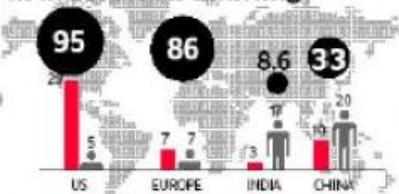
WITH LOW HISTORICAL emissions and a high population, India can hope for a high carbon budget. But it needs a clear carbon budget-linked plan to articulate its case in the next round of climate talks.

...And How Much the World is Emitting

● Contributions from 1950 to 2010 (giga tonnes)

■ Actual share of cumulative emissions (%)

▲ Ideal share based on 2009 population (%)



Source: Derived from a study published in *Environmental Science* (July 2013) jointly by the Institute of Social Sciences and the Delhi School of Economics

IT WAS LARGELY DECIDED IN THE WEE hours of the morning, after intense discussions, only a few hours before the report was released. Late last month, the Inter-governmental Panel for Climate Change (IPCC) meeting in Stockholm announced a carbon budget for the planet, a maximum amount of carbon dioxide the world can emit without inviting dangerous climate change.

On the surface it seems like a simple correlation: human beings can emit only another 350 giga tonnes of carbon dioxide if the warming has to be within safe levels of 2 degree centigrade. However, a lot of intricate science went behind this calculation, and it is set to lead to even more intricate political wrangling in the next two years.

The concept of a carbon budget has been around for at least a decade, but it is the first time IPCC has given a number and announced it in strong terms. This budget will form the basis of climate talks from now on, which will culminate in a global treaty to be signed in Paris in December 2015.

This new basis is actually advantageous for India, which otherwise has been steadily losing its position in climate talks. However, the government has little time to formulate a clear strategy in terms of carbon budget. "There is a small window to articulate our point of view in the climate talks if we want to shape an agreement for 2015," says Navroz Dubash, senior fellow at the Centre for Policy Research.

The Need For A Plan

There is a strong reason why IPCC introduced this concept now. Our understanding of the climate system has improved tremendously over the last decade. "In the last six years, our models have been able to link carbon emissions with temperature rise very well," says Govindaswamy Bala, professor at the Indian Institute of Science and one of the authors of the chapter on carbon budget.

Now that there is a carbon budget for the planet, climate talks will veer away from annual emissions to how to share the budget. "The evidence for warming is so strong that governments can no longer be complacent about it," says Krishna Kumar, professor at the Indian Institute of Meteorology in Pune and a co-author of the summary for policy-makers of the IPCC report.

So the next round of talks, to continue in Warsaw next month, will focus on how this budget is to be shared between countries. This decision would depend on many factors, one of which would be the strength of a country's arguments.

This would, in turn, depend on a clear development and decarbonisation plan prepared by its government. For India, with low accumulated emissions, it is a better deal than one based on annual emissions.

But while China, the US and Europe have good plans based on carbon budgets, India is yet to develop one, say officials who have been part of negotiations in earlier climate talks. "If we are silent on the carbon budget issue, we will not have something to put on the table during the talks," says Mukul Sanwal, former lead negotiator for India and executive secretary of the United Nations Framework Convention on Climate Change. Sanwal now teaches climate change politics at the University of Massachusetts in the US.

In the environment ministry, the joint secretary and additional secretary in charge of climate change negotiations were unavailable for comment. Calls and an emailed query to the secretary's office remained unanswered at the time of going to press.

China Versus India

The Kyoto Protocol, signed by many developed countries in 1990, is now considered a failure as it had no impact on global carbon dioxide emissions. India had been refusing so far to be part of any deal, saying that it has development priorities that would be hurt by serious emission-reduction measures. This position is being gradually weakened over the years as other countries kept increasing the pressure on India. It does not help that climate change was never been a top priority in India, and has almost completely disappeared from the government radar in recent times.

Shyam Saran, former foreign secretary, quit his job in 2010 as special envoy on climate change. Since then, environment minister Jairam Ramesh, who had been driving India's climate change policy, has also left the ministry. India's team for climate change negotiations, if it exists in full, has no visible leadership.

While this is a problem, the biggest obstacle would be the absence of a study that linked the country's development future with a carbon budget, something essential to put forth a strong case at the climate talks. "India's climate policy has not yet fully come to terms with the carbon budget concept," says T Jayaraman, professor and dean at the Tata Institute of Social Sciences at Mumbai.

Other big emitters had recognised this idea a few years ago. In May 2011, US National Research Council had jointly produced a report on America's Climate Choices, and it had recognised carbon budgets as a key concept. This preparedness was probably the reason why the US did not oppose the introduction of the carbon budget idea in the IPCC report.

China, with the highest annual emissions, quite clearly gained from a shift away from annual emission reductions. Climate change talks participants also say that China is thoroughly prepared to deal with the carbon budget concept. They also say that both US and China were remarkably quiet during the discussions at the IPCC meeting in Stockholm. Unless India articulates its plans clearly at least 18 months in advance of the treaty, there is no chance of it being heard loudly in these talks. This leaves the country little time to orient national development plans based on a carbon budget. China is expected to complete its major infrastructure projects by 2020, when the treaty is supposed to come into effect. India's infrastructure development still has a long way to go, and therefore much to lose from a treaty forced on it.

An expert group headed by Kirit Parikh, set up to develop strategies to reduce carbon intensity of the GDP by 25% by 2020, is yet to submit its final report even after three years. In the end, even such reductions may fall far short of the requirements—from a climate change point of view—if the GDP grows well during the next decade.

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The Economic Times, Delhi dated October 08, 2013

The Climate Report Calls for More Work

Policy must work for new energy models

The latest report of the UN's Intergovernmental Panel on Climate Change has marshalled a mass of data, trends and analyses that unequivocally suggest warming of the climate system, albeit in the teeny decimal points of 0.85° C when globally averaged for the period 1880 to 2012. Now, in complex systems, small changes can add up to large effects. The Fifth Assessment Report does take note of extreme weather and climate events and global-scale changes in precipitation patterns witnessed in recent years, citing that each of the last three decades has been successively warmer at the Earth's surface.

The panel finds that the concentrations of carbon dioxide (CO₂) and other gases causing the greenhouse effect in the atmosphere have risen 40% since pre-industrial times, mainly due to the higher combustion of fossil fuels. And as rising emission levels will cause further warming, the global community needs to carry out effective mitigation and policy action to arrest climate change.

The sceptics can point out that the rate of warming during the 15-year period, 1998-2012, has been a mere 0.05° C, and so far slower than the trend since 1951. But the report avers that the figures for short periods can be misleading and adds that many of the lately observed changes in climate patterns are unprecedented in decades and millennia.

The contrast between wet and dry seasons and inter-regional variations are expected to increase, with the water cycle affected. Here, in India, CO₂ emissions remain minuscule in per-capita terms, but given that energy poverty is widespread and energy demand likely to greatly increase going forward, we need to rev up energy efficiency and step up supply of alternative, renewable energy sources to boost overall supply and better manage the risks of climate change. It is entirely possible that in the future, there would be viable scientific solutions for global warming and climate change, and the techno-economic paradigm based on fossil fuels of today is likely to change. But that possibility is a matter of conscious policy and investment, not chance.



UN Body Rejects EU Move to Levy Carbon Tax on Foreign Airlines

ICAO agrees to put in place by 2020 a market-based system to curb carbon emissions from airlines

URMIA GOSWAMI
NEW DELHI

India, along with countries like China, Russia and the US, scored a diplomatic victory in the aviation sector. The UN body in charge of civil aviation, International Civil Aviation Organisation (ICAO), made it clear that the Europe Union would not be permitted to levy a carbon tax on foreign airlines landing in and taking off from the EU region.

At the same time, countries under the umbrella of ICAO agreed to put in place a market-based system to curb carbon emissions from airlines, which will be implemented from 2020.

The agreement was hammered out at the ICAO's general assembly held in Montreal over the last fortnight. Countries have agreed to formulate the new system by 2016, when the assembly meets next.

This agreement on climate, the first ever by a major industry, has averted a possible trade war. The EU had said that in the absence of an acceptable agreement in Montreal, it would implement an emission-trading scheme, which would levy a carbon tax on all airlines entering and leaving its territories from January 2014.

The final agreement is in line with the September decision of the ICAO governing council, which agreed to develop a

global market-based mechanism scheme for international aviation by 2016.

It takes on board concerns expressed by India that the proposed system must take into account the environmental and economic impacts, including feasibility and practicability of the different market-based options.

There are some concerns that the lack of a proper road map to develop the proposed system could result in delays beyond 2016. The Montreal decision of the ICAO could cast a shadow on the November round of climate negotiations in Warsaw.

Carbon emissions from the aviation sector, which accounts for less than 5% of the global emission pie, is seen by experts as a low-hanging fruit.

A proper road map could have provided some positive signals for the Warsaw meet which is expected to focus on increased efforts to reduce carbon emissions as well as begin work on the global climate regime, which should be finalised by 2015.

"Given the historical trend, one wonders whether the postponement, without credible pathways for developing the system being set out to meet the 2016 deadline, could result in further delays," said Srinivas Krishnaswamy, CEO of Vasudha Foundation, a social organisation focusing on sustainable development.

Climate experts see the move to postpone the decision to 2016 as something of a missed opportunity.

"Proceeds from market-based interventions to address emissions by air-

lines could have, after repatriation of funds to developing countries, been a new source of revenue for the Green Climate Fund, which has little ink in the moment. It could have been an opportunity to build trust among countries," said Krishnaswamy.

For the countries like India and China, the Montreal agreement represents a triumph of the multilateral process.

"We are happy that multilateralism has prevailed over unilateralism," an Indian negotiator said.

The Montreal agreement does present something of a climbdown for the EU. In 2012, the Europeans sought to put in place an emission-trading scheme that made it mandatory for all airlines using EU airports to pay a price for emitting planet-warming gases during a flight.

The move was opposed by 20-odd countries as the decision to implement a levy had been taken by EU unilaterally. In November last year, the EU put its controversial scheme on hold to give ICAO time to develop a global consensus on a system to tackle emissions by the aviation sector. The ICAO resolution put EU firmly put in the dock for attempting to push through an unilateral measure. In what is a rebuke to the EU, the resolution states that no country can include another country's airlines in their emission-trading scheme without a mutual agreement between the two.

Connie Hedegaard, EU's climate change commissioner, welcomed the resolution. "After so many years of talks, ICAO has finally agreed to the first-ever global deal to curb aviation emissions. If it hadn't been for the EU's hard work and determination, we wouldn't have got this decision today to create a global market-based measure," he said.



Countries under ICAO have agreed to formulate the new system by 2016 but lack of a proper road map could result in delays

The Economic Times, Delhi dated October 09, 2013

Tata Power Buys AES' Gujarat Wind Farm

Analysts estimate deal size at about ₹150 cr; move to benefit co once carbon credit market revives in Europe

OUR BUREAU
MUMBAI

Tata Power, the Tata group's power utility, said it has acquired AES Saurashtra Wind farms from the US-based AES Corporation.

AES Saurashtra Wind farms operates a 39.2 MW wind farm in Gujarat.

Tata Power said the acquisition was done through Tata Power Renewable Energy, the group's green energy arm. It did not disclose the deal value but analysts estimate it to be worth about ₹150 crore.

"This is our second acquisition of an operating wind asset and we are in constant lookout for similar op-

portunities in respect of wind and solar plants," Anil Sardana, managing director at Tata Power, said in a release. "This is yet another step towards the company's commitment to sustainability."

The acquisition comes at a time when Tata Power has decided to put on hold its expansion plans in India's thermal power sector, given the multiple problems faced by the beleaguered sector.

With the acquisition of AES Saurashtra, Tata Power's generation capacity has gone up to 8,560 MW, of which wind energy contributes 437 MW. The company aims to reduce its carbon footprint and intends to have a

20-25% of its generation from clean power sources.

"This acquisition may not have any major impact on Tata Power's revenue or profit, but it may benefit the company once the carbon credit market revives in Europe. This acquisition is part of the company's strategy to focus on the domestic renewable market," said Sachin Mehta, research analyst at Centrum Broking.

AES Saurashtra commissioned its wind farm near Dwarka in Jamnagar district of Gujarat in January 2012. The project has a power purchase agreement with Gujarat Urja Vikas Nigam for sale of electricity at a tariff of ₹3.56 a unit.

The sale of the wind farm by AES Corporation is part of its strategy to scale down its operations in India and restrict presence to its Odisha power unit. The company had entered India in 1998 with ambitious plans but issues like land acquisition, approvals and fuel availability changed its capacity expansion plans.

AES Saurashtra is registered with the United Nations Framework Convention on Climate Change as a Clean Development Mechanism project and is eligible to receive carbon credits. The project is also registered to get generation-based incentives under a scheme of the ministry of new and renewable energy.

Deccan Chronicle, Hyderabad dated October 09, 2013

The Economic Times, Delhi
dated October 09, 2013

FESTIVE TIME

Noise pollution on rise

■ Loud music played during dandiya adds to problem

KRUTHI GONWAR | DC
HYDERABAD, OCT. 8

Dandiya nights are back and so are increased noise pollution levels thanks to the loudspeakers dotting the city blaring away.

According to the latest data recorded by the AP Pollution Control Board, the decibel levels have become considerably higher than the permissible limits set by the PCB.

Decibel levels recorded in different parts of the city have exceeded the standard levels prescribed for residential, commercial and sensitive zones.

Ambient sound levels recorded from five different stations include Jubilee Hills as a residential zone - 59 (Permissible Levels or PL - 55 db), commercial zones including Abids and Punjagutta at 74 and 75 db respectively (PL - 65 db), Jeedimetla as a industrial zone at 75 db (PL - 62 db) and the silent zone at the zoo area with 57 db (PL - 50 db).



The Durga idol at Keyes Girls High School in Secunderabad.

— DC

In places like Charming, Dilsukhnagar and other busy areas, the noise levels have gone as high as 80-90 db.

Veeranna Patil, junior scientific officer at APPCB said, "The five areas have been exceeding the standards, but other places have also shown a steep increase. During festivities, one cannot really control or regulate the noise levels. Both box and horn speakers have added to decibel levels."

Commissioner of police Anurag Sharma said, "We grant permissions only for the box speakers but not for horn speakers. We do receive a few complaints and tackle them as soon as possible. We appeal to people at these gatherings not to disturb other people."

However, when asked

about regulatory measures, he said there were not many options. "We do not have noise meters yet, which detect noise pollution levels." The threshold levels prescribed are high and with lack of equipment to check noise levels, there is little being done to regulate them.

Green Corridor to See Wind & Solar Farms in Rajasthan, TN

YOGIMA SETH SHARMA
NEW DELHI

The government will set up wind and solar farms in Rajasthan and Tamil Nadu in the first phase of the ₹43,000-crore green energy corridors project that aims to add 30,000 mw to the national grid by 2020.

The first phase of the Indo-German project is expected to cost ₹18,000 crore, of which ₹10,000 crore will be invested in the two states, a senior official told ET.

The initial funding for the project will be finalised by the month end and the first tranche of ₹2,500 crore is expected to come from Germany, the official added.

Germany has committed technical and financial assistance of euro 1 billion for the green energy corridors under the Indo-German bilateral development cooperation programme.

"We have appointed a sub-group that will soon write to the finance ministry to seek the first tranche of ₹2,500 crore from Germany," the official, who did not wish to be named, said. "Meanwhile, it is also in talks with the PowerGrid and the National Cooperative Consumers Federation of India to fund the remaining part of the initial phase." India aims to channel renewable energy from wind and solar projects into the national grid to help narrow the country's power deficit and reduce its dependence on coal. A massive grid failure last summer had left millions of people without electricity in several parts of the country. The country has 27,541.71 mw of installed renewable energy capacity, excluding hydropower stations, but its integration with the national grid is difficult due to variations in supply and voltage.

The green energy corridors will comprise of both inter-state and intra-state schemes for evacuation of power from wind and solar projects. Integration of these projects with the national grid will require intra-state grid upgradation and inter-state networks that will be taken up by PowerGrid and the state utilities, respectively. The Power Grid Corporation of India, the central transmission utility, operates five grids—northern, western, southern, eastern and northeastern—which together transmit nearly 1,29,980 mw during peak demand.

The Times of India, Delhi dated October 11, 2013

'City may reach climate tipping point by 2050'

Vishwa Mohan | TNN

New Delhi: Around 20 years from now, Mumbai and Chennai may routinely start seeing temperatures hotter than they have experienced in 150 years, an alarming University of Hawaii study predicting the climate 'tipping points' of

various cities has warned.

By 2045, Pune, Surat, Jaipur, Bangalore and Ahmedabad would have joined the

► Climate to change, P 22

ranks of cities showing climate departure, which means even the monthly dips in temperatures would be

hotter than that experienced in 150 years (ending 2005), states the paper published in Nature on Wednesday.

Delhi will join the ranks by 2050, says the study, a massive analysis of climate models. Most cities in the world would have reached climate tipping points by 2047 if no

new steps to contain carbon dioxide emission are initiated, the paper warns.

The paper carries predictions for 10 Indian cities, saying Mumbai and Chennai will be the first to reach the 'point of no return' — as early as 2034 — in the "business as usual" scenario.

Sand mining: NGT notice to UP, Haryana

TIMES NEWS NETWORK

New Delhi: The National Green Tribunal (NGT) has sought responses from the Centre and the Uttar Pradesh and Haryana governments on a plea alleging that illegal sand mining is still going on in some districts of the two states.

A bench, headed by NGT chairperson Justice Swatanter Kumar, directed the district magistrates and senior superintendents of police to ensure that a ban on sand mining is being followed in their areas. The lawyer, appearing for the petitioner in the case, claimed that illegal sand mining is happening on the banks of river Betwa in Jhansi and Jalaun districts (UP) and Faridabad (Haryana), under the guise of clearing out dump. "A very unique strategy has been adopted by them," he said, adding that sand mining is also being done under the garb of removing sand deposited by the rivers on agricultural fields.

The petition alleges the illegal mining of sand is happening

with the help of the state government which has allowed people to stock-up sand and sell it later. It also says there are over 13 mining areas in the two districts where sand is being removed without environmental clearance and



TAKING A TOUGH STAND

without paying royalty to the government. The petition relating to illegal sand mining in Faridabad was filed by Ashok Kumar who has alleged that sand is being removed from the Yamuna in violation of the NGT's orders.

NGT had banned mining or removal of sand, without a clearance, from river beds across the country on August 5 and in its August 14 order extended the ban to beaches.

Climate to change even if bid made to cut emissions

POINT OF NO RETURN

Projected year when Indian cities will reach their 'tipping points', when local temperatures exceed historical extremes recorded in 150 years ending 2005



147 cities globally will shift to a hotter climate regime by 2043

► Mumbai & Chennai to be among first cities to reach tipping pt, after which coldest years will be consistently hotter than any in 150 yrs

City	Climate departure year		Remarks
	Scenario 1	Scenario 2	
Mumbai	2034	2051	Manokwari, Indonesia will be first city to reach tipping pt, by 2020
Chennai	2034	2052	
Pune	2037	2055	Male in Maldives will be first in S Asia to bear brunt by 2025
Surat	2045	2066	
Jaipur	2045	2074	
Bangalore	2046	2069	Anchorage, Alaska will be last city in list to witness climate departure (in 2071)
Ahmedabad	2046	2075	
New Delhi	2050	2081	
Kolkata	2053	2081	
Hyderabad	2057	2085	

Predictions made for two scenarios: 1, business as usual, nothing is done to cut CO2 emissions; 2, cities adopt measures to decrease CO2 emissions

► In 1st scenario, an average location on earth will experience radically different climate by 2047

► In 2nd scenario, global mean climate departure will take place by 2069

Vishwa Mohan | TNN

New Delhi: Mumbai and Chennai may regularly start experiencing hotter temperatures, according to a study predicting the climate 'tipping points' of various cities has warned. Even if concerted efforts are made to cut emissions, Mumbai is predicted to reach its tipping point by 2051, followed by Chennai a year later. Delhi will follow suit by 2050 (in first scenario) or 2081 (in second scenario).

"The results shocked us. Regardless of the scenario, changes will be coming soon," said lead author Camilo Mora of the University of Hawaii. "Within my generation, whatever climate we were used to will be a thing of the past".

Other Indian cities, the

study says, will only be delaying the inevitable by a few years. The list predicts Hyderabad would reach tipping point by 2057 or 2085 (under two different scenarios) and Kolkata by 2053 (or 2081).

The years mentioned against each city denotes the beginning of an entirely new — and hotter — climate regime for that city.

These predictions have come from an analysis of 39 climate models developed independently by 21 climate centres in 12 different countries. The Nature reported that Mora and his team of researchers from the University of Hawaii used those climate models to assemble projections on seven environmental variables, such as near-surface air temperature

and precipitation, for the years 1860-2005.

"The researchers then ran simulations for the next 100 years to identify the years in which climate variables are predicted to exceed historical limits in various locations", said the report. The study — Projected Timing of Climate Departure from Recent Variability — is the first of its kind which pinpointed when global warming will become the norm in the world's major cities.

The complete global list of cities is available online at the University of Hawaii website. The statement also referred to the fact that countries first impacted by unprecedented climates are the ones with the least capacity to respond.

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

The Times of India, Delhi dated October 12, 2013

1.7 lakh trees felled for Posco plant, Odisha district loses cyclone barrier

Govt Has Left Us Exposed To Danger,



UNEASY CURRENTS: A massive wave seen from the fishing harbour at Jalapipeta in Visakhapatnam district on Friday

Ashis Senapati | TNN

Kendrapada: While the country's eastern seaboard braces for cyclone Phailin, the people in Jagatsinghpur district in Odisha are particularly in dread.

Reason: the government felled more than 1.7 lakh trees and betel vines that would have acted as natural barriers against strong winds to facilitate building of the Posco steel plant.

Villages at the mouth of the Jatadhari river around 2km from the shore had an abundance of casuarina and cashew trees apart from betel vines that were removed. Casuarinas are evergreen shrubs and trees that grow up to 35m tall, are highly tolerant of cyclones and often planted as windbreaks.

"The administration is responsible for the denuded green cover. We're now spending sleepless nights with the cyclonic storm expected to hit our village on Saturday evening," said Mahadev Swain of Nohasahi. Other villages in dread of the cyclone are Nohasahi, Polanga, and Gadakujang. The trees and foliage surrounding these villages were felled by the Odisha government for the Posco steel plant about two years ago.

With Phailin funneling in towards Odisha at a wind speed of around 200 kmph, memories of the 1999 super cyclone are back to haunt the people here. The surging tidal waves had then killed more than 10,000 people in nearby Kujang and Ersama blocks. With the government sounding the alert, hundreds

of villagers from coastal pockets moved to safer places, including cyclone shelters, on Friday. Sources said that the cyclone was likely to reach within 400km of the Paradip coastline. "We had then protested against felling of the trees. But the administration paid no heed and felled 1.70 lakh trees and 2,500 betel vine farms over 2,700 acres at the project site. Now, we are left in the open to face nature's fury," sarpanch of Nuagaon gram panchayat Bhaskar Swain said. "The thick casuarinas and other trees in this area protected us against cyclone, storm and tidal waves. There was not a single casualty at this village in 1999," said Pabitra Swain of Nuagaon.

"With the green cover and sand dunes gone, the villagers could face the worst of tidal surge," Posco Pratirodh Sangram Samiti (an anti-Posco outfit) Sisir Mohapatra said.

Urban forestry dept to earn carbon credits

UN CAP FOR CAPITAL

- **Trees being planted at Deramandi:** Ronj, kikar, musquete, khejari, neem, ullo neem, Israeli babod, siris, ber, imli, jamun, shisham, palash, bargad
- **Amount of CO2 emission that can be reduced:** 12,138 metric tonnes CO2 equivalent per annum
- **What are carbon credits?** Carbon credit represents 1 tonne of carbon dioxide equivalent removed, avoided or sequestered
- **Carbon credits can be generated from** various types of projects like renewable energy, forestation and afforestation, energy efficiency, methane capture

Jayashree Nandi | TNN

New Delhi: The Delhi government's urban forestry project in the wasteland of Deramandi has been chosen by the United Nations Framework Convention Climate Change (UNFCCC) for clean development mechanism (CDM). This essentially means that the project will be entitled to carbon credits for the extent of reduction in carbon emissions, which could be traded in the international carbon market for money.

The forest department officials, who recently learnt about their selection, said Delhi's is the only such

Indian Territorial Army, with plantation being done mainly by former Army personnel from ETF under the guidance of the forest department. The project, which was launched in 2008, has been planned for a 30-year period. Between 2008 and 2013, it may have managed to save 1,992 tonnes of CO2 equivalent, and can cut down on almost 7,873 tonnes of CO2 in 2018.

"We are very excited. Our project was accepted in 2012 but it takes a few months for all parties to give their consent. If no objections are raised, the project gets a final clearance for operating under CDM," said G N Sinha, the head of forest department.

The project is estimated to save 12,138 metric tonnes CO2 equivalent per annum but the forest department staff said it's too early to project how much money will the savings will bring.

"We have not reached that stage. There are different carbon markets and rates. For instance, premium market rate would be different from the voluntary market rates so we can estimate the earnings, which are dependent on the carbon market rate when we actually decide to float our carbon emission reductions (CERs)," said S Rajesh, deputy conservator of forests of the department, who is working on the project.

DELHI FIRST INDIAN CITY

project to be selected from India.

The Deramandi project focuses on rejuvenating grasslands and planting native varieties. The land, spanning across 358 hectares in the southeastern part of the southern Aravalli ridge, is very close to Delhi-Haryana border.

The project design document shows the region had a flourishing flora and fauna till 1900 AD but increased urbanization and open cast quartzite mines resulted in encroachment and degradation. In the absence of adequate staff, the government handed the project to the Eco-Task Force (ETF) of

The Times of India, Delhi dated October 15, 2013

CR Park shows way with eco-friendly immersion

TIMES NEWS NETWORK

New Delhi: Durga Puja concluded on Monday with samitis across NCR immersing their idols in the Yamuna. However, in one neighbourhood – Pocket 52 of Chittaranjan Park – no one stirred out of the pandal to board trucks and buses. Drum beats reverberated in the air amidst colours and loud cheers.

The idols were to be immersed right on the spot. And Dakshinapalli Durga Puja Samiti gradually lowered their biodegradable idol into a 12X15ft water tank. The idols of Kartikeya, Saraswati, Ganesha and Lakshmi were immersed in two 11X11ft tanks.

Ashok Bose, president of the Samiti, said the four other idols, similarly immersed, will take about a day to dissolve completely after which the slush will be



MAKING THE DIFFERENCE

released into the park.

"Thousands of idols are immersed in the Yamuna, causing irreparable damage to the river. And we are spending crores to clean up the mess. We decided this year, after consulting priests, to take this environment-friendly route," Bose said.

Environmentalists have

long complained about the damage caused to rivers by the toxic colours, metal ornaments and non-biodegradable add-ons of idols. Taking note of these concerns, the Allahabad HC passed an order banning immersion of idols in the Ganga and Yamuna from next year and at Allahabad with immediate effect.

Waste from idols leaves Yamuna ghats in a mess

TIMES NEWS NETWORK

New Delhi: People who gathered on the Yamuna banks for idol immersion were pleasantly surprised by a cleaner river. The white foam caused by industrial effluents was nowhere to be seen. However, by the time the *visarjan* ended, the muck and filth were back.

Officials of South Delhi Municipal Corporation (SDMC) and the irrigation department said their requests to follow the guidelines were ignored by a number of puja committees which immersed their idols without removing the plastic and metals—most of them cited religious reasons.

"A number of unregistered groups that come here from the NCR are unaware of the guidelines. As they are not a part of our committee, we cannot control their actions," said a member of the south Delhi immersion



REMAINS OF THE DAY: Many committees flouted the guidelines

committee which oversees the process.

Several committees from Noida and Faridabad also came to the ghats in Delhi for the immersion. "We have come all the way as immersion of idols in the Yamuna from Noida side has been banned. We could not come up with an alternative plan at such short notice," said A K Sinha, a member of a Durga Puja committee in Noida. SDMC officials at the Ka-

lindi Kunj ghat said additional personnel was deployed to remove the bamboo structures once the clay was washed off from the idol. "The river will be cleaned on Tuesday once the entire process is over," said an SDMC official.

Meanwhile, environment secretary Sanjiv Kumar said that the department will make sure that the ghats are cleaned within the next three days.

Deccan Chronicle, Hyderabad dated October 17, 2013

The Times of India, Delhi dated October 17, 2013

60k sq km of W Ghats to be preserved

Mumbai: Almost 40% of the Western Ghats or 60,000sq km of the green belt that runs across six states is set to become an Ecologically Sensitive Area (ESA), a tag that will keep mining, quarrying, thermal power plants or any polluting industries out of the zone.

Hydro-electricity projects will be allowed there after taking consent from gram sabhas. The decision has been taken following recommendations from the K Kasturirangan Committee, set up to review suggestions that the entire Ghats be declared an ESA. But after a review, the panel divided the Western Ghats into natural (no development) and cultural (agriculture, plantations etc) landscapes. **TNN**

Immersion of idols, festival waste is polluting city lakes

DC CORRESPONDENT
HYDERABAD, OCT. 16

Less than a month after the Ganesh idol immersions, Hussainsagar, Kapra Lake, Alwal Cheruvu, Hasmathpet Lake and other water bodies are once again being clogged with idols that have been immersed as per tradition but with no thought to the environment they pollute.

So far, 2,090 Durga idols have been immersed in the city's lakes and 56 tonnes of Bathukamma puja material has been removed, of which 24 tonnes was cleared from Hussainsagar alone. Despite restrictions on throwing puja material into the lake, huge quantities were thrown in on October 12 and 13.

According to T. Sai Manohar, additional commissioner of police (traffic), Saifabad, 252 idols were immersed in Hussainsagar on October 13, 1,400 idols were immersed on October 14 and 380 on the 15th. "Several idols were installed in the city without



seeking permission. Out of the 2,090 idols only 1,400 were registered. This year, the number of pandals in the twin cities has increased. Bathukamma Puja got bigger as well," said Mr Sai Manohar. There were heavy traffic jams on roads leading to Hussainsagar last Thursday owing to the Bathukamma celebrations. Thousands of women flocked to the city lakes to perform the ritual.

N.V. Reddy, manager of the Hyderabad Metropolitan Development Authority, Buddha Purnima Wing of Hussainsagar said, "A total of 24 tonnes of puja materi-

al was collected between Saturday and Monday from four puja collection counters set up at the Tank Bund. This is the first year that so much has been cleared. The remains have been dumped at GHMC's temporary dumping yard." The GHMC has started cleaning up at other city lakes too. Three tonnes of debris was cleared from Kapra Lake on Tuesday three tonnes from Alwal Lake, and 10 tonnes from Hasmathpet Lake. Sixteen tonnes was cleared from Sarooranagar, Kukatpally Mir Alam and Durgam Cheruvu together.

The Times of India, Delhi dated October 18, 2013

Man seeks recognition as climate refugee

Wellington: A Pacific islander is seeking recognition as the world's first climate change refugee in New Zealand as rising seas threaten his low-lying homeland, the man's lawyer said Thursday.

Ioane Teitiota, 37, launched an appeal this week against a decision by New Zealand immigration authorities to refuse him refugee status and deport him to Kiribati in the central Pacific, lawyer Michael Kitt said.

Kitt acknowledged Teitiota's New Zealand visa had expired but said he should not face deportation because of the difficulties he would encounter in Kiribati—which consists of more than 30 coral atolls, most only a few metres above sea level.



WORLD'S FIRST: A man from Kiribati, an island nation in the Pacific Ocean, wants asylum in New Zealand, saying rising seas have endangered his low-lying homeland

He said rising seas had already swamped parts of Kiribati, destroying crops and contaminating water supplies. "Fresh water is a basic human right... the Kiribati government is unable, and perhaps unwilling, to guarantee these things because it's completely beyond their control," Kitt said.

He said Teitiota's case had the potential to set an international precedent, not only for Kiribati's 1,00,000 residents but for those threatened by man-made climate change. If his appeal is successful Teitiota would become the world's first climate refugee, Kitt said. A new class of refugee was emerging that was not properly covered by existing international protocols, he said. **AFP**

*The Times of India,
Lucknow
dated October 18, 2013*

'Air pollution causes cancer'

WHO Terms It As Carcinogenic; Puts It In Same Category As Tobacco

Kounteya Sinha | TNN

London: The World Health Organization's (WHO) International Agency for Research on Cancer (IARC) on Thursday declared air pollution as carcinogenic—a major cause for cancer among humans.

The IARC added air pollution to Group 1 carcinogenic—the same category under which tobacco, UV radiation and plutonium come. Air pollution was known to be among the causes for heart and lung diseases, but now evidence has emerged for the first time about it being carcinogenic.

"There is sufficient evidence that exposure to outdoor air pollution causes lung cancer with a positive association with an increased risk of bladder cancer. Particulate matter, a major component of outdoor air pollution, was evaluated separately and was also classified as carcinogenic to humans (Group 1)," said an IARC statement.

IARC Monographs Section head Kurt Straif said the air we breathe has become polluted with a mixture of cancer-causing substances. "We now know that outdoor air pollution is not only a major risk to health in general, but also a leading environmental cause of cancer deaths."

Studies indicate exposure levels have increased significantly in some parts of the world, particularly in rapidly industrializing countries with

EVERY BREATH YOU TAKE

TOXIC FIGURES

Urban outdoor air pollution causes **1.3 million** deaths globally every year
 ▶ Quarter of a million of these deaths caused by lung cancer



WHAT COMPRISES POISON

HEALTH RISK
 Chronic exposure can cause cardiovascular and respiratory diseases as well as lung cancer



Are you choking on smog? Beware. It has now been scientifically validated that air pollution causes lung cancer. The International Agency for Research on Cancer has declared it a carcinogen

PARTICULATE MATTER (PM)

Microscopic particles generated by coal, oil and forest fires; natural sources like volcanoes, dust storms

PM DIVIDED INTO 2 CATEGORIES | PM10 & PM2.5

Biggest threat | PM is so light that it can float on air. Some particles are small enough to penetrate into lungs, cross into bloodstream

Components | Sulphate, nitrates, ammonia, sodium chloride, carbon and mineral dust, traces of arsenic, cadmium, nickel & mercury

- ▶ PM2.5 can cut life expectancy by 8 months
- ▶ PM2.5 exposure during pregnancy can cause baby to be born with a low birthweight

OZONE | In stratosphere it protects us from the Sun's UV rays, but at ground level, ozone is a component of photochemical smog. In high levels, it can trigger asthmatic attacks

large populations in recent years. The most recent data indicates 2.23 lakh deaths of lung cancer worldwide resulted from air pollution in 2010. The IARC Monographs Programme, dubbed the "encyclopedia of carcinogens", provides an authoritative source of scientific evidence on cancer-causing substances and exposures.

In the past, the programme evaluated many individual chemicals and specific mixtures that occur in air pollution. These included diesel engine exhaust, solvents, metals and dust. But this is the first time that experts have classified outdoor air pollution as a cause of

cancer.

"Our task was to evaluate the air everyone breathes rather than focus on specific air pollutants," said Straif's deputy, Dana Loomis.

"The results from the reviewed studies point in the same direction: the risk of developing lung cancer is significantly increased in people exposed to air pollution."

IARC reached its conclusion after an independent review of over 1,000 scientific papers from studies on five continents.

The studies analysed carcinogenicity of various pollutants present in outdoor air pollution, especially particulate

matter and transportation-related pollution.

The predominant sources of air pollution are transportation, stationary power generation, industrial and agricultural emissions, and residential heating and cooking. "Classifying outdoor air pollution as carcinogenic to humans is an important step," said IARC Director Christopher Wild. "There are effective ways to reduce air pollution and, given the scale of the exposure affecting people worldwide, this report should send a strong signal to the international community to take action without further delay."

The Economic Times, Delhi dated October 19, 2013

Mono-Rail Coming



It's fast, less noisy and eco-friendly. Once it begins operations, the aim is to see surface traffic reduced by 50,000 vehicles and carbon emission reduced by 200 tonne per day

India's first of its kind mono-rail service will be launched in Mumbai in a matter of days. The mass transport system consists of several airconditioned rakes that run on an elevated corridor ferrying passengers between Chembur and Wadala in the first phase and between Wadala and Jacob Circle in central Mumbai in the second phase. When the two phases are complete, the Mumbai mono-rail will be the world's second longest Mono Rail corridor in the world after Japan's Osaka mono-rail corridor which is 23.8km long. Other well known monorails are the Tokyo mono rail, the Tama mon rail and the Star LRT in Malaysia.

The Mumbai corridor will have 17 stations, two less than the Osaka Mono Rail corridor which has 19 stations. The mono rail has been built by the Mumbai Metropolitan Region Development Authority and the contract to build it was awarded to the consortium of M/s L&T and M/s Scomi from Malaysia. The total cost of the project is estimated to be 2460 crore.

The Fare, The Design

Mumbai mono rail fare will range between 8 and 20 for a single trip. The

rakes are in three colours – green, pink and sky blue. The National Institute of Design has designed the exterior.

On the design elements, Kanesan Velupillai, Chief Executive Officer, Scomi Engineering said, "In terms of the interiors, each rake is designed with composite seats and grab rails for easy maintenance and protection. The well lit, light coloured interior and large tinted window panels provide maximum natural light inside the car."

"The advantage over a Metro rail system is that mono requires a one meter wide space for the elevated track and it rests on a single pillar of height 6.5 meter. This causes least disturbance to traffic running below the elevated path. It is also less noisy, eco-friendly and easily accessible in comparison with Metro rail," an MMRDA spokesperson said.

The coaches move on rubber tyres on concrete beams designed to create less noise and vibration during operation. The system is powered by electric motors that are silent and also control emission. "The monorail project is anticipated to reduce over 50,000 private and public vehicles which are petro-chemically fueled thus resulting

in an estimated reduction of 200 tonnes of CO2 emission a day in Mumbai," Velupillai added. The challenge was the narrow corridors available to construct the mono-rail as Mumbai is a densely populated city. The slender tracks have been designed to block less sunlight thus promoting natural landscape of the city. The Mumbai train will be delivered in 4-rake formations with capability to extend to a maximum 6-rake formation in future.

So as per the plan set out by MMRDA, a monorail with four cars will have a capacity to ferry 562 passengers, while one with six cars will be able to accommodate 852 commuters, according to Velupillai.

The Infrastructure

Apart from the elevated infrastructure, the monorail has other assets. The 6.5 hectare Wadala car depot provides parking facility for commuters of 21 trains. There is also an operation control centre, a training center and a power station, a receiving traction substation and a full-fledged administrative facility. The mono-rail will be integrated with all three lines of the Mumbai suburban railways.

ROHIT CHANDAVARKAR / MUMBAI



The Economic Times, Mumbai dated October 19,

Andhra Pradesh All Set to Test 'Green' Push Via Cyberabad

The 20-sq-mile area will have brought down its carbon footprint by nearly a third post project end

**RAJI REDDY KESIREDDY &
SWATHI KELLA**
HYDERABAD

Cyberabad, the tech hub in Andhra Pradesh housing the likes of Google, Facebook and Infosys, will be the laboratory for a state-wide push to go green. At the end of the project, which could take up to five years to implement, the 20-square-mile area will have brought down its carbon footprint by nearly a third.

The Andhra strategy includes constructing 60 km of cycling tracks, providing cycles to work, having zero-discharge offices, and increasing energy efficiency through better cooling and lighting technologies. Apart from reducing the carbon footprint, the aim is to increase green cover in the area to 30% from the current 18%.

"Based on the success rate of this programme in Cyberabad, we plan to extend it to other industrial clusters — both services and manufacturing — spread across the state," says Jayesh Ranjan, managing director of Andhra Pradesh Industrial Infrastructure Corporation, the nodal agency that will coordinate with Nasscom, CII, IIIT-Hyderabad

and German firm GIZ. The UK government is also sharing technology.

Cyberabad has over 90% of the state's IT and related services, consultancies, as well as banking and financial services companies. It is also home to premier institutions such as ISB and the Tata Institute of Social Sciences. This initiative is a step-up on the existing 'green' practices that Cyberabad's most prominent companies already follow. Companies such as Infosys, Microsoft, Wipro and Tech Mahindra already have a 'green' plan in place.

B Jyotirmoy, energy, health and safety head at Wipro, says, "At the design stage itself, we incorporate green standards adoption as a practice. We also have a budget for continuing facility and operations management — which includes energy, water, waste and health and safety management." The company's campus at Gopanpally in Cyberabad, spanning 1.94 lakh square feet, has already been rated Gold.

Similar is the case with Microsoft, whose manager for real estate and facilities in India, Ajit Kumar Varma, says the company's aim is to re-

Turning City Into Green Zone

THE ANDHRA strategy includes constructing 60 km of cycling tracks, providing cycles to work, having zero-discharge offices, and increasing energy efficiency through better cooling and lighting technologies

BASED ON THE success rate of this programme in Cyberabad, the state government plans to extend it to other industrial clusters — both services and manufacturing — spread across the state

certifies buildings based on their environmental impact and energy efficiency. India has its own agency, the Indian Green Building Council, located in Hyderabad.

The government will enable retrofitting of existing buildings into 'green' ones by encouraging the use of energy-efficient lighting technologies, such as LED, heat-proof doors and special paints. It will also work with other agencies on waste management, recycling and water harvesting. "It is a great initiative by the government and it will help reduce the demand for electricity and water," says Rohan Parikh, head-green initiatives and infrastructure, Infosys, which among other things is working on installing a comprehensive rain water harvesting system in its Gachibowli campus. "Most of the existing buildings use fluorescent technologies. If a company replaces its existing lights with light emitting diode (LED) lights, then it would save 50-55% on power usage," says Arun Shenoy, founder of Green India Building Systems and Services, which works with firms to replace existing systems with energy efficient systems.

duce direct carbon footprint by 30% on its own.

The World Green Building Council, a non-governmental body, globally

The Times of India, Delhi dated October 19, 2013

Delhi, Kolkata have the worst air quality in India

Vishwa Mohan | TNN

New Delhi: With the World Health Organization's (WHO) International Agency for Research on Cancer declaring air pollution as a major cause of cancer, its findings have put the focus on Indian hot-spots like Delhi, West Bengal, Maharashtra and Jharkhand which showed high concentration of life-threatening air pollutants.

Air quality data of the government's pollution watchdog, Central Pollution Control Board (CPCB), for 2010 — the last one in the series of such reports — shows that Kolkata and Delhi are among the worst affected cities in terms of air pollution.

In fact, figures compiled by the Indian Council of Medical Research (ICMR) for 2009-11 vindicate what the world health body has concluded while putting 'air pollution' in the same category as tobacco, UV radiation and plutonium as lung cancer causing agents.

Quoting the ICMR data which showed that the highest number of lung cancer cases was reported during 2009-11 in Delhi, Mumbai and Kolkata, noted environmentalist and director general of Centre for Science and Environment (CSE) Sunita Narain said, "It is a worrying development. We need to take urgent steps to find ways to deal with the menace of air pollution."

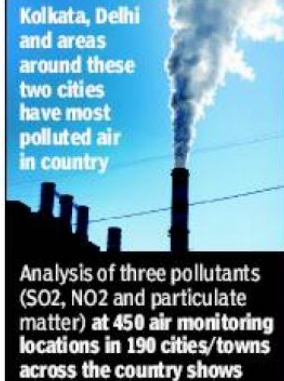
Lung cancer cases peaked in '09-'11

Kolkata, Delhi and areas around these two cities have most polluted air in country

Analysis of three pollutants (SO₂, NO₂ and particulate matter) at 450 air monitoring locations in 190 cities/towns across the country shows

► Delhi, Jharkhand, West Bengal and Maharashtra have worst air quality
► Highest number of lung cancer cases during 2009-11 reported in Delhi, Mumbai and Kolkata
► Half of urban population breathes air that exceeds the accepted standard of PM₁₀

One-third of urban population lives in cities/towns with PM₁₀ levels classified as 'critical'



She added, "The government must immediately make Euro-IV norms in vehicles mandatory across the country and stop incentivizing car users. Government must also focus on public transport in a big way to minimize vehicular air pollution on priority basis."

A CSE report pointed to a forecast of the National Cancer Control Programme which said more than 1.4 million people would suffer from some form of cancer in India by 2026. It also said that out of the total number of cases reported during 2009-11 in Kolkata for 20 types of cancers, lung cancer had the highest share of 12%.

CSE executive director of research and advocacy on

air pollution Anumita Roychowdhury termed WHO's findings as a "wake up call" saying, "This is the first time scientists have evaluated the air people breathe for its cancer-causing potential."

Her report quoted figures of the Delhi Cancer Registry, AIIMS, which said Delhi alone reported 13,000 new cases of cancer every year with 10% of them being lung cancer. It also stressed that all those who suffered from lung cancer in recent years did not have a history of smoking.

Roychowdhury said, "The situation demands urgent and immediate policy intervention to prevent exposure early in life to reduce risk as it takes long years for this toxic effect to surface."

Aerial technology used to find drinking water

Part of mega project to map aquifers in India

Shobha John | TNN

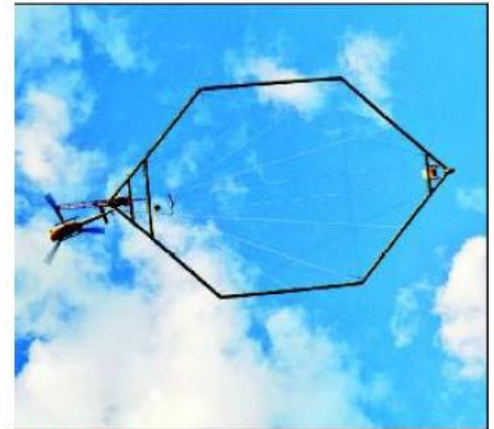
New Delhi: Water scarcity is endemic in our country. With groundwater irrigation accounting for over 60% of the total area irrigated, it's important to save this precious resource. Recognizing this, the ministry of water resources has, for the first time, started a Rs 41 crore pilot project to map aquifers. Expected to be completed by May 2014, it will use specialized choppers to find clean, drinking water. The mapping began recently in Dausa near Jaipur and will cover five more areas.

This pilot project is part of a mega one — the National Project on Aquifer Management — to map aquifers all over India and will cover 21 million sq km. It has been taken up during the 12th and 13th Five Year Plans. The project is in conjunction with the Central Ground Water Board and National Geophysical Research Institute (NGRI), Hyderabad, and is funded by World Bank.

While the country has enough water, its distribution is uneven, said an official of the ministry of water resources.

"In order to assess ground water, we need a three-dimensional geometry of aquifers so that we know how much to extract. Eventually, the community and state governments will manage these," he said. Aquifers, incidentally, are ground water deposits and can be found at a depth of 200-500m.

The six areas covered under the pilot project have been selected on the basis



MAGNETIC MOVE: A specialized chopper searches for water by sending electromagnetic currents through a 300 sq m frame

of soil types and topography. Dausa, for example, has hard rock with alluvium. "The other places include Chandrabhaga in Nagpur (Deccan basaltic traps), Tumkur in Karnataka (granite), Cuddalore in Tamil Nadu (coastal area), Ramgadh in Jaisalmer (desert environment) and Patna (alluvial soil)," said Shakeel Ahmed, chief scientist at NGRI. The matrix that evolves from this pilot project will be used in the rest of the country.

For the first time, aerial geophysical techniques are being used to cover a wide area and even inaccessible ones. Using a Danish technology called Skytem, a specialized Eurochopper is hooked below with a 30-m long probe which has a huge frame of 300 sq m. The chopper flies low — 3,500 km high — and slowly at a speed of 60-80 km/hr so that the frame

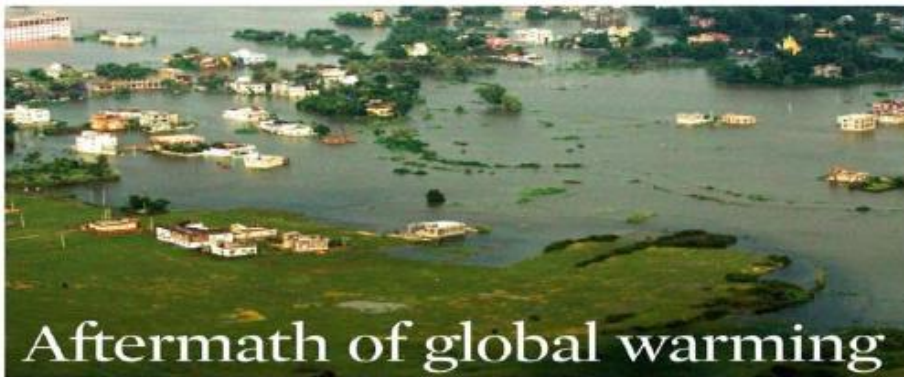
doesn't swing too much, said Ahmed.

"Through the loop, which is made of fibre optics, electromagnetic currents are sent to the ground and the magnetic field thus generated is measured. This allows us to see the distribution of water—how much there is and at what depth," says Ahmed.

"It's important to have a chopper which can carry half-a-ton weight under it. It's especially useful in dry and coastal areas."

This technique, incidentally, has been used to map half of Denmark, informs Lars Jensen, senior field manager, SkyTEM, who is currently in Jaipur. "We have also used it in Australia, Malaysia, Antarctica, South Africa and America. We will finish mapping Jaipur within two weeks and cover an area of some 600 sq km," he said.

Deccan Chronicle, Hyderabad dated October 20, 2013

The Times of India,
Delhi dated October 21,

Aftermath of global warming

NATURE FURIOUS

THE LATEST IPCC REPORT STRENGTHENS THE FACT THAT FOSSIL FUEL BURN-
ING AND OTHER HUMAN ACTIVITIES ARE RESPONSIBLE FOR THE WARMING
OF THE GLOBE SEEN OVER THE PAST HALF-CENTURY.

RASHMI SEHGAL

India appears to be a creaking battleship struggling hard to come to terms with climate change. Not only has India become warmer than it was five decades ago but extreme weather events such as flooding, drought and cyclones are driving this battleship aground.

Some of the deadliest tropical cyclones in history have emanated from the Bay of Bengal triggering speculation that these could well be linked to climate change, the most recent being cyclone Phailin which lashed the Odisha coast early October. This was preceded by heavy rainfall that struck Uttarakhand in mid-June causing rivers and glacial lakes to overflow, triggering massive landslides. This was preceded by an earthquake in Sikkim in 2011 which left several dead.

An analysis of extreme weather events caused by increasing heat hosted on the National Disaster Management Authority website, shows that extreme weather events have increased in the past three decades. The average number of extreme weather events on an annual basis has more than doubled from 140.8 in 1980-89 to 350.4 in 2000-10.

The Indian Institute of Tropical Meteorology has



1. An image of Virgin Mary and Holy Child Jesus is placed amidst the totally collapsed Our Lady of Light Catholic church, in central Philippines after a 7.4-magnitude quake.
2. A temple is submerged due to flood triggered by Cyclone Phailin in Jajpur district of Orissa.

also shown that much of India is warming.

Rising temperatures will affect the Indian monsoon. The Fifth UNFCCC report confirms our worst fears. The report states: 'While monsoon winds are likely to weaken, monsoon precipitation is expected to intensify due to increase in atmospheric moisture. Monsoon may arrive earlier. Monsoon retreat dates are likely to be delayed, resulting in the lengthening of the monsoon season.'

The report warns that greenhouse gas emissions need to stay within 800 giga-

tonnes of carbon equivalent but humans have already used up around 530 GtC. The remaining 270 GtC is expected to be used up in the next two decades.

India wants the atmosphere to be shared equitably. But within the country, rampant deforestation, large-scale construction of hydroelectric dams and unregulated urbanisation is worsening the situation.

Environmentalists have warned that around 76 per cent of India's coastline is prone to cyclones and tsunamis and the main protection against these is to extend mangrove forests. The first line of defence against cyclones has been destroyed just as increasing deforestation of the Himalayas has led to a sharp increase in landslides. Another 59 per cent of the country is vulnerable to quakes while huge tracts are prone to floods.

No wonder, India remains one of the most disaster-prone countries in the world with its 1.2 billion people increasingly vulnerable to extreme weather events.

How is this creaking battleship going to be turned around? "We do not have a credible climate change policy," pointed out Dr Ravi Chellam, an environmental biologist. Unless an environment blueprint is prepared and implemented, no amount of crying wolf is going to help.

Temp-induced moisture stress causing trees to wither

Jayashree Nandi | TNN

New Delhi: A study has found a worrying increase in 'browning' in forests in the eastern Himalayas.

This may mean that the trees in these forests are not able to transpire at the optimum level and their photosynthesis activity has reduced due to temperature rise. Among the 47 protected areas across five biodiversity hotspots selected for the study were Kangchendzonga national park in Sikkim and Namdapha national park in Arunachal Pradesh.

"One would imagine the mountains would become more green with the rise in temperature, but it is not so," said Jagdish Krishnaswamy, one of the authors and a scientist at Ashoka Trust for Research in Ecology and Environment (ATREE). "There is a temperature-induced moisture stress which is causing the trees to wither. There is less foliage even during the most productive time of the year in almost all the five regions we have studied." The study also points to complete loss of certain moisture regimes in these forests.

"The globally consistent browning trends that we observed indicate that such phenomenon is probably more widespread in tropical mountains, with implications for primary production and species diversity at all levels," the study concludes. Researchers used normalized difference vegetation index (NDVI) which monitors live green areas from remote sensing data from 1982 to 2006 and focused on select high altitude (1,000 to 5,000 metres above mean sea level) protected areas in the tropical belt. During the period, there was an increase in temperature and trends in precipitation were different for different regions. Despite that, scientists spotted a similar browning trend in all the areas covered.

"In the Himalayas we see temperature rise of about 1 degree C between 1982 and 2006. But it's not the same for other continents that we studied," explained Krishnaswamy. Except for South America, all the other four regions studied experienced a steady rise in temperature during the period but precipitation trends were inconsistent.

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

The Times of India, Delhi dated October 21, 2013

Auditing firm RSM forays into energy services biz

Acquires Majority Stake In General Carbon

Namrata Singh | TNN

Mumbai: RSM Astute Consulting Group, which ranks among the top six accounting and consulting players in India, has acquired a majority stake in General Carbon, a sustainability and energy advisory service company, marking its foray into this fast developing sector.

RSM Astute Consulting is the Indian member of RSM International, the seventh largest network of independent audit, tax and advisory firms in the world with an annual combined fee income of \$4 billion. While it competes on all counts with the big four — EY, PwC, KPMG and Deloitte — it was not present in the energy and sustainability service business. One of the main reasons for acquiring General Carbon is to get a ready presence in this sector.

"RSM in India has taken a strategic stake in General Carbon (GC), which now becomes a subsidiary of RSM in India and will be called RSM GC Advisory Services," K H Viswanathan, executive director, RSM Group in India,



A FAST GROWING SECTOR

told TOI.

General Carbon provides strategic, technical and financial services across major energy and environmental commodity markets. It is said to be the third largest company in the carbon asset management sector, where EY (formerly known as Ernst & Young) and Emergent Ventures are the leading two.

General Carbon is promoted by P Ram Babu who, in his 35-year experience in this field, has helped governments and multilateral agencies define policies on sustainable development and plans to address environmental issues.

Although the financial aspects of the deal were not revealed, the acquisition presents an opportunity for RSM to enter a new field which has huge growth potential while on the other hand, it provides General Carbon the leverage to grow globally on the back of RSM's global network. According to Viswanathan, RSM plans to build on GC's business in India and expand it globally to compete with the big four.

Ram Babu, who will continue as CEO of the RSMGC Advisory Services, said, "The sustainability sector is currently of the order of Rs 150 crore but is slated to grow to Rs 500 crore in the next two to three years given the mandatory requirements for companies to follow under the Companies Act and other regulations on the energy efficiency and sustainability front." Companies, big and small, have been relying on such speciality service providers to help them adopt best practices on sustainability and carbon emission reduction fields. This is generating a huge demand for services in energy and sustainability advisory business.

E Himalayan forests turning brown: Study

Jayashree Nandi | TNN

New Delhi: In what appears to be another grim outcome of climate change, a study has found that forests in eastern Himalayas are gradually 'browning', with trees withering and foliage declining even during productive seasons. Similar changes have been noted in tropical moun-

tain forests across the world.

The study used satellite images from 1982 to 2006, which revealed a common trend: mild greening till the mid 1990s and then a sudden

TREES WITHERING

► Kangchendzonga and Namdapha national parks in Northeast among tropical mountain forests across world found to be turning 'brown'

► Satellite study finds trees withering & foliage declining

► This may mean reduced photosynthesis due to temperature rise

and steady reversal which is making these forests appear drier and brown.

The study has been accepted for publishing in the Global Change Biology journal.

Delhiites worst hit by air pollution: Study

Kolkata Institute Finds Bad Air Killing Immunity

Jayashree Nandi | TNN

New Delhi: If you did not consider air pollution a major threat, then think again. Scientists from the Chittaranjan National Cancer Institute (CNCI) at Kolkata have been studying air pollution in Delhi and Kolkata for over 15 years now. In their study, they have found that the alveolar macrophage (AM) per unit level was about two to three times higher in subjects from Delhi than in subjects from less-polluted towns.

The study has made a direct correlation between PM 10 levels (particulate matter) in different parts of the capital and the AM response which acts as a defence system to the lungs. AM (cells in the lungs which clean off dust particles and micro-organisms) is seen in very high numbers among subjects from central Delhi, followed by residents of west Delhi, and the activity was least among the residents of south and southwest Delhi.

The study also looked at the impact of air pollution on the lungs of subjects from different zones in Delhi. Cases of bronchial asthma were higher in the subjects that were being studied in Delhi as compared to the control group from

smaller towns. "AM levels can be studied by testing the sputum of a person. As it's a non-invasive procedure, subjects agree to give their samples. It's also a great bio-indicator for pollution exposure. Since AMs are defence cells, they increase in large numbers whenever there is an attack from infections," said Manas Ranjan Ray, head of department of Hematology, CNCI who is con-

The study has made a direct correlation between PM 10 levels in different parts of the capital and the AM response which acts as a defence system to the lungs

ducting the study along with 12 other scientists.

In Delhi, the AM tests were done on adults and children and then compared to subjects from Himachal Pradesh, Uttarakhand and sub-urban West Bengal.

"Our sample size for Delhi is more than 6,500 adults and about 10,000 children. For both the study group and control group, we mapped their body mass index (BMI), food habits,

socio-economic conditions and many others. The correlation of the two groups was statistically significant. Then we focused on how air pollution was changing the health parameters for our study group from Delhi and Kolkata," added Roy.

The long-term study—being funded by Central Pollution Control Board (CPCB) and World Health Organization (WHO)—covers not just respiratory problems caused by air pollution but also incidence of certain kinds of cancer and changes in behavioral pattern of children. The researchers, including Roy, have been publishing a number of scientific papers on their work periodically. Roy recently made a presentation based on the study at a conference organized by the Centre for Science and Environment (CSE).

Roy said that air pollution is compromising immune systems of people in cities dramatically. "We found depression incidence to be twice high in Delhi as compared to the control group. Our study shows this is linked to air pollution. Liver and kidney function is also affected," he said, adding that long-term exposure to benzene can cause DNA damage.

The Times of India, Delhi dated October 21, 2013

Experts plan to toy with nature, fight warming

But Geoengineering Experiments, Like Using A Giant Mirror To Reflect Sunlight, May Wreak Havoc

MemphisBarker

THE INDEPENDENT

Two years ago this month, in a disused UK airfield, scientists were preparing to undertake one of the more controversial experiments in history. A dirigible balloon would spray 120 litres of water droplets into the sky; a miniaturized test for a larger system that would pump out chemical particles to reflect sunlight and, so the scientists hoped, cool the planet. It was to be a momentous day.

Geoengineering is the large-scale, technological manipulation of the climate (some call it "planet hacking"). But back in 2011, shortly before lift-off, the Stratospheric Particle Injection for Climate Engineering (Spice) team aborted their experiment. There was, they feared, no way of knowing who could use their research, or in what way.

Little has changed in practical terms since 2011. Yet, since the end of last month, the prospect of geoengineering has cast a giant shadow over the world of environmental campaigners and climate scientists. On September 27, the Intergovernmental Panel on Climate Change (IPCC), the world's most respected authority on global warming, acknowledged the need to consider it as a weapon against rising temperatures. And a number of people started to panic.

Geoengineering technologies are the stuff of Hollywood disaster movies. Researchers have suggested sending a giant glass sunshade into space to reflect light; the eruption of artificial volcanoes, or spraying of sulphate aerosols into the stratosphere; dissolving mountains and put-



DOUBLE-EDGED SWORD: An artist's impression of an equipment which, its creator claims, can extract 1,000 times more carbon dioxide a day than a tree

ting remains in the sea; and, filling the ocean with iron filings to stimulate algae blooms. Already, a protest movement of sorts has formed.

And the reasons for the concerns go back to the Vietnam War, when US planes seeded clouds in the skies above a strategic pass in Vietnam with silver iodide particles, extending the monsoon season and turning the strategic pass into a bog. In 1977, the Enmod (Environmental Modification Convention) treaty outlawed weather warfare. The IPCC statement has again raised the spectre of weather warfare.

Besides, from computer modelling, we know how wrong an answer geoengineering could be. Spraying large amounts of sulphate aerosols into the stratosphere would blur the presence of the sun's disc. Dumping iron filings into the might kill off large swathes of marine life.

But can geoengineering really fight climate change? A look at a few geoengineering experiments might give some idea. Strato-

spheric aerosols could stop heat from reaching the Earth's atmosphere by reflecting some of the sun's rays back into space. Though this would be among the fastest fixes to global warming, it is also among the riskiest. Global weather patterns could be drastically affected. Experts give it a 5/10 score on practicality.

As for space reflectors, assembling a giant glass sunshade in space and then firing it into orbit could reflect a small proportion of the sun's rays, making warming more manageable. But the reflectors would be vulnerable to asteroids, and maintenance would require money. So, the experiment gets a 4/10 on practicality.

Ocean fertilization involves dropping iron filings into the ocean to generate blooms of carbon-absorbing plankton. The plankton would take in carbon dioxide, carry it with them as they drift to the ocean floor after death. But it would take a long time for little effect, and could wipe out marine. So, a poor practicality score of 2/10. THE INDEPENDENT

*Deccan Chronicle,
Hyderabad
dated October 22, 2013*



Waste management gets popular

DC CORRESPONDENT
HYDERABAD, OCT. 21

While the GHMC has been grappling with the issue of waste management for years, the Residential Welfare Associations of Umanagar Colony, Methodist Colony — Begumpet, Uppal, Shanthinagar and Masab Tank have come up with a solid waste management initiative.

Inorganic garbage like bottles, plastic and metal that can be recycled are being segregated at the colony level or homes and then handed over to be recycled. Organic waste is being transported to the GHMC dumping yard. With this, close to 40 per cent of waste is

HCU FIRST TO TAKE INITIATIVE

Hyderabad: Setting an example in this regard is the HCU.

Waste in the university is collected daily from the 200 odd quarters on the campus as well as from the hostels. Segregation at source of organic and inorganic waste also takes place. Secondary segregation takes place at the

Zero Waste centre. Biodegradable waste is converted into vermi compost and paper, plastic, metal and glass is sent into informal recycling stream.

The vermi compost is used in HCU gardens.

HCU is probably the first university in the country which has successfully implemented this system.

source segregation. But this has not been possible.

However, some institutions, RWAs and individual homes have taken it upon themselves to help the GHMC in this regard.

Residents of Methodist Colony segregate their waste out of concern for the *subrak* (rag-picker) who otherwise would have to scour the waste with bare hands to recover recyclables.

Madhavi Lata of Umanagar Colony has gone a step further to set up a terrace vegetable garden with a regular supply of vegetables and flowers grown with the compost from her biodegradable waste.

being minimised.

On an average 4,000 tonnes of garbage is generated daily in the city — at 2 kg per family. About 750 vehicles are used for transporting waste, cost-

ing more than ₹100 crore per annum.

As per the Solid Waste Management Guidelines issued by the SC in 2000, municipalities are supposed to strictly enforce

The
Economic
Times,
Mumbai,
dated
October
23, 2013

ECO-FRIENDLY

Going Green a Priority for Indian Companies



George Wyeth

Spending four months in India as an American scholar concerned about global environmental issues, it was enlightening to see what Indian companies are doing to put themselves on a path toward sustainable growth. Based in Pune, conversations with people in large and small companies yielded surprising results.

To be honest, India's global image on environmental issues is not a great one. It ranks low on Yale's Environmental Performance Index, and enforcement of environmental laws is generally thought to be uneven. So, it could be assumed that sophisticated sustainability efforts would be found in the local operations of multinationals (MNCs), and possibly suppliers to them under pressure to be "green". The presumption is that most Indian firms would be focused on short-term growth rather than sustainability.

However, a significant number of India-based businesses do have sophisticated sustainability efforts. These initiatives are designed by the companies' own experts and driven by each company's local needs and opportunities, not by pressure from MNCs. The MNCs had sustainability efforts of their own, but there was little evidence that they were influencing their local suppliers.

The greenest company was Godrej and Boyce. Its programme Good and Green includes (a) greening company operations, (b) developing greener or socially-beneficial products, and (c) supporting educational program-

mes to train more skilled shopfloor workers. Godrej makes energy-efficient air-conditioners, and is one of the first makers in the world to market products with extremely low-GHG refrigerants. It has "greened" its operations to make maximum reuse of discarded materials, minimise energy and water use, and cut GHG emissions by switching from diesel to biomass fuel.

A visit to Godrej's factory in Shirwal revealed that its sustainability targets were displayed in the factory's conference room. That showed sustainability is a serious priority.

Some other companies are also making a mark in this arena. Hindustan Unilever, for example, has set aggressive goals for its own operations, aiming to cut carbon emissions by 22%, water use by 29% and waste by 77% per product manufactured. ITC has received global recognition for its efforts to keep small farmers economically viable. Kirtokar Brothers is marketing a line of highly-energy-efficient pumps, significant because pumping water is one of the major drivers of energy demand.

The Tata Group has embedded sustainability into its organisational DNA.



When Tata scores each of its component companies on measures ranging from leadership to business results, it looks for evidence of action being taken to combat climate change, reduce waste and use sustainability strategically as part of their business planning. So, sustainability is part of the main corporate strategy.

Ashutosh Pandey, CEO of Delhi-based investment firm Emergent Ventures, estimates that between 50 and 100 companies are addressing sustainability in a comprehensive way (that is, addressing issues beyond energy and climate). Nitin Kalothia, with consulting firm Frost and Sullivan, offered similar numbers but says that awareness has risen dramatically in the last 2-3 years among many firms.

Industry associations such as the CII actively encourage their members to be more sustainable. India, unlike the US, has an official Action Plan on Climate Change and has launched an innovative energy efficiency programme called Perform, Achieve and Trade. Efforts to create a carbon cap in the US failed several years ago.

The larger economic picture is a sobering one at the moment for Indian businesses and manufacturers. A big question will be whether sustainability efforts survive this period. However, companies are unlikely to scale back efforts for which there is a true business case.

The bigger challenge will be in the public sector, as voluntary efforts alone will not solve the country's environmental problems. The efforts of leading businesses need to be complemented with enforcement to improve standards, and a firm commitment to the rule of law. In future, it is hoped that progress can be reported in those areas as well.

The writer was a visiting Fulbright Scholar in India

The
Times of
India,
Delhi
dated
October
23, 2013

Now, you can recycle old shoes

London: British scientists claim to have developed the world's first comprehensive system for separating and recovering useful materials from old footwear. The newly developed recycling process is able to granulate and segregate leather, plastic foams and rubber so that they can be reused in products ranging from rubber playground surfacing to new shoes, researchers said. The system was developed and tested at Loughborough University's Innovative Manufacturing and Construction Research Centre.

"Footwear is incredibly difficult to recycle as it can contain up to forty different types of material, many of which are stitched or glued together," said professor Shahin Rahimifard, who led the project. "In our process, the first, manual step is to pre-sort shoes into broad types, such as trainers, and to recover metals, such as eyelets. Next the shoes are automatically shredded and granulated, with the granules automatically separated into four waste streams: leather, foams, rubber and other material," he said. ■

The Times of India, Delhi dated October 23, 2013

Lower tariffs drive mega solar dreams

Govt Plans World's Biggest Plant; Solar Power Price Down To ₹8.50 From ₹18 A Few Years Ago

Sanjay Dutta | INN

New Delhi: The sun is literally shining on India's green energy sector, with the government taking a leap of faith by planning to set up mega solar power plants that would be the biggest in the world as technology costs come steadily down to make these projects viable.

As first reported by TOI last month, the department of heavy industries is piloting a solar project with a staggering capacity of 4,000 MW. A project of this size would be a global first for solar technology, and would be similar in size to other ultra-mega power projects conceptualized to quickly ramp up India's generation capacity.

State-run power gear maker Bhel would build the first phase of the 4,000 MW project for a joint venture of state-run companies on 23,000 acres of land belonging to Sambhar Salts Ltd, a

SUNSHINE SECTOR

- Bhel-led consortium of state cos plan 4,000MW solar photovoltaic plant in Rajasthan
- Plant's capacity will be similar to other ultra-mega power projects envisaged to quickly boost country generation capacity
- NTPC's power trading arm NVVN also plans to bid out a 750MW solar plant

POWER FUTURE

- India's grid-connected solar PV capacity is over 1,600MW against a target of 1,000MW for period 2010-13
- Solar contributes less than 0.5% of India's energy mix but govt hopes to ramp it up to 5-7% by 2022
- Study by power gear-maker Schneider says 80% of surveyed companies expect to meet 15% of their power needs from green sources in 3 years

IS IT COSTLY?

- Yes, but tariffs have come down to Rs 8.77/unit from Rs 18 initially and are expected to fall further. Solar is already cheaper than power from diesel
- Solar becomes viable when bundled with power from coal-fired plants which costs about Rs 4 per unit

subsidiary of central enterprise Hindustan Salts Ltd, some 75km from Jaipur.

There's another plan to bid out solar capacity generation of 750 MW in the second phase of the Jawaharlal Nehru National Solar Mission (2013-17).

This would be similar to conventional power plants where a company offering

the lowest tariff gets to set up and operate a project. However, the ministry would provide viability gap funding to these solar plants for making tariffs more affordable.

Solar power tariffs have come down to Rs 8.50 per unit from Rs 18 a few years ago, removing one of the major impediments in the sector's growth. Rates are expected to drop further as projects gain economy of scale. Even at current tariffs, the non-conventional and renewable energy ministry (MNRE) considers solar power viable when bundled with electricity from conventional sources.

All these factors together are prompting companies such as Reliance Power to think in terms of setting up 100MW solar plants while the capacity of such units have earlier been in two digits. A recent study by power equipment maker Schneider said 80% of the surveyed companies expected to get 15% of their electricity from renewables in the next three years.

According to MNRE secretary Ratan P Watal, nearly 40% of India's population lacks access to conventional

energy resources. Even providing one unit of power to such households throughout the year would itself need a capacity of 15,000 MW of solar power. The growth in solar power is already beyond expectations. A capacity of 1,685 MW was added in the past three years since JNNISM was launched against a target of 1,000 MW. The government is now set to roll out the second phase with the aim of ramping up capacity to 10,000 MW by 2017. Solar contributes less than 0.5% of India's energy mix but government hopes to ramp it up to 5-7% by 2022 when the JNNISM's third and final phase concludes and tariffs become competitive against grid.

A 2010 study by the US-based The Pew Charitable Trust estimated clean power investments in India to touch \$169 billion over the next decade, much of it in solar and wind power plants.

*The Times of India, Delhi
dated October 25, 2013*

Squatters threaten to eat up Asola greens

Digitized Maps Show Growing Encroachment

Jayashree Nandi | TNN

New Delhi: The Asola Bhatti wildlife sanctuary is losing pristine forest land to encroachments. Though sanctuary status is supposed to protect the green patch, reality is quite different. The 2001 map of Asola shows no encroachments. In 2007, around five grey areas (non-forest) which look like houses have come up; the 2013 map shows not just grey areas but also a patch that looks like a large colony cluster toward its boundary with Maidan Garhi.

The Bhatti side of the sanctuary shows six grey patches including a large patch which is Sanjay colony (a settlement of over 25,000 people). The size of the colony seems to have increased significantly from 2001 to 2013. TOI was shown these digitized maps in reply to a Right to Information (RTI) query on the extent of encroachments in southern Ridge.

TOI had sought details of the forest area that has been encroached as per the recent digital maps that the forest department is preparing.

Out of 18 digitized maps that are to be prepared of the southern Ridge, chief wildlife warden, A K Shukla said only one map of Asola Bhatti sanctuary has been made so far. "The grey areas seen in these maps cannot be confirmed to be constructions before we complete the ground-truthing exercise. They may even be dry forest because of which they look grey."

According to the forest department, the encroached area, excluding Sanjay colony, is about 7,500 square metre (over 1 acre). But this may be a conservative estimate as the grey areas seem considerable in the maps.

While Sanjay colony, creat-

SANCTUARY IN A BAD SHAPE



Asola Bhatti wildlife sanctuary is spread over 6,800 acres

► Part of southern Ridge, the sanctuary runs along Delhi-Haryana border and Faridabad

► Legal status of southern Ridge uncertain till 1986 when community land of three villages—Asola, Shapur and Maidan Garhi—were notified as sanctuary. The land of Bhatti mines area notified in 1991

► Sanjay Colony, located inside Bhatti area, has over 5,000 houses

► Forest dept's 2013 map of Bhatti shows colony's area has expanded since 2007

► In 2006, Supreme Court orders eviction of colony residents. But many civil society organizations feel it would be anti-poor and unjustified as many farmhouses and other establishments still exist in Ridge area

► Digitized maps of forest dept also show encroachments in Asola

ed for the settlement of Pakistani refugees, has been inside the Bhatti mines area since 1980s, the forest department couldn't explain what the rest of the encroachments were. Around seven more encroach-

RTI REVEALS

ments in different parts of the Bhatti area have come up in the 2013 map. Some of them appear to be large houses or farmhouses.

"This is a serious issue. We never knew of any encroachments on the Asola side of the sanctuary. These encroachments are clearly illegal and allowed by design. What were the forest department and

Ridge Management Board doing all this while?" said Ravi Agarwal, conservationist and former member of RMB.

The sanctuary, a part of Delhi Ridge, is not just important because of its biodiversity but also for its massive groundwater recharge capacity and carbon sink potential.

National Green Tribunal (NGT) had pulled up the Delhi government in July 2013 for "creating an unmanageable situation" by not making clear which regions of the Ridge are being considered as forest area "as construction is going on all over the place". The forest department started preparing digitized maps of the Ridge to be submitted to the court.

*The Times of India, Delhi
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More Lethal Greenhouse Gas

India must discuss phasing down hydrofluorocarbons which endanger the planet

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In September, Prime Minister Manmohan Singh and President Barack Obama agreed to discuss how hydrofluorocarbons (HFCs), which are hundreds to thousands of times more potent global warming compounds than carbon dioxide, could be phased down. They agreed, bilaterally and at the G20 summit, to use the expertise and institutions of the Montreal Protocol and report emissions under the UN Framework Convention on Climate Change (UNFCCC).

Action on HFCs offers some common ground in the protracted climate negotiations, potentially creates commercial opportunities for Indian firms, and allows India to assume the mantle of climate leadership.

Despite the Singh-Obama agreement, this week India opposed discussing amendments in the Montreal Protocol to phase down HFCs. Opponents list four main concerns against acting on HFCs. Let us consider each one.

First, action on HFCs is undesirable because action on carbon dioxide would be ignored by developed countries. The converse is also true. In 2050 HFCs could account for 20%-40% of the warming attributed to carbon dioxide, if the latter's levels were held to a two degree celsius climate stabilisation scenario. In effect, action on carbon dioxide could be negated if HFC growth remains high between now and 2050, thanks to rapid expansion of

refrigerant use in air conditioners. So, we need action on both fronts. Cherry-picking greenhouse gases will not succeed.

Secondly, the concern is that the Montreal Protocol route ignores the UNFCCC process, while not guaranteeing financial support for India to transition to non-HFC alternatives.

There can be no guarantee of funding unless we estimate costs and participate in negotiations. That is what India did during 1987-1990 to secure funding under the Montreal Protocol's Multilateral Fund for the transition from Chlorofluorocarbons to Hydrochlorofluorocarbons. Based on past experience, there is higher chance of getting money through

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the Montreal Protocol than through the UNFCCC, which has failed to deliver any significant funds for climate activity.

Would UNFCCC negotiations lose steam then? That is one possibility. It is also possible that countries that do act on HFCs have stronger voice in UNFCCC negotiations, demanding that developed countries act on carbon dioxide as well as start reducing HFCs now. The UNFCCC battle has to rage on.



This was the right path to deal with climate change

Thirdly, some worry that India is being forced into a corner just because China and US have cut a deal on HFCs. Fair enough. Our negotiating strategies must be set based on our self-interest. India and China are not the same when it comes to greenhouse gas emissions, so the more we ally with them, the more we will have to take on similar burdens when we should not be doing so. That situation has now emerged. By being intransigent on HFCs, we have made China, let alone the US, look like a hero. This week, while India opposed discussion on HFCs under the Montreal Protocol, China remained silent. India eventually failed to keep the issue off the agenda. If we refuse to talk about it, we cannot develop a strategy. Only China and US win in that case.

Fourthly, critics argue that action on HFCs is undesirable because it opens up India's refriger-

ants market to foreign companies peddling alternative chemicals.

So? Indian companies are also undertaking research and development for alternative chemicals (such as efficient hydrocarbons) as refrigerants in room air conditioners. Indian car companies are using lower emission refrigerants for cars meant for EU or US markets, where standards are changing. Business opportunity is not a prerogative of only the developed world. Arguing that we should not act on HFCs because someone else invented the alternatives is like saying we should not fly because two American brothers invented the aeroplane.

Prime Minister Singh showed leadership and strategic insight by keeping both the UNFCCC and Montreal Protocol routes open while acting in concert with other G20 countries.

What should India do next?

One, do not compromise on action on carbon dioxide even if HFCs are phased down. India should suggest periodic review of actions on carbon dioxide and HFCs, thereby keeping the issue alive within the UNFCCC while proceeding through the Montreal Protocol on operational issues.

Two, identify impacts on India via temperature rise if HFCs are not curtailed, or if carbon dioxide is not reduced, or if the world fails to control both.

Three, engage with Indian firms, particularly manufacturers of automobiles, home appliances and refrigerants. We need better understanding of the cost of transition, efficiency gains and losses, changing technical standards in export markets, commercial opportunities for Indian-made automobiles and home appliances, and potential patent-related concerns.

Four, engage the best global experts (Indian and foreign) on safety issues relating to alternatives to HFCs.

Five, develop a strategy for supporting Indian firms, which would be adversely affected by the transition. Financing for them would also have to come from multilateral sources.

Discussing HFCs with the US bilaterally and negotiating a multilateral roadmap to phase down HFCs are not mutually exclusive. India should ensure that an agreement delivers replacements that are technologically safe, commercially viable, and contains adequate financial support to make the transition.

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