

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

Business Sustainability News

International

Beyond carbon: Emissions cuts the energy industry has missed

By Emilie Pratico

As we enter the second half of the year, activity is picking up in advance of the United Nations COP21 climate summit in Paris this December.

China just released its "Intended Nationally Determined Contribution" to peak its carbon-dioxide emissions around 2030. And in June, six oil and gas majors — BG Group, BP, Eni, Royal Dutch Shell, Statoil and Total — published a joint letter to the U.N. and international governments to affirm their own climate commitments and call for action to ensure we remain within the 2 degrees Celsius threshold.

Christiana Figueres, executive secretary of the U.N. Framework Convention on Climate Change, responded with her own open letter to welcome the oil and gas industry's efforts and suggest ways they can support government action.

Whatever Paris delivers, the energy sector can make immediate progress to build momentum for the transition to a low-emissions economy. The industry is uniquely positioned to address short-lived climate pollutants — black carbon, methane, tropospheric ozone and hydrofluorocarbons — through fast mitigation.

Indeed, up to 1 degree C (PDF) of temperature rise can be avoided this way. Based on BSR's work with the Climate and Clean Air Coalition (CCAC), there are three main areas where the sector can make progress on short-lived climate pollutants:

1. Address methane leakage in company operations

According to the CCAC, more than 8 percent of global natural gas production is lost to venting, leakage and flaring, costing \$27 billion to \$63 billion in energy and economic losses every year.

It is technologically feasible to capture much of the methane emissions associated with leakage in oil and gas production with varying break-even costs, but most companies see these investments as peripheral to their core business.

Companies can address this by shifting more capital expenditures toward technologies to prevent leakage, and by collaborating with government (and the effort led by CCAC) to create a global standard in controlling methane emissions in oil and gas systems.

2. Put a price on carbon

If done effectively, a price on carbon, supported by the six majors, would take into account all carbon equivalents, including methane — a pollutant whose warming potential is 25 times greater than carbon dioxide.

Many oil and gas companies already have begun moving in this direction by applying a shadow carbon price in making investment decisions, and this also can be applied to short-lived pollutants such as methane.

3. Change company culture

Decision-making on fast mitigation of methane is most likely to happen at headquarters level, but methane leaks occur at the facility level.

Companies can address this disconnect by encouraging methane management with an incentive structure that rewards implementing break-even or cost-negative mitigation measures.

In addition to our partnership with the Climate and Clean Air Coalition, BSR is also partnering with We Mean Business to support companies who wish to reduce methane emissions from oil and gas production. The coalition has added fast mitigation as one of the seven actions companies can take on climate.

Fast mitigation provides a tangible way for oil and gas companies to take action on climate in a way that is affordable, pragmatic and beneficial across a range of sustainability metrics. This is the kind of solutions that will be needed to turn an agreement in Paris into a reality.

[<ReadMore>](#)

Apple, GM, Google and the \$140 billion pledge to combat climate change

By Keith Larsen

General Motors has pledged to help find a way to make electric vehicles more mainstream.

In preparation of COP21, officials from 13 of America's largest companies including Apple, Walmart, and Goldman Sachs gathered with Secretary of State John Kerry at the White House on Monday to announce a \$140 billion pledge in low-carbon investments.

The announcement is a part of the Obama Administration's American Business Act on Climate Pledge, which looks to partner with the private sector to reduce carbon emissions and meet its previously stated goal of reducing greenhouse gas emissions throughout the United States by 26-28 percent in 2025.

In addition to the \$140 billion pledge in low carbon investments, the 13 companies announced that their investment will also include a commitment to 1,600 megawatts in new renewable energy.

"These are executives who saying that climate change is already costing us too much. And the longer we delay action the higher the price tag grows," said Bob Deans Director of Strategic Engagement at the National Resources Defense Council (NRDC).

The companies participating in the Climate Pledge across a variety of different industries, and along with Goldman Sachs, Walmart and Apple, include PepsiCo, Bank of America, Google, General Motors, steel supplier Alcoa, Coca-Cola, Cargill, UPS, Microsoft and Berkshire Hathaway Energy.

Combined, the 13 companies' yearly revenues total \$1.3 trillion*; however, each company's commitments to reduce carbon emissions differ.

Cargill's Vice President of corporate affairs, Mike Fernandez, added, "With our unique position in agricultural supply chains, it is important for Cargill to participate in the conversation about the needed response to climate change. This is for us not just about doing the right thing, it is about doing the smart thing for our customers."

These commitments include Alcoa's pledge to reduce GHG emissions by 50 percent in 2025, as well as Bank of America's pledge to increase their "environmental business initiative", which includes lending, financing and advisory services from \$50 billion to \$125 billion by 2025.

"These are not companies that would make decisions lightly. I think it sends a signal to other companies," said Anne Kelly, a Senior Program Director at sustainability NGO Ceres.

Leading up to Paris

The companies' combined pledges come before the United Nations Climate Change Conference, which is being held in Paris in December as countries world look to hold the world's temperature from rising above 2 degrees Celsius and mitigate the ravishing effects of climate change.

Last September at the UN Climate Summit in New York, President Obama stated, "There's one issue that will define the contours of this century more dramatically than any other, and that is the urgent and growing threat of a changing climate."

As COP21 approaches, the Climate Pledge also highlights the role that businesses and companies will play in Paris, and the role that they play in reducing GHG emissions given that there is little regulation requiring them to do so.

"We have to have very strong U.S. ambition going into Paris," said Kelly. "These are all U.S. companies and it's really important that the U.S. negotiating team has the economic cover to go and push for a strong deal."

The Climate Pledge also looks beyond reducing carbon emissions as companies pledge to reduce water and waste as well as increase investment in renewables.

In the press release, Google announced that it would reduce water usage by 30 percent reduction in their Bay Area headquarters by the end of the year. General Motors plans to reduce waste by 40 percent in 2020 using 2010 as a baseline.

[<ReadMore>](#)



Shutterstock/Steve Lagreca



Shutterstock/Leonid Ikan

Methane flares are a highly concentrated and immediate form of harmful emissions — which should make the gas a prime target for energy companies looking to cut their climate impacts.

3 strategies to shape more efficient water systems

By David Festa, Vice President, Ecosystems Environmental Defense Fund



Specific investment and policy approaches can help shore up water supplies in areas experiencing new levels of scarcity first hand.

The crippling drought in the American West is making headlines daily and the stories are raising a collective awareness of the unfolding crisis — as The New Yorker did recently when it chronicled the plight of the Colorado.

If there's a silver lining to the Western water crisis, it's that governors, state legislators and federal policymakers are finally taking action to ensure a reliable water supply.

These are welcome actions — except top-down government mandates, while sometimes necessary, won't result in the durable change we need to move from scarcity to sustainability.

Top-down mandates only work as long as there is political will to enforce them. In order to crack open the ossified structure that has dictated unsustainable water policy for more than a century, we need to build ground-level support for flexible solutions that benefit everyone — including cities, agriculture and, of course, the environment.

Here are three areas ripe for investment:

1. Groundwater allocation: Local solutions key

Groundwater is vital for irrigation, drinking water and freshwater ecosystems. In California, we have a golden opportunity to get groundwater management right on all counts.

Until September, California groundwater was unregulated. Today, a new law on the books requires local districts to develop plans for maintaining safe levels in their aquifers.

Early success in influential communities can build the champions and examples needed to create change, spur additional water reform in California and help inform groundwater initiatives elsewhere in the West.

Now is the time for agricultural, business, environmental and local community interests in these groundwater basins to come together to design and implement incentive and market-based approaches to groundwater management.

For example, by implementing tiered pricing for groundwater use such as what we've seen in Orange County, incentives can help manage extractions. It's possible for some portion of the revenue to be dedicated to multi-benefit groundwater recharge projects to improve both water supply reliability and aquatic habitat.

2. Water transactions: Flexible rules can benefit people, environment

Regulations in California and throughout the West allow limited use of water trading to move water. As water managers face potential shortfalls, they are turning to these mechanisms to avoid cutbacks on those who can tolerate it least by compensating willing sellers for water.

But the process is slow and clunky.

Now is the time for agriculture, industry, agencies, NGOs and academia to help design more flexible rules governing transactions with conditions that protect not only water supply reliability for farms and cities, but also rural communities and the environment.

3. Supply chains: Consumer and companies can add pressure

We've seen how consumers and corporations can drive sustainability through the supply chain. Consumer pressure, for example, forced tuna fisherman in the 1990s to adopt dolphin-safe practices.

Today, consumer pressure is accelerating demand for zero-deforestation palm oil. And companies such as Walmart, Campbell's Soup and United Suppliers are increasing demand for nutrient-efficient grains as part of an initiative to reduce their greenhouse gas footprint.

An unmistakable shift in these conversations today is the priority being placed on decreasing the risk of supply and price vulnerability associated with water scarcity.

Now is the time for companies to develop lasting sustainability commitments and to take advantage of evolving metrics that can help them track success.

A rare opportunity

The pressure of overuse and drought makes this one of the most potentially productive periods in generations to cut the Gordian Knot of Western water.

Government can do its share. But the real solutions need to bubble up from the ground. Let's tap into them.

This story first appeared on: EDF

[<Source>](#)

World Bank: clean energy is the solution to poverty, not coal

The world's poorest populations need a low-carbon revolution to meet their needs and lift them out of poverty

By Rachel Kyte, World Bank's special envoy for climate change



An Indian labourer works at a coal depot on the outskirts of Jammu, India. Photograph: Channi Anand/AP

It is the development conundrum of our era. Extremely poor people cannot lift themselves out of poverty without access to reliable energy. More than a billion people live without power today, denying them opportunities as wide-ranging as running a business, providing light for their children to study, or even cooking meals with ease.

Ending poverty requires confronting climate change, which affects every nation and every person. The populations least able to adapt — those that are the most

poor and vulnerable — will be hardest hit, rolling back decades of development work.

How do we achieve the dual goals of expanding energy production for those without power and drastically reducing emissions from sources such as coal that produce carbon dioxide, the primary contributor to climate change?

There is no single answer and we cannot ask poor communities to forego access to energy because the developed world has already put so much carbon pollution in the air.

An array of policies and programs backed with new technology and new thinking can — if combined with political will and financial support — help poor populations get the energy they need while accelerating a worldwide transition to zero net carbon emissions.

An end to fossil fuel subsidies

The World Bank Group's focus is on five key areas: building low-carbon, climate resilient cities; moving forward on climate-smart agriculture; speeding up energy efficiency and investment in renewable energy, including hydropower; supporting work on ending fossil fuel subsidies; and developing carbon pricing to increase the cost of emissions.

Such an approach depends on decoupling economic growth from carbon emissions. We have to keep economies growing to bring shared prosperity for all, but we also have to bring down greenhouse gas emissions.

We are seeing change: countries are shifting from fossil fuels to renewable forms of energy with massive new investments in well-known types of renewables, like hydropower, geothermal, solar and wind.

Between 2010 and 2012, the uptake of modern renewable energies grew by 4% globally. East Asia led the charge, representing 42% of new renewable energy generation.

In countries like Bangladesh and Mongolia small scale solar power is dramatically changing the lives of poor people, lighting up their homes with low-cost solar systems. As part of the government's sustainable development strategy, more than 3.5m solar homes systems have been installed in rural Bangladesh, creating 70,000 direct jobs.

Morocco is setting an example for the African continent. It has a renewable energy target of 42% of total electrical capacity by 2020, has recently established an agency dedicated to solar energy and is working to develop a "super grid" that integrates solar power, wind power, hydropower and biomass.

Renewable energy investment in Morocco grew from \$297m in 2012 to \$1.8bn in 2013, due in part to reduced fossil fuel energy subsidies.

From an investment perspective, a global focus on low-carbon or carbon-free energy production also means that continuing to pollute will cost more. We're running out of room for how much carbon we can emit into our atmosphere, so every ton emitted is becoming more expensive.

There are now about 40 countries and more than 20 cities, states and provinces using or planning to use a price on carbon to bring down greenhouse gas emissions. Altogether, these initiatives are valued at almost \$50bn.

Increasingly, we are hearing the voices of business calling for a price on carbon and investing in clean energy sources.

Green bonds are also on the rise. A new report shows the World Bank (IBRD) has issued 100 green bonds in 18 currencies, raising the equivalent of \$8.4bn. The investments are targeting low carbon and climate resilient growth in countries. Two energy efficiency projects in China, supported by green bonds, are estimated to reduce 12.6m tons of carbon dioxide annually — equivalent to taking 2.7m cars off the road each year.

Our private sector arm, IFC, has to date, issued a total of \$3.9bn in green bonds. The Bank and IFC helped pioneer the green bond market, with the global green bond market now worth about \$38bn.

And as we head towards December's climate change conference in Paris, we're seeing clear signs that in the halls of government, debate has shifted from the offices of ministers of the environment warning about climate change to the offices of ministers of finance assessing the likely price tag of dealing with and adapting to climate change.

[<ReadMore>](#)

Asia takes leadership on renewables, but only out of necessity

Despite rapid growth in renewables, China and India are far from ready or willing to lead the world on environmental issues

By Mike Scott

As the Paris climate conference draws ever nearer, and with it the prospect of a global agreement that all countries will cut greenhouse gas (GHG) emissions, Europe can look on its contribution to the fight against climate change with pride.

But having fostered the fledgling renewable energy sectors of wind and solar power, and created the world's first emissions trading scheme (ETS), it now looks as if Europe is ceding its leadership on environmental matters to Asia.

China was the world's leading market for renewable power in 2014, the \$83.3bn invested there being 33% higher than in 2013. Japan was in third place, India was in the top 10 and more than \$1bn was also invested in Indonesia, according to a report for the United Nations Environment Programme. All saw double digit growth in investment. Europe was still a major destination for investment in clean energy, attracting \$57.5bn, but the market grew by less than 1%.

Meanwhile, as carbon prices on the EU ETS languish far below the level that would incentivise low-carbon investment, China has launched seven regional pilot carbon markets that will be scaled up to national level next year and Korea has introduced its own market.

And while governments in Europe, from Bulgaria to Spain, scramble to cut support payments to renewable energy projects – most recently in the UK – India has increased its solar power target for 2022 from 20GW to 100GW.

Asia's pollution crisis

"There are some very ambitious and impressive initiatives coming out of Asia. If you just look at that, you can make the case for Asia being ahead of Europe," says Linda-Eling Lee, global head of research for MSCI's ESG research group. "But actually, I think that many of the things that Asian countries are doing, they are doing out of desperation to solve domestic concerns rather than out of any desire for global leadership."

For example, China has another cap and trade initiative that has received much less attention than its carbon trading scheme – for water. "It is very inspiring and pioneering, but it is motivated by monumental problems that Europe just doesn't have. The government says that 60% of [China's groundwater is polluted](#)," Lee says.

India sees renewable energy as its chance to achieve energy security, "possibly having the same transformational impact that shale gas has played in the American energy landscape," according to Rana Kapoor, CEO of YES Bank.

India has few oil and gas reserves, and while it has the fifth-largest coal reserves, it has been importing coal because of delays in developing new mines. "The government has positioned renewable energy as one of its cornerstone strategies – with a clear path to encourage domestic manufacturing of renewable energy equipment," he adds.

The government hopes to build a domestic manufacturing sector less for environmental reasons and more as a way to build skills, create jobs and to expand access to electricity.

There is a clamour for action in Asia because there are deep-rooted problems that need urgent attention. In Europe, by contrast, "there was much more public support for environmental leadership in the absence of an acute environmental emergency," says Lee.

The EU and European governments set the pace by saying "there may be knock-on effects in terms of higher energy prices but we just have to do this", adds Paul Dickinson, executive chairman at CDP, the environmental group that collects information on companies' GHG emissions on behalf of investors.

Much of Europe's activity was driven by EU targets that called for a 20% reduction in emissions, 20% of energy to come from renewable energy and a 20% improvement in energy efficiency, all by 2020.

Europe less willing

The policy was underpinned by three pillars – climate change, affordability and energy security – says Richard Slark, director of renewables at Pöry Management Consulting. "Initially the agenda was mainly driven by security of supply issues and concern about being dependent on fossil fuel supplies that were looking expensive and uncertain.

"The economic crisis in Europe has seen European policy makers focus much more on affordability than the environment or security of supply. However you look at it, there are challenging times ahead for European markets," he adds.

But Robert Readhead, a member of the renewable energy capital team at property consultancy JLL, says that "while other countries are looking to make big strides in terms of renewables deployment, Europe is still a global leader in terms of taking action on wider sustainability and environmental issues. This can be seen in its push of further decarbonisation targets for 2030."

What has changed is that Europe is now less inclined to go it alone and take on binding targets that could put it at an economic disadvantage, while at the same time "governments in many countries realise that tackling climate change is an inevitable requirement and don't want to miss out," says Dickinson.

In the runup to Paris, as different countries publish their climate commitments, "there is a public competition to demonstrate how well countries can deliver what needs to be done. There is healthy competition to own the green agenda, where before, people were looking not to damage economic growth."

And this could be a situation where everyone wins. "It is good for the world that other regions are stepping up," Readhead says.

"This will give European companies an opportunity to export their capabilities and apply them in other markets, further improving the quality of installations and deployment rates in those markets."



A woman wearing a face mask walks through thick smog in Beijing. China's growth in renewables comes more from a desperation to solve domestic concerns than a desire for global leadership, argues Mike Scott. Photograph: Wang Zhao/AFP/Getty Images

TIPS

The researches and studies suggest that there is hardly any time left to sit back and discuss whether climate change, global warming is a reality. The time is to act immediately to save our earth and ensure sustainable future for our future generations. As our humble contribution to provide sustainable future for our generations to come, we are providing a few tips that if practiced will help us to promote sustainability.

1. Now days space on cloud is available on mobiles, gmail, DropBox, Box.net and so many other sites for free and on payment depending on requirement you may chose options. By using cloud you may reduce printing and share documents, thus you will save paper and ink and above all the documents will remain safe.
2. We have often seen that due to extreme temperatures people open tap and drain down water for some time (10 – 15 seconds) and when water at required temperature is available use it. If we waste a litre of water at one time we might be wasting thousands of litres every year.
3. Dish washing in most of the houses is done by maids or servants they use (waste) water recklessly. Instruct them to remove all solids directly in the trash, pile up all the dishes at one place, keep dish washing soap solution in one tub and to apply the solution to each dish etc and in the ask them to open tap not to the full and wash the dishes and keeping aside. In this way lot of water will be saved.
4. Use of dishwashers is a reasonably good way optimizing use of water but one should always bear in mind that it must be used at full load to save water. In our country mostly dish washing is done manually for that if we follow the method given below will help avoid wasting water: a. Remove all residue from dishes directly in trash. b. Have soap solution in a bowl. c. With the help of a sponge or cloth/ scrub apply soap solution to each dish and keep aside. d. Open the tap half so that flow of water is lesser and then wash all dishes and put them on wire mesh stand to drain out water. In this way we may save lot of water.
5. Frequently we overlook the wastage of water involved in standard heating systems. If we wait up to 10-15 seconds for our running tap to generate hot water, in the course of a year, we could be wasting literally thousands of litres of water. There are devices that connect directly to cold water pipes, can generate hot water instantly also there are taps available that directly generate hot water.
6. While using pressure cooker and boiling food just add water sufficient enough. Putting more water results in loss of water as well as loss of fuel or energy. And most advantageous thing is that with less water you keep more flavor and nutrients in your veggies.
7. For washing fruits and vegetables take a large bowl or tub of water according to requirement and clean with the help of scrub or brush instead of using water pressure of your faucet.
8. Plan in advance! Don't use water or microwave to defrost frozen foods. Instead, leave them in the fridge overnight.
9. Use electronic banking as far as possible and avoid unnecessary trips to bank. Make withdrawals at ATM or Green Channel at the banks this saves paper. Keep in mind it unless required do not take transaction slips at ATM and thus save precious paper.
10. Avoid needless travel, it contributes to climate change. You will agree when we travel and amount of traffic we find on roads we are stuck in jams and idling causes lot of burning of fossil fuel. By avoiding unnecessary travel we will ease the traffic which will have positive impact on reduction in CO₂ emission.

[<ReadMore>](#)

2015 Arctic melting season won't break records, but could wipe the 'recovery'

Late but persistent bout of sunny weather and high temperatures threatens this year's Arctic ice

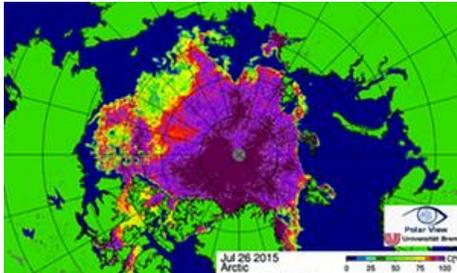
By John Abraham



Sea ice in the Northwest Passage. Photograph: Alamy

Following the post of my colleague, Dana Nuccitelli on misreporting of ice trends, this article is a timely guest post by Neven Acropolis who runs the Arctic Sea Ice blog.

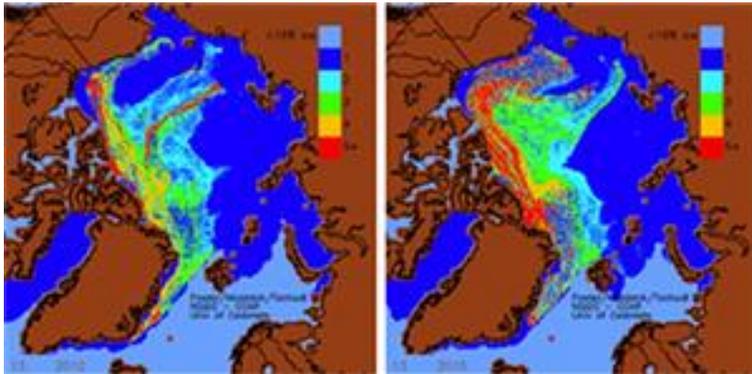
"After the record smashing 2012 melting season had ended, Arctic sea ice watchers awaited the following melting season with a mix of anticipation and apprehension. Anticipation, because the annual ebb and flow of Arctic sea ice is one of the most spectacular natural events on the planet, accentuated by the dramatic loss of the past 30 years. Apprehension, because further losses would bring the Arctic yet one step closer to virtually ice-free conditions, an iconic image entailing many unpredictable consequences.



Arctic sea ice concentration on July 26, 2015. Source: University of Bremen.

But just as the previous record low reached in 2007 was followed by a short-lived rebound, the 2013 melting season proved to be sufficiently cold and cloudy to make up for the large amount of thin first year ice in the Arctic. When the following 2014 melting season was relatively cold again, with little wind to compact the ice and transport it to lower latitudes, extent and area numbers yet again ended up well above 2012 levels. Consequently, this year's melting season started out with more volume and more multi-year

ice. The ice age distribution map below shows how much more multi-year ice there was at the start of this melting season, compared to 2012:



Arctic sea ice age distribution map in spring 2012 vs 2015. Source: University of Colorado.

The first two months of the melting season, May and June, are thought to play a crucial role in how much ice is left in September. The idea is simple: melt ponds that first show up during May and develop further during June, precondition the ice for the rest of the melting season by lowering the pack's albedo and thus soaking up more solar radiation.

This in turn increases so-called *melting momentum*, which can sustain a high rate of decrease during the second half of the melting season, even if weather conditions aren't perfect for melting, compaction and transport. Conversely, if melting momentum is low, chances of new September records are minimal, unless weather conditions during July and August favour huge losses.

Scientists are trying to quantify this influence; not an easy task given the many phases between water and ice and a lack of uniformity across the ice pack. Some researchers try to decipher satellite observations (see [Rösel et al 2011](#)), others use models to simulate melt pond cover based on atmospheric data (see [Schröder et al 2014](#)).

This year the melting season started out relatively cold during May and it took quite a while for melt ponds to start forming on the ice pack surface. At the end of [June](#), slightly more preconditioning seemed to have taken place compared to 2013 and 2014, because overall temperatures were somewhat higher than in the two prior years. But the amount of melt ponds simply didn't come close to that of big melting years like 2007 and 2012. Any

expectation of 2015 ending up close to record territory despite having more multi-year ice and volume, was effectively put on ice.

However...

As said, despite the importance of preconditioning for the second half of the melting season, exceptional weather conditions can still turn the tables by building up melting momentum. And that's exactly what the Arctic has seen in the past few weeks.

Sunny weather and anomalously warm temperatures have dominated large parts of the Arctic, most importantly those areas where a lot of the thicker multi-year ice has been moved to during winter. The impact is slowly, but surely showing up on sea ice concentration maps, graphs and satellite image.



LANCE-MODIS satellite image from July 19th, 2015, showing multi-year ice floes interspersed with large areas of open water and rapid break-up of fast ice in the Northwest Passage. Source: NASA.

There is still virtually no chance of 2015 beating the 2012 record, but something more important for the longer term could be happening. If this weather keeps up – and according to the current forecasts, it will for at least another week – that thicker multi-year ice could receive such a beating that the slight rebound from record low levels is essentially wiped out by the time winter sets in again.

On top of that, it looks highly probable that both the Northwest Passage and the Northern Sea Route open up again simultaneously, a previously rare, but now frequent event.

Last week a research paper was published showing how Arctic sea ice volume had rebounded after the crash of 2012. It's too early tell, but if this rebound does get wiped out, the Arctic will remain poised for larger losses, as soon as conditions are right for large-scale melting.

"We'll know more come September."

So thanks for that explanation Neven. To summarize, each year has its own flavor, preconditioning, and shorter term weather patterns that can affect the summer ice extent. Consequently, there are short-term fluctuations that are superimposed upon a long-term trend for decreasing ice.

The notion that the Arctic ice decline has somehow halted or that the ice has recovered simply ignores these facts. I looked at the Arctic Data Archive here and I see that Neven's comments about recent weather are right on the mark. 2015 ice has decreased quickly over the past two months. We probably won't see a new record this year, but it looks like the long-term trend of decrease is continuing.

[<Source>](#)

US Navy Buys Solar For 14 California Bases

SustainableBusiness.com News

In the largest renewable energy purchase by the US government to date, the Navy is buying solar energy to partially power 14 training centers and bases in California.

The Navy contracted for the entire output of the 210 MW, Mesquite 3 solar project - under construction about 60 miles from Phoenix, Arizona. It will supply a third of the electricity for 14 Navy and Marine installations over the 25-year power purchase agreement.

Developer Semptra US Gas & Power is installing over 650,000 solar PV panels that track the sun. The Navy expects to save at least \$90 million on energy costs over the life of the contract. It comes online by the end of 2016.



The Navy's goal is to buy 1 gigawatt of renewable energy by the end of this year.

All this stems from a 2009 mandate from Congress, directing the Department of Defense to achieve 25% renewable energy by 2025. DoD even raised that goal, requiring the Army, Air Force and Navy to each procure 1 GW of renewables by the end of 2015.

The Navy's on track to exceed that with 1.2 GW in the pipeline, and has its own goal to "produce 50% of all energy from renewables by 2020.

It's also moving aggressively on biofuels, announcing last year that they are the "new normal." Besides being included in all solicitations for jet engine and marine diesel fuels, the Navy is contracting for on-site bio-refineries at bases across the world.

[<Source>](#)

Costa's last stand: climate change could see tourists swap the Med for the Baltics

Drought and forest fires could mean Mediterranean resorts losing out to cooler climates and holidaymakers travelling outside peak season, EU report predicts

By Arthur Neslen, Brussels



An helicopter battles the flames during a forest fire at Mangualde in Portugal on 10 August 2015. A Photograph: Nuno Andre Ferreira/EPA

The traditional summer holiday in Spain and other popular Mediterranean holiday destinations is at risk from droughts and forest fires because of global warming, a European commission report says.

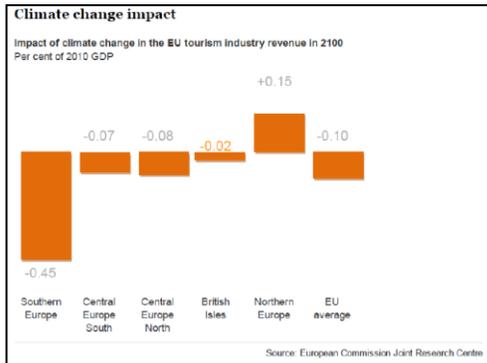
In contrast, northern European countries could see a rise in tourist numbers and related income, according to the analysis by the commission's Joint Research Centre (JRC).

As parts of Europe become seasonally inhospitable, tourists are likely to change the length and timing of their holidays – as well as

their destinations – the centre says.

Spain and Bulgaria were likely to be the biggest losers from climate disruption, the paper says, while Estonia, Latvia, Slovenia and Slovakia would gain the most.

"Altered climatic conditions may influence the relative allure of many regions," the study says. "Under current economic conditions, the 2100 climate could lower tourism revenues by up to 0.45 % of GDP per year in Mediterranean EU regions, while other EU regions in northern Europe could gain up to 0.32 % of GDP."



The JRC's analysis combined accommodation and travel cost estimates with a conservative assumption of a 2C (3.6F) rise in temperatures this century. Such a rise would probably increase desertification, droughts, forest fires and the widespread death of animals, such as dolphins, from disease, according to the Intergovernmental Panel on Climate Change (IPCC).

As summers become hotter and drier in southern Europe, the JRC study predicts that people will take shorter holidays, and take more of them outside the current peak season.

"One could expect that tourists would distribute their holiday pattern more evenly during the year and take shorter holidays in order to benefit, for instance, from more clement weather conditions during the other seasons," it says.

Jacqueline McGlade, the chief scientist for the United Nations environment programme (Unep) said the report was modest but robust, and that tourism operators should be doing more to prepare for the effects of a warming continent.

"It is absolutely clear that the comfort zone for humans in the Mediterranean is going to be under seasonal threat from climate change," she told the Guardian. "In the short term it will be disruptive but it is also an opportunity for the industry to offer the public different types of travel experience that cater to more diverse tastes and styles than just the sunshine beach holiday."

She said the industry should also become more aware of increasingly common extreme weather events, such as dust and sand storms, and adapt its loss and damage insurance policies – and back-of-the-brochure weather information – accordingly.

Travel agencies the Guardian contacted declined to give details of their preparations for climate disruption in the years ahead.

But a spokesman for Thomas Cook said the company "considers a range of potential factors in its long-term planning, and these include climate change and whether or not it could have an impact on its business model".

Other operators said terrorism was currently viewed as a bigger threat to Mediterranean tourism, but that climate concerns were being closely followed.



A forest fire near a village in Galicia, north-western Spain, last month. Photograph: Brais Lorenzo/EPA

"This is our livelihood and of course we will lose our jobs if no one can go skiing in Europe any more because of climate change," a spokeswoman for Thomson Ski Holidays told the Guardian. "We are fully aware of the threat of climate change and doing our utmost to counterbalance it."

Thomson sees itself as a pioneer in the environmental field, having developed policies on carbon offsetting and sustainable resort accommodation.

Nikki White, the head of destinations and sustainability at the Association of British Travel Agents (Abta), declined to comment on the report but said the industry was working to mitigate the damaging effects of tourism on the environment through schemes such as Travelife certification.

"The scheme, which was developed by Abta, helps hotels improve how they manage their environmental and social impacts, such as reducing their energy or water consumption, and ensuring they support the needs of local people, businesses and culture," she said.

[ReadMore>](#)



Tourists are evacuated from a campsite near Frejus, south-eastern France, after forest fires broke out nearby. Photograph: Philippe Arnassan/EPA

President Obama, Stop Leasing Our Federal Lands & Waters

SustainableBusiness.com News

More than 400 organizations will deliver a letter to President Obama tomorrow that urges him to make the US the first country that commits to keep all remaining fossil fuels in the ground.

They want him to halt all new fossil fuel leases on federal lands (national parks, national forests, wildlife refuges) and oceans, which would amount to 450 billion tons of emissions if exploited.

The letter will be delivered during a press conference at the White House at 10AM.

"Under existing federal laws, including the Mineral Leasing Act, Outer Continental Shelf Lands Act, Federal Land Policy and Management Act, and Surface Mining Control and Reclamation Act, you have clear authority to stop new leases. With the stroke of a pen, you could take the bold action needed to stop new federal leasing of fossil fuels, and to keep those remaining fossil fuels - our publicly owned fossil fuels - safely in the ground," says the letter.



Over 67 million acres (out of a total 650 million acres) of federal public land and ocean (1.7 billion acres) are already leased to the fossil fuel industry, adding up to 43 billion tons of potential carbon emissions.

About 30% of US energy production comes from public land and water, and even though that's responsible for about 27% of all energy-related GHG emissions, they aren't counted in the US total because they are caused by private companies.

Sadly, these exploitive, polluting industries are dwarfing our natural areas' ability to absorb carbon, and thus lower US emissions. In 2010, public lands

in the lower 48 states contributed 4.5 times more carbon to the atmosphere than they absorbed, according to the Center for American Progress.

Under Obama, we've seen the mainstreaming of renewable energy, but we have also seen more oil and gas permits on public land (with streamlined processing); an unregulated fracking boom; more offshore oil drilling even extending to opening the Atlantic coast and the Arctic.

"The federal government is enabling some of the wealthiest companies in the world, with names like Exxon and Peabody, to mine and drill America's public lands for private profit. This egregious drilling, fracking and mining is devastating the health of communities and endangering the stability of our climate. We are simply asking President Obama to stop selling off our national forests, oceans and sacred heritage sites for pennies on the dollar and slow the effects of climate change by stopping fossil fuel leasing on public lands," says Lindsey Allen, Executive Director, Rainforest Action Network.

"The 'river of grass' in our Florida Everglades could soon become the home of numerous fracking rigs if the US continues our unsustainable policy of extracting fossil fuels. Under Florida's antiquated laws, dangerous new fracking techniques are allowed in the state with almost no oversight. If allowed to expand, fracking in the Florida Everglades would threaten the drinking water of millions of South Florida residents and permanently damage the ecosystem of one of our national treasures," says Jorge Aguilar, Florida Director, Food & Water Watch.

Signatories include tribal leaders, labor unions, scientists, religious leaders, public interest groups and climate activists.

[Source>](#)

Why Laws Matter: 10 Years of Halliburton Loophole

SustainableBusiness.com News

After taking a summer hiatus, we return to producing our news.

We start with the 10-year anniversary of the Halliburton Loophole, the origin of the widespread, largely unregulated fracking industry we live with today.

A suite of bills have been introduced to end oil and gas industry exemptions from our bedrock environmental laws: Safe Drinking Water Act, Clean Air Act, Clean Water Act, and Resource Conservation and Recovery Act. We haven't heard that any are moving forward.

Until recently, the industry has been able to keep the chemicals it uses a secret, but California and several other states now require disclosure. An analysis of chemicals used in California shows that 15 are on the state list for causing reproductive problems or cancer; 12 are listed under the Clean Air Act as hazardous air pollutants that cause cancer or other diseases, and 93 harm to aquatic life.

by Wenonah Hauter

This past Saturday, Aug. 8 marked a notable 10th anniversary. But it was certainly nothing to celebrate. Ten years ago, President George W. Bush signed the Energy Policy Act of 2005.

The giant energy bill included massive giveaways for the fossil fuel, nuclear and ethanol industries, and provided only token incentives for renewables and improved energy efficiency. But the most infamous piece of the law was what is now commonly known as the "Halliburton Loophole," an egregious regulatory exemption that ushered in the disastrous era of widespread oil and gas fracking that currently grips our nation.

Fracking - the extreme oil and gas extraction method that involves blasting millions of gallons of water mixed with toxic chemicals underground at enormous pressures to break apart subterranean rock - has exploded in the last decade.

More than 270,000 wells have been fracked in 25 states throughout the nation. More than 10 million Americans live within a mile of a fracking site. This means that 10 million Americans - and truly many more - have been placed directly in harm's way. Hundreds of peer-reviewed studies have connected fracking to serious human health effects, including cancer, asthma and birth defects.

Imagine this in your neighborhood:



For this we can thank the Energy Policy Act of 2005, the law that holds the Halliburton Loophole. Named after Dick Cheney and the notorious corporation he led before becoming vice president, the law (championed by Cheney and disgraced Enron founder Kenneth Lay, among others) explicitly exempted fracking operations from key provisions of the Safe Drinking Water Act. These exemptions from one of America's most fundamental environmental protection

laws provided the oil and gas industry the immunity it required to develop a highly polluting process on a grand national scale.

One of the most troubling repercussions is how fracking companies hide the contents of their toxic water and chemical solutions pumped into the ground. Contamination of underground drinking water sources from fracking fluids is a glaring threat to public health and safety. Yet even doctors responding to fracking-related health complaints can't access data on what particular chemicals their patients may have been exposed to.

But the Halliburton Loophole wasn't the only fracking enabler in the Energy Policy Act. The act granted the Federal Energy Regulatory Commission (FERC) sweeping new authority to supersede state and local decision-making with regard to the citing of fracked gas pipelines and infrastructure. It also shifted to FERC industry oversight and compliance responsibility for the National Environmental Policy Act of 1969, another key law. This was akin to putting the fox in charge of the hen house.

[<ReadMore>](#)

How cable companies cut 3 million tons of carbon last year

By Noah Horowitz



A new report out today shows the cable, satellite and telco service providers — companies such as Comcast, Dish Network and AT&T that bring pay TV into our homes — have begun to really focus on the amount of energy consumed by the almost 200 million set-top boxes installed across America.

In fact, the new black boxes purchased by these companies in 2013 and 2014 to provide to their customers used \$500 million less electricity than the

2012 models did and as a result, 3 million metric tons of harmful carbon dioxide emissions were avoided over the past two years.

This progress is really important because set-top boxes were estimated to draw \$3 billion worth of electricity annually in 2012.

According to the just-released 2014 "Annual Report on the Voluntary Agreement for Ongoing Improvement to the Energy Efficiency of Set-Top Boxes," the industry has met almost all of its near-term procurement and reporting commitments under the agreement reached three years ago.

(Note: NRDC is a participant in the agreement, which requires industry to submit an annual progress report, and serves on the Steering Committee implementing it.)

The latest findings

Most noteworthy in the recent progress report, required under the agreement:

1. New DVRs use 33 percent less energy

The ever-popular digital video recorders (DVRs) purchased in 2014 use an average of 179 kilowatt-hours (kWh) per year, down from the 269 kWh annual consumption by models bought in 2012.

2. More energy-efficient devices are increasingly being installed on second and third TVs

With the introduction in the last few years of whole-home DVRs, all the TVs in a dwelling can receive live or previously recorded shows without the need for a DVR to be connected to each TV.

The secondary TVs in a home can provide this functionality via a much smaller and less energy-consuming box called a thin client. Energy use of the thin clients can be as low as 50 kWh per year.

3. Service providers have posted energy information on their websites

Consumers finally can access information on the energy use of the set-top boxes that their service providers have purchased for customer use since Jan. 1, 2013.

The back of the Annual Report published today also contains a complete listing so you can see how your service provider's boxes stack up to the competition.

What's next?

The big remaining energy-saving opportunity for the industry is bringing down the roughly \$1.5 billion worth of electricity that set-top boxes still consume annually when they are not being actively used.

Despite the significant improvements made by the industry thus far, the newest boxes still draw almost the same amount of power when they are on as when customers believe they are shut "off" because no one is watching or recording a show.

Unlike most products, consumers do not buy their home set-top box. Instead, their cable, satellite, or telephone company provides it along with the pay-TV service.

But informed consumers still can take steps to cut their utility bills when shopping for service by requesting a whole home DVR for the main television and a thin client for the second and third TVs, and that each set-top box meets Energy Star version 4.1 efficiency levels.

The pay-TV industry is undergoing massive changes, including shifting in many cases to an IP (Internet protocol)-based system that has the potential to dramatically reduce national set-top box energy use. For example, instead of storing shows on the DVR in your home, the show can be saved in the "cloud" instead for a lot less energy.

These changes open up a realm of possibilities and we are hoping that the industry includes power-scaling technology in their next-generation devices so these devices only work as hard as the task at hand. In other words, let's have our new set-top boxes go to sleep and consume very little power in the middle of the night, just as most of us do.

[<Source>](#)

China develops battery that charges in 10 seconds

Source Name: [Indiatoday.in - Tech](#)

China has built the world's fastest charging electric buses, with a battery that takes barely 10 seconds to be fully charged.

The electric buses, with a battery that takes just 10 seconds to be fully charged, were put into operation for the first time in Zhejiang province's Ningbo city on Tuesday, reported Xinhua.

The bus operates on an 11-km route with 24 stops, transport authorities said.

In the next three years, a total of 1,200 such buses will be used for public transport in the city, where the electric bus plant is located.

The bus recharges while stationary or while passengers get on or off, and each charge enables the bus to run for at least five kilometers, according to Zhou Qinghe, president of Zhuzhou Electric Locomotive, a subsidiary of high-speed train maker CRRC.

In addition, the bus, which rolled off production line in April, consumes 30 to 50 per cent less energy than other electric vehicles. The capacitor can be charged one million times and has a 10-year life cycle.

[<Source>](#)

Cable companies are being forced to confront pressure to cut their carbon footprints while also competing with new online television offerings

CU-Boulder researchers use wastewater treatment to capture CO2 emissions and produce energy

Source Name: News Center: University of Colorado Boulder

Cleaning up municipal and industrial wastewater can be dirty business, but engineers at the University of Colorado Boulder have developed an innovative wastewater treatment process that not only mitigates carbon dioxide (CO2) emissions, but actively captures greenhouse gases as well.

The treatment method, known as Microbial Electrolytic Carbon Capture (MECC), purifies wastewater in an environmentally-friendly fashion by using an electrochemical reaction that absorbs more CO2 than it releases while creating renewable energy in the process.

"This energy-positive, carbon-negative method could potentially contain huge benefits for a number of emission-heavy industries," said Zhiyong Jason Ren, an associate professor of Civil, Environmental, and Architectural Engineering at CU-Boulder and senior author of the new study, which was recently published in the journal *Environmental Science and Technology*.

Wastewater treatment typically produces CO2 emissions in two ways: the fossil fuels burned to power the machinery, and the decomposition of organic material within the wastewater itself. Plus, existing wastewater treatment technologies consume high amounts of energy. Public utilities in the United States treat an estimated 12 trillion gallons of municipal wastewater each year and consume approximately 3 percent of the nation's grid energy.

Existing carbon capture technologies are energy-intensive and often entail costly transportation and storage procedures. MECC uses the natural conductivity of saline wastewater to facilitate an electrochemical reaction that is designed to absorb CO2 from both the water and the air. The process transforms CO2 into stable mineral carbonates and bicarbonates that can be used as raw materials by the construction industry, used as a chemical buffer in the wastewater treatment cycle itself or used to counter acidity downstream from the process such as in the ocean.

The reaction also yields excess hydrogen gas, which can be stored and harnessed as energy in a fuel cell.

The findings offer the possibility that wastewater could be treated effectively on-site without the risks or costs typically associated with disposal. Further research is needed to determine the optimal MECC system design and assess the potential for scalability.

"The results should be viewed as a proof-of-concept with promising implications for a wide range of industries," said Ren.

Power companies have many reasons to perk up at the possibility of a carbon-negative wastewater treatment solution. The Environmental Protection Agency's Clean Power Plan, expected to take full effect in the year 2020, will require power plants to comply with reduced CO2 emission levels.

The study may also have positive long-term implications for the world's oceans. Approximately 25 percent of CO2 emissions are subsequently absorbed by the sea, which lowers pH, alters ocean chemistry and hence threatens marine organisms, especially coral reefs and shellfish. Dissolved carbonates and bicarbonates produced via MECC, however, could act to chemically counter these effects if added to the ocean.

[<ReadMore>](#)

16-Year-Old Scientist Finds Scalable Solution to Pharmaceutical Pollution in Water

Source Name: Sustainable Brands

For many of us, our high school science fair likely involved creative experimentation that may have yielded one more baking soda and vinegar volcano. Not so for 16-year-old Maria Elena Grimmert, a student at the Oxbridge Academy of the Palm Beaches in West Palm Beach, Fla., who is already an accomplished scientist tackling serious water quality issues that threaten the health of rivers, streams and groundwater.

At the age of 14, Grimmert became the youngest person published in the *Journal of Environmental Quality*. Now at 16, she has just put the final touches on her latest research, also published in the *Journal*, of a plastic adsorbent that removes pharmaceutical drugs from water sources.

Grimmert's parents say her interest in science is self-propelled. The journey to publication was a product of gumption, passion, a supportive scientific community, and a collection of events that led her to water quality research.

In search for an interesting project for the sixth grade science fair, Grimmert noticed that the well water at her house was looking brown. After some research, she discovered she could remove the water stains using resins — tiny chains of plastic that attract contaminants, causing them to "stick" to the resins. While presenting her board at the county science fair (at which she won first place in the Environmental Science category), she noticed another student's work on the contamination of the Everglades by pharmaceuticals. Grimmert was horrified that most water treatment filters don't remove these drugs. Armed with purpose, she embarked on a research project to do something about it.

"It's scary that 80 percent of rivers, streams, and groundwater in this country are contaminated by at least one organic contaminant," Grimmert says.

Modern water treatment tactics are good for removing common contaminants, but many pharmaceuticals and other chemicals escape treatment simply due to their extreme diversity. The drugs get into the water after excretion by humans and animals that take them

medicinally. One drug in particular, sulfamethazine, is a common antibiotic fed to livestock to promote growth and to prevent diseases.

"90 percent of it is not metabolized and ends up in water sources," Grimmert says.

For six years, Grimmert used her summers to experiment with sulfamethazine and specific types of polymer resins, which she describes as "just small plastic beads with tiny gaps." Water is passed through a container loaded with resins. The offending drug clings to the tiny spaces in the resins, leaving the water to flow out drug-free.

Grimmert hopes to see her research employed in the real world by water engineers.

"Resins are so versatile," she says. "I've only been testing for sulfamethazine, but I bet they are capable of removing more than just the one pharmaceutical."

The technique applies at any scale, from household to city water treatment.

Because of a rule restricting lab use by anyone under 16, Grimmert commandeered her family's garage and the dining room for her experiments. Her proud parents say they didn't resent the invasion of pipettes and test tubes too much, mostly because Grimmert was willing to do all the work herself.

"She was able to do it all at home due to her determination, multiple contacts with scientists and companies, and I suppose my wife and I, who were willing to play ball," Grimmert's father, Michael, an ophthalmologist, said in a statement.

Grimmert says she has no trouble being taken seriously by her peers in the science community.

"Everyone is so supportive," she says. "Whenever I read articles and have questions for the author, they are always responsive and helpful."

Talking to the right people, asking the right questions, and working hard on solutions has paid off. Grimmert has a lot more access to materials and expertise as a result.

"It takes a village to raise a child," her father says. "For Maria Elena, the 'village' was her global network with PhD researchers that she contacted from published articles, and forward thinking company presidents and CEOs who believed in her."

[<ReadMore>](#)

First aqueous solar flow battery designed

Source Name: BusinessLine

Researchers have designed the first aqueous flow battery with solar capability that can achieve a 20 per cent energy savings over traditional batteries.

Researchers at The Ohio State University had developed the world's first solar air battery last fall.

In a new study, the researchers have reported that their patent—pending design — which combines a solar cell and a battery into a single device — now achieves a 20 per cent energy savings over traditional lithium—iodine batteries.

The 20 per cent comes from sunlight, which is captured by a unique solar panel on top of the battery, said Yiyi Wu, professor at Ohio State.

The solar panel is a solid sheet, rather than a mesh as in the previous design. Another key difference comes from the use of a water-based electrolyte inside the battery.

Because water circulates inside it, the new design belongs to an emerging class of batteries called aqueous flow batteries.

"The truly important innovation here is that we've successfully demonstrated aqueous flow inside our solar battery," Wu said.

As such, it is the first aqueous flow battery with solar capability. Or, as Wu and his team have dubbed it, the first "aqueous solar flow battery."

"It's also totally compatible with current battery technology, very easy to integrate with existing technology, environmentally friendly and easy to maintain," he added.

Researchers around the world are working to develop aqueous flow batteries because they could theoretically provide affordable power grid—level energy storage someday.

The solar flow battery could thus bridge a gap between today's energy grid and sources of renewable energy.

"This solar flow battery design can potentially be applied for grid—scale solar energy conversion and storage, as well as producing 'electrolyte fuels' that might be used to power future electric vehicles," said Mingzhe Yu, lead author of the paper and a doctoral student at Ohio State.

The new solid solar panel is called a dye—sensitized solar cell, because the researchers use a red dye to tune the wavelength of light it captures and converts to electrons.

Those electrons then supplement the voltage stored in the lithium—anode portion of the solar battery.

To carry electrons from the solar cell into the battery, a liquid electrolyte is required, which is typically part salt, part solvent.

The researchers used lithium iodide as the salt, which offers a high—energy storage capacity with low cost, and water as the solvent.

In tests, the researchers compared the solar flow battery's performance to that of a typical lithium—iodine battery. They charged and discharged the batteries 25 times.

Each time, both batteries discharged around 3.3 volts.

The difference was that the solar flow battery could produce the same output with less charging.

The study was published in the *Journal of the American Chemical Society*.

[<Source>](#)

US Green Building Industry Employs 2.3 Million People

SustainableBusiness.com News

Did you ever think there would be 2.3 million people employed in green building in the US?

That's how many are employed this year, according to the *2015 Green Building Economic Impact Study*, conducted by Booz Allen Hamilton for the US Green Building Council. As have previous studies, it shows that green construction is rapidly outpacing conventional building and will continue to rise.

By 2018, green building will support more than 3.3 million US jobs - about a third of the construction industry - and directly contribute \$304 billion to GDP, along with critical savings in energy, water and construction debris that is recycled, rather than trashed.

States are also benefiting from LEED building projects, estimated to reach \$8.4 billion by 2018. Texas alone has close to 1.3 million jobs in green building.

Read our article, [US Still Leads On Green Building: Top 10 Countries](#).

Seattle's Bullitt Center under construction:



2012-9-8, 9:11 Bullitt Center Under Construction photo: John Stamets

Global Real Estate Industry Embraces Sustainability

Last year, the global real estate industry cut greenhouse gas emissions 3%, increased on-site renewable energy 50% and improved environmental, social and governance (ESG) performance 19%, says Netherlands-based GRESB, which evaluates the sustainability performance of real estate portfolios.

"The global property industry is at the heart of critical global issues that include resource constraints, climate change, and urbanization. There is strong evidence that more sustainably designed and operated buildings can provide solutions to these challenging issues, while also creating value for real estate investors and shareholders," they say.

Its latest study concludes the industry is increasingly integrating ESG considerations in corporate policies, strategy, and practices, such as energy and water efficiency programs.

Report Highlights:

- More property companies and REITs issue Sustainability Reports: 707 companies and funds, representing \$2.3 trillion and 61,000 assets;
- Better environmental performance: in addition to reducing emissions 3%, energy consumption is down 2.87% and water use is down 1.65%.
- On-site renewable energy generation has reached 445 gigawatt-hours (GWh), up from 296 GWh in 2014.

North American REITs and private equity funds trailed the global market slightly, with an average sustainability score of 44 compared to 46 globally. 88% of US funds have sustainability policies and a growing number - but still too small - include specific provisions that address climate risk (36%) and resilience (26%). 86% of North American property companies and funds implemented water efficiency systems over the past four years.

[<Source>](#)

Islamic Leaders Issue Thoughtful, Strong Climate Declaration

SustainableBusiness.com News

Islamic leaders from 20 countries issued a "Climate Change Declaration" today, calling on world leaders to take strong action at December's UN summit.

And it calls on the world's 1.6 billion Muslims and people of all faiths to take urgent action on climate as the "issue of our time." In some amazing statements (see below) they point



to problems such as the goal of endless economic growth and consumerism.

Right now, the International Islamic Climate Change Symposium is taking place in Istanbul, Turkey. A diverse group of Islamic scholars from around the world drafted the Declaration after a lengthy consultation period before the conference.

The Declaration:

Paris UN Summit in December: urges governments to deliver a strong, **binding** international climate agreement that signals the end of fossil fuel use. The agreement should make it possible to limit global warming to 2C, or preferably 1.5C above pre-industrial levels, "bearing in mind that two-thirds of the earth's proven fossil fuel reserves remain in the ground." It should include clear targets and monitoring systems.

On fossil fuels, it calls on wealthy and oil-producing countries, in particular, to quickly phase them out - no later than 2050. The world needs to swiftly transition to 100% renewable energy - preferably distributed energy which can "reduce poverty and achieve sustainable development," it says. And "generous support" - financial and technical - is needed for vulnerable communities already experiencing severe impacts.

Moral Case for Action

Based on Islamic teachings, it makes a moral case for Muslims and people of all faiths to take urgent climate action.

"We call on the people of all nations and their leaders to:

- Recognize the moral obligation to reduce consumption so the poor may benefit from what is left of earth's non-renewable resources;
- Re-focus concerns from unethical profit from the environment, to that of preserving it and elevating the condition of the world's poor.
- Invest in the creation of a green economy.
- Realize that to chase after unlimited economic growth in a planet that is finite and already overloaded is not viable. Growth must be pursued wisely and in moderation; placing a priority on increasing the resilience of all, and especially the most vulnerable, to the climate change impacts already underway and expected to continue for many years to come.
- Set in motion a fresh model of wellbeing, based on an alternative to the current financial model which depletes resources, degrades the environment, and deepens inequality.

The Corporate Sector must:

- Shoulder the consequences of their profit-making activities, and take a visibly more active role in reducing their carbon footprint and other forms of impact upon the natural environment;
- Commit to 100% renewable energy to mitigate the environmental impact of their activities as soon as possible.
- Change from the current business model which is based on an unsustainable escalating economy, and adopt a circular economy that is wholly sustainable;
- Pay more heed to social and ecological responsibilities, particularly to the extent that they extract and use scarce resources;
- Assist in divestment from the fossil fuel driven economy and scaling up of renewable energy and other ecological alternatives.

"It is with great joy and in a spirit of solidarity that I express to you the promise of the Catholic Church to pray for the success of your initiative and her desire to work with you in the future to care for our common home and thus to glorify the God who created us," says Cardinal Peter Turkson, President of the Pontifical Council for Justice and Peace, Vatican City.

The world's major religions have now issued climate declarations: the Pope's Encyclical and the Rabbinic Letter on the Climate Crisis.

Last year, religious and spiritual leaders held the *Religions for the Earth* conference in New York City and the Vatican held a 5-day summit, Sustainable Humanity, Sustainable Nature: Our Responsibility.

Read the Islamic Climate Change Declaration:

Website: <http://islamicclimatedeclaration.org/islamic-declaration-on-global-climate-change/>

[<Source>](#)

Snakeskin: A design breakthrough for robots and race cars?

GE Tchnologist



Even though a snake's skin is dry as a bone, we often think of it as wet and slick. There's a good reason for that — the animals have evolved a coating of scales that helps them slide seemingly without effort across any surface.

Nature's design is actually more complex than just making a

supersmooth skin, though: Each scale overlaps the one behind it to diminish friction in the forward direction while creating enough on the rear of the scale to let the snake propel forward. Each scale is also built to maximize resistance against wear.

Expert friction control and durability make snake and lizard skin very interesting to engineers who want to build those characteristics into machines.

Eventually, replica reptile materials could find a use in high-end automotive engineering, such as Formula One racecars, or in the coming generation of search-and-rescue and exploration robots modeled off snakes.

Researchers at the Karlsruhe Institute of Technology in Germany say they've borrowed designs from belly scales of African pythons and sand skink lizards. The textured surfaces they created have reduced sliding friction force as much as 40 percent in tests.

"If we'd managed just a 1 percent reduction in friction, our engineering colleagues would have been delighted; 40 percent really is a leap forward and everyone is very excited," said materials scientist and lead researcher Christian Greiner.

They made the slick surface by etching the heads of steel pins that measured a third of an inch in diameter with a laser. They tried two patterns: one had completely overlapping scales in the x and y directions while the other had scales oriented in rows. Each scale measured 50 microns across.

Tests moving the pins across another surface showed that the texture with scales arranged in rows produced less friction than the overlapping texture. Both surfaces produced considerably less friction than a totally smooth surface: overlapping scales reduced friction by 22 percent compared to the smooth surface while scales in rows offered 40 percent reduction.

The difference in the results caught the researchers by surprise, particularly because the overlapping scales more closely resembled real snake skin.

"This result was somewhat unexpected as we anticipated the [narrow, overlapping scales] to be more beneficial than the wide ones as they are closer to the natural inspiration," they wrote in their study, published this month in the journal *Bioinspiration & Biomimetics*.

The friction reduction improvements disappeared when the textured surfaces were put into contact with oil, meaning that they will only work in dry, sandy environments, like where their spirit animals live.

"This wasn't a huge surprise since we were looking to nature for inspiration and the species we mimicked — the royal python and a lizard called a sandfish skink — live in very dry environments and don't secrete oils or other liquids onto their skin," Greiner said.

The researchers say their texture could be useful in a number of applications, mostly at the microscale and smaller. They could be used as coatings in mechanical parts and sensitive sensors such as accelerometers.

[<Source>](#)

Under the sea: the underwater farms growing basil, strawberries and lettuce

Scuba divers and agricultural experts develop a project to work out if growing plants in pods on the seabed could be a viable solution to future food security

By Rich McEachran



A diver visits one of the Nemo's Garden growing pods off the coast of northwest Italy. Photograph: AFP

Beneath the blue waters 100m off the coast of Noli in northwest Italy lies a cluster of balloon-like pods pegged to the seabed by ropes half a dozen or so metres long. Inside a range of produce is being grown, including red cabbage, lettuce, beans, basil and strawberries.

It may sound like something you'd find in a science fiction novel, but this is the work of Ocean Reef Group. With the help of agricultural experts, the Genova-based scuba diving company is applying its

knowledge and technology to finding new ways to produce food.

The research project, known as Nemo's Garden, began in 2012 and currently consists of seven pods — biospheres — each of which can hold around 8-10 trays or 22 plant pots. Having improved the design of the pods over time following episodes of rot and flooding, the company is ready to scale up its testing with the ultimate aim of commercialising its operations. The company has a local government permit to operate for five months of the year (May to September) and the pod structure has been patented. The project is currently seeking financial assistance through a crowdfunding campaign which ends this week.

Inside the pods

The company uses a version of hydroponics, creating fresh water through desalination. Seawater within the structures evaporates, drops condense on the roof and then drip back down as fresh water to feed the herbs and vegetables.

[See video CEAN REEF - Orto Di Nemo - Nemo's Garden Project](#)

Unlike underground hydroponic systems and greenhouses, which rely on various heating and cooling systems and LED lights to regulate the temperature, submersion in seawater offers a stable temperature while avoiding exposure to extreme weather conditions on land. When it comes to sunlight, studies have shown that a majority of plants — although not seaweed — are dependent on the red spectrum in light for physiological development; the red can filter out at depths of around five to 15m. To address this, the pods are submerged five to eight metres below the surface; they could potentially go deeper but more data is needed to work out the viability of this.

Jon Old is co-founder of The Wasabi Company. The horseradish-like vegetable is regarded as one of the most intensive crops to grow. It involves a lot of watering and is vulnerable to high temperatures and direct sunlight, so could potentially be ideal for underwater farming. Old is excited by the potential of the Nemo Project model: "certain aspects are very appealing, like the sealed environment, no pests to wander in, no disease spores to blow in on the wind, and no slugs. If we assume the underwater [farm] is structurally sound, I think it would be fantastic. It'd be like working in a huge, dry aquarium all day."

Meeting future food demands

Qualified divers are required to maintain and operate the pods. Luca Gamberini, whose family has been running the Ocean Reef Group for six decades, acknowledges this is a sticking point, but firmly believes underwater farming can be more than just a plaything for growing high-value, niche crops.



The Nemo's Garden team is keen to develop food growing opportunities for regions lacking much suitable soil or water, although others have expressed concern that projects such as this could disrupt the local food infrastructure. Photograph: AFP

Although the cultivation of Nemo's Garden is yet to reach commercial scale, the aim of the project is to see whether that is a viable prospect and to plant more varieties of crops in the process, something that Gamberini believes is technically possible. Tests carried out by Ocean Reef Group suggest that crops underwater grow faster than their counterparts, according to the company.

Ocean Reef Group has received interest from businesses and organisations, but has so far decided against selling the concept. Gamberini believes its place in the food system could be dynamic, from small producers to NGOs working on nutrition projects in developing countries.

"That [meeting future food demands] is the aim, and it could be a sustainable way of agriculture," he says. "Not just local businesses, but for large parts of the world. Starting from Middle Eastern and tropical countries such as the Maldives, where there is not much [suitable] soil or fresh water ... [to] southern California, which is experiencing droughts."

Not everyone is convinced. Rachel Kerr is a relief worker who has worked on nutrition projects in sub-Saharan Africa. "My concern would be whether a set-up like this would disrupt the local food infrastructure. Coastal communities often rely on fish not just as food but as a source of income," she says. "It would need to respect local customs and be mindful of the environment [the ocean]."

Gamberini acknowledges that some people may not buy into the idea of underwater farming, but believes it has the potential to work harmoniously with other food production methods. Despite his optimism, however, he remains cautious about its long-term potential.

"We know that we can grow plants underwater, we know they grow faster. We now need to finalise our research ... hopefully by the end of the year, or next," he says. "Worst case scenario, if we discover Nemo's Garden isn't feasible in terms of size, logistics and economics, is that it'll be a credible eco-tourism resource, as scuba diving sites for islands and places with warm waters."

[<ReadMore>](#)

Jumpstarting sustainability — without big ideas, money or executive support

By Nancy Himmelfar

At companies such as Ben Jerry's, Starbucks and Patagonia, top executives seem fully committed to managing their companies' environmental impacts.

Meanwhile, your company might be only minimally engaged on sustainability issues (if at



Ever feel like you're on your own when it comes to corporate sustainability? Here are some tips to cope.

all), and executives might not view sustainability as a value-add essential to achieving business goals or mitigating operational risks.

At your company, no one is tasked with focusing on sustainability issues, and your job description and department budget do not cover environmental management. You want to make a difference, but think you cannot get anything done.

You are wrong. You do not need big ideas, money or

executive support to be a successful change agent. Let's address each supposed limitation, one by one:

1. Big ideas

First things first: there is no requirement for you or your company to "change the world."

Even though some other companies achieve big milestones through tracking and dramatically reducing carbon emissions, water use, waste, etc., small-scale initiatives can be very worthwhile.

To get started, assess all of the various functional areas of your company (at a high level) and research best practices to create a list of possible opportunities for sustainability improvements. Do not spend too much time on this list; it is only a starting point.

Next, start talking with people at the company about environmental stewardship and your list of sustainability initiatives. It's critical to listen to their ideas, because this is where the magic happens.

When I served on the Environmental Commission of Highland Park, Illinois, I lobbied at a grassroots level for individual school green teams, which would work to green schools through recycling programs and other initiatives. I never could have imagined that one school, Highland Park High School, would have created a butterfly sanctuary or a biodiesel lab. These ideas, and the successes, belonged 100 percent to the students and faculty on the new school green team.

2. Big money

You also don't need a big budget, or any budget, to start a company dialogue on the importance of environmental stewardship. Of course, many initiatives require capital, but others do not.

When I worked as vice president and associate general counsel of Williams-Sonoma, I did not have any budget for sustainability work. Nevertheless, I created slogans and a logo, and helped employees across the company take "small green steps" to "green our home" and "help our business by helping the environment."

The small steps were noticeable and meaningful on many levels. For example, I helped launch a composting program for the corporate cafeteria, which resulted in a net savings on waste disposal fees. I also convinced the cafeteria manager to offer a small discount to coffee customers who brought in their own mugs.

Other small steps included greening the specifications for store builds; working with other retailers and transport companies to reduce environmental impacts of freight transport; and reducing packaging materials on catalog orders.

Keep in mind that all of these successes were achieved without expensive carbon footprints, performance metrics or expert consultants.

3. Big executive support

Having executive support is very helpful — but not essential — to your work as a change agent.

Look for people who share your passion for environmental stewardship. Having champions in the business units is key. They are the ones who get things done, and they become the ambassadors for inspiring and recruiting more champions and for publicizing successes.

Although any individual success might be small, it becomes a story that is sharable and a source of pride, especially when coupled with other successes.

The grassroots work also becomes the basis for conversations with company executives. You can use the successes to help prove the business case for a company-wide commitment to environmental stewardship.

The small, zero-budget initiatives that you started with might then become part of a much larger program and commitment with dramatic successes. But even if they do not, the small successes matter and make a difference. Your efforts are never wasted.

[<Source>](#)

How forests can be a bigger part of the answer to climate change

By RP Siegel, *President, Rain Mountain LLC*



Piotr Krzeslak

Usually when we talk about climate change and what we can do to mitigate its impacts, we talk about ways to cut back carbon emissions through alternatives, policy actions or efficiency measures. We usually don't think about the role that forests play in this equation.

The fact is, forests absorb much of the carbon that our cars, homes and power plants emit — about a third of it, actually. That means that if we had three times as much forest as we do today, which, of course, we did not that long ago, we wouldn't have that big of a problem keeping our climate the way it's been for a long time.

Of course, forests take a long time to grow and we don't exactly have millions of acres sitting around, doing nothing, that we can turn into forests. If anything, things are going the other way. Forests are continuously being turned into farmland to feed the growing population. The point is to recognize the important role that forests do play in this unfolding tale of our battle against time in the face of a climate that is becoming unstable.

The relationship is a complicated one, but it's important that people understand it. Because of the vast amounts of carbon stored in forests, that means that all that carbon is slowly released when a forest is cut down, or very quickly released when a forest burns down.

One study found that deforestation was responsible for 8 percent of the world's carbon emissions. Another interaction to consider is that climate change is posing a significant threat to forests through warmer temperatures, droughts and northward migration of insect pests, emboldened by the warmer temperatures.

A recent report in the New York Times described a threat to the aspen trees of the American west, brought on by climate change-induced drought. Drought also can increase the likelihood of forest fires.

Recognizing the critical role of forests and their need for our protection, the U.N. Climate Summit, last year in New York, pledged to halt deforestation by 2030. Given the vast amount of commercial activity involving the exploitation of forests, that really sounds like a green optimist's dream. Yet doing so would save somewhere between 4.5 billion and 8.8 billion metric tons from reaching the atmosphere. How much is that? It is essentially equivalent to taking all the world's cars off the road.

Talk is cheap, but what is actually being done? Several European countries, notably the U.K., Germany and Norway, have pledged roughly \$1.1 billion to pay to other countries to reduce deforestation. A number of companies also made pledges, including Kellogg's, Marks & Spencer, Barclays and Nestle.

Even more impressive, perhaps, are those companies whose livelihoods have depended on the exploitation of forest resources. Among these are palm oil giant Cargill and Asia Pulp and Paper (APP), whose interests in forests is self-explanatory.

APP announced a Forest Conservation Policy last year which included a Sustainability Roadmap 2020. The company suspended all forest clearance activities while it performed an assessment of its properties to determine which areas deserved High Conservation Status and will remain protected.

The company further committed to protect forested peatland, to respect the rights of indigenous peoples and to follow responsible forest management practices throughout its supply chain. Likewise, Wilmar International, the world's largest palm oil producer, pledged a full moratorium on all forest and peat land clearance.

These are positive steps, varied and widespread as they might be, in dealing with a complex global challenge.

So when you're walking in the woods the summer, cooling off from the excesses of summer sun, keep in mind the vital role these trees will play in our future.

[<ReadMore>](#)

Reaching the Base of the Pyramid — and cutting carbon in the process

By Barbara Grady



Ghana's per capita income is \$31 a week, according to the World Bank. But the roughly 500 female farmers who cultivate and harvest the leaves of moringa oleifera trees in the Tamale region of the West African nation earn five times that amount.

That's because the women supply ground leaves of the nutrient-rich moringa plant to Oakland-based Kuli Kuli Foods, which markets and sells energy bars, teas and nutrition supplement powders made from the "superfood" at stores

Courtesy of/ Kuli Kuli Foods
Women farmers in Ghana's Tamale region harvesting moringa, some of which will be exported to the U.S.

including Whole Foods.

For the Ghanaian women who work at the beginning of the Kuli Kuli supply chain, skills such as hygienic food processing and packaging have helped both boost the products' utility in the local market, as well as given them a toehold in the global export market.

The farmers in the cooperative were previously subsistence farmers with very little power. Now, they are exemplary footsoldiers of the "base of the pyramid" model of economic development — a movement to start self-sustaining business operations in impoverished Third World communities.

"The poorest people in the world grow food for a living. The people at the base of the pyramid are all farmers, but subsistence farmers. So when you invest in those farmers you are lifting up their economy, giving them a way to earn an income," said Lisa Curtis, the 27-year-old founder and COO of Kuli Kuli Foods.

"For us, just the idea we have the opportunity to help people grow this plant that is incredibly nutritious and grow it right here where it was hardly eaten, and benefit from it and earn an income from it means a lot."

A former Peace Corps volunteer who learned about moringa from villagers when she served in Niger and suffered from a lack of vitamins, Curtis aimed to start a business where West African communities could benefit by their own enterprise.

Because Kuli Kuli pays what it considers fair wages, the company reports that farmers whose incomes rose are also buoying their whole village economy by spending on school fees, clothes and better food for their children. They are circulating wealth that wasn't there before and feeding aspirations of others to do the same.

What's more, they're planting trees that function carbon sinks in the process of their work, illustrating how economic development done thoughtfully also can advance sustainability.

Back in Oakland, Kuli Kuli is also reaping the rewards of sourcing a unique product. As the first U.S. food manufacturer to use moringa as the major ingredient in food products, demand is growing quickly. Sales are on track to triple this year, Curtis said, and pass \$400,000 from the sale of \$2.99 health bars, teas and powder protein supplements in the U.S. Farmers keep about 25 percent of the moringa they grow for sale to the local market or for their families.



In the U.S., Kuli Kuli hits upon a few trends that are fueling that growth: consumer interest health foods — moringa has 15 vitamins and nutrients and 46 antioxidants — and a desire by consumers to buy products that do good (or at least less bad) in the world. The double bottom line approach is key to both the company's marketing and its success, which, in turn, has allowed Kuli Kuli to finance the Ghana farm cooperative's purchase of equipment needed to process foods for U.S. export.

"We're providing financing in the form of pretty large pre-payments, as well as loaning them money so they are able to do all of this work to meet our standards and then harvest the moringa," Curtis said.

Building the base

Kuli Kuli is part of a new crop of businesses engaging populations at the base of the pyramid.

Spurred by the same double-bottom-line instincts — and heightened consumer consciousness about what is happening at the other end of product supply chains — social enterprises are being formed by Western entrepreneurs as well as larger companies.

According to many economists, such efforts to set up quasi-independent manufacturing or production businesses are working to provide more than one-time Band-Aid approaches to world poverty.

[Learn more about Base of the Pyramid business models at VERGE 2015 in San Jose, California, Oct. 26-29.](#)

Yet such enterprises typically battle similar obstacles that Kuli Kuli encountered working with farmers in places with no business systems or infrastructure in place. Those missing pieces, in turn, reinforce the very reason that under-developed economies remain under-developed.

Writing in Harvard magazine about business school author C.K. Prahalad's book "Fortune at the Bottom of the Pyramid: Eradicating Poverty through Profits," editor John Rosenberg describes a growing interest in launching social enterprises in the poorest of poor countries and how Prahalad and other theorists believe that private enterprise is the only way to lift them out of a cycle of poverty.

Still, enterprises in rural communities run into a host of infrastructure and business system deficiencies, from lack of all-season roads to bring goods to market to lack of electricity to the fact that most people in these rural areas don't use banks or have any cash flow.

Financing notoriously has been the biggest stumbling block; banks don't want to finance an enterprise whose goods may not make it to market or which might fall apart when electricity stops. Still, too, potential abounds in vulnerable poor areas for labor abuses, environmental degradation and other notorious supply chain ills.

The question now, as countries and businesses turn to the exigency of tackling climate change, is whether new approaches can address these ingrained challenges. In the meantime, businesses both big and small are watching to gauge how — or even if — new models can be implemented and paid for at scale.

Financing with a tool for another purpose

As governments buckle down to reduce carbon emissions and pass laws to stave off climate change, a new financing tool has emerged that could solve this logistical piece of the puzzle: income from carbon offset purchases.

Jonathan Shopley, managing director of the Carbon Neutral Company, said he is excited about the possibilities.

"In my experience, there are technologies that are incredibly relevant, but the expense of building them out can be formidable," Shopley said in an interview with GreenBiz.

But after 18 years in the business of packaging and selling carbon offsets that companies and countries buy to meet regulatory emissions reductions targets, Shopley is seeing a transformational impact of these offset purchases, aside from carbon reduction.

"One thing that defines a carbon credit is functionality — the direction of money to something that would otherwise not get money," Shopley said. "We have directed a lot of our clients' money to projects in developing countries, and it has shown us that financing appropriate delivered technologies that are being accepted in those projects can be transformative."

That's all possible because of the international system of carbon offsets that have grown up since the Kyoto Protocol was signed 18 years ago, along the trend of more national governments requiring large emitters to either pay carbon taxes or trade for carbon offsets. Carbon offsets have been evolving ever since, and Shopley's Carbon Neutral Company formed as the world's first business packaging and selling carbon offsets to companies and consumers.

The Kyoto Protocol requires that carbon offsets, to be counted, must reduce carbon or raise opportunity in countries where no reduction targets were set because their economies are still developing. Signatories to the Protocol agreed to reduce carbon emissions by 5.2 percent from 1990 levels by the period 2008-2012.

Now, Shopley said, the world is beginning to see the value of these offsets not only as a way for large companies and countries to reduce carbon in a net global way, but as a financing tool for economic development in places where it is hard to attract capital.

Two successful projects he hopes to see replicated elsewhere are the SELCO India Pvt. Ltd. in rural India and the Ecofiltro water filter manufacturing plant in Guatemala.

SELCO's principles note on their website that India's rural banking system just didn't have a portfolio for financing solar lighting technology, and yet — as India strives to overcome the problems of scarcity of electricity — solar micro-grids are becoming the way that many villages, schools and standalone manufacturing projects in rural areas are getting energy.

SELCO provides solar in underserved communities. It finances these projects in many ways, but one increasingly popular way is developing packages of projects that can be sold as carbon offsets through the Carbon Neutral Company.



Solar powered electricity supplied by SELCO-India brings light into this family hut.

Shopley says similar social enterprise financing packages are being formed in Guatemala, Africa and throughout the developing world.

In Guatemala, one such effort receiving carbon offset money is Ecofiltro, a tiny company manufacturing water filters using technology applied to locally available materials — clay pots — to create water filters. Manufactured locally by Guatemalans, Ecofiltro is not only improving health by expanding access to clean water, it is also providing jobs and a manufacturing infrastructure in the hills outside of Antigua, Guatemala.

One major differentiator between these enterprises and philanthropy or donations is an emphasis on economic empowerment, creating real job opportunities

"That is in stark contract to philanthropic programs where filters are handed out," Shopley said.

[<ReadMore>](#)

Farm sensors, software and growing more food with less water

By Matt Weiser



Atlantis
A center-pivot irrigation system, with attachments.

Satellites and software are adding piles of new data to help manage water on the farm. From soil moisture to leaf transpiration, pump speed to valve status, a farm field these days can seem as wired as an airport.

Water scarcity is adding urgency to the quest for this kind of information. Droughts seemingly have become more common and persistent across the globe, presenting farmers with tough choices and slimmer economic margins. In the face of uncertainty, technology offers one way to exert more control over basic inputs such as water.

In the Texas panhandle, the recent prolonged drought forced many farmers to realize they no longer can depend on rain alone to irrigate crops. Many are drilling deep wells to tap into the Ogallala Aquifer, the largest in North America, for supplementary irrigation water.

"Irrigation is important to people here — not only farmers, but the whole economy," said Susan O'Shaughnessy, a research agricultural engineer at the U.S. Department of Agriculture in Bushland, Texas.

O'Shaughnessy is developing new sensors for center-pivot irrigation devices to help farmers ensure that precious groundwater isn't wasted. The sensors measure leaf-canopy temperature to gauge water demand, which helps avoid over-irrigating.

"We know it'll run out someday. We can't stop that," she said. "Irrigation is important to people here — not only farmers, but the whole economy. We're looking to sustain farmers for a few years to come."

Improved irrigation efficiency also can reduce diversions from creeks and rivers, leaving more water for aquatic habitat and other human uses. And it may prevent herbicides and fertilizers from being carried back into those rivers when water runs off fields.

Sensitive center-pivots

Agriculture accounts for 69 percent of global freshwater withdrawals, according to estimates by the United Nations Food and Agriculture Organization. The number is generally higher in developing countries and lower in industrialized nations, where a greater share goes to manufacturing. In the United States, agriculture uses close to 40 percent of freshwater withdrawals.

Only about 20 percent of global farmland is irrigated, but that irrigated land accounts for 40 percent of food production. Flood irrigation is the most commonly used method, even though crops use only about half of the water applied by this method.

Many people recognize a center-pivot sprinkler because it creates "crop circles" visible from the air. A giant sprinkler on wheels rotates around a central water supply (a well or supply pipe), watering a circular field. It is the most common irrigation technique in the Texas panhandle and many other parts of the United States.

And it is becoming increasingly popular around the world because it is simpler and more durable than many other irrigation technologies. It also can be efficient, with up to 90 percent of applied water being absorbed by the crop in automated center-pivot systems. The remaining 10 percent is either lost to the wind or runs off the field.



O'Shaughnessy is helping make center-pivot systems even more efficient by developing infrared sensors. Shown being adjusted by O'Shaughnessy and colleague Nolan Clark in the photo, these hang from the center-pivot arm to measure temperature in the leaf canopy of the crop below and provide data farmers can use to apply water only when and where needed. Such data are a better indicator of plant health than traditional soil-moisture readings, she said, which are commonly used to determine irrigation settings.

In O'Shaughnessy's system, an onsite computer — the brains of the \$3,000 system — processes data from the infrared sensors along with weather information. The computer compares these data against stress thresholds for that particular crop to determine how much to irrigate. Different zones within the circle may have unique thresholds based on soil type, drainage characteristics and other factors, and will get different amounts of water.

"At midnight, it takes this data ... and spatially calculates the crop water stress for each management zone," O'Shaughnessy said. "So if that is exceeded, it signals to the system that an irrigation is needed in that zone."

This article, written and co-published with Civil Eats, originally appeared on Ensia.

From reading the weather to choosing a crop, farming always has been a hands-on enterprise. When a farmer wonders how much water a crop needs, a simple test always has sufficed: Grab a handful of soil and feel how it clumps together.

Now something else is helping inform

the farmer's touch: Data. Sensors,

satellites and software are adding piles of new data to help manage water on the farm. From soil moisture to leaf transpiration, pump speed to valve status, a farm field these days can seem as wired as an airport.

Water scarcity is adding urgency to the quest for this kind of information. Droughts seemingly have become more common and persistent across the globe, presenting farmers with tough choices and slimmer economic margins. In the face of uncertainty, technology offers one way to exert more control over basic inputs such as water.

In the Texas panhandle, the recent prolonged drought forced many farmers to realize they no longer can depend on rain alone to irrigate crops. Many are drilling deep wells to tap into the Ogallala Aquifer, the largest in North America, for supplementary irrigation water.

"Irrigation is important to people here — not only farmers, but the whole economy," said Susan O'Shaughnessy, a research agricultural engineer at the U.S. Department of Agriculture in Bushland, Texas.

O'Shaughnessy is developing new sensors for center-pivot irrigation devices to help farmers ensure that precious groundwater isn't wasted. The sensors measure leaf-canopy temperature to gauge water demand, which helps avoid over-irrigating.

"We know it'll run out someday. We can't stop that," she said. "Irrigation is important to people here — not only farmers, but the whole economy. We're looking to sustain farmers for a few years to come."

Improved irrigation efficiency also can reduce diversions from creeks and rivers, leaving more water for aquatic habitat and other human uses. And it may prevent herbicides and fertilizers from being carried back into those rivers when water runs off fields.

Sensitive center-pivots

Agriculture accounts for 69 percent of global freshwater withdrawals, according to estimates by the United Nations Food and Agriculture Organization. The number is generally higher in developing countries and lower in industrialized nations, where a greater share goes to manufacturing. In the United States, agriculture uses close to 40 percent of freshwater withdrawals.

Only about 20 percent of global farmland is irrigated, but that irrigated land accounts for 40 percent of food production. Flood irrigation is the most commonly used method, even though crops use only about half of the water applied by this method.

Many people recognize a center-pivot sprinkler because it creates "crop circles" visible from the air. A giant sprinkler on wheels rotates around a central water supply (a well or supply pipe), watering a circular field. It is the most common irrigation technique in the Texas panhandle and many other parts of the United States.

And it is becoming increasingly popular around the world because it is simpler and more durable than many other irrigation technologies. It also can be efficient, with up to 90 percent of applied water being absorbed by the crop in automated center-pivot systems. The remaining 10 percent is either lost to the wind or runs off the field.

O'Shaughnessy is helping make center-pivot systems even more efficient by developing infrared sensors. Shown being adjusted by O'Shaughnessy and colleague Nolan Clark in the photo, these hang from the center-pivot arm to measure temperature in the leaf canopy of the crop below and provide data farmers can use to apply water only when and where needed. Such data are

a better indicator of plant health than traditional soil-moisture readings, she said, which are commonly used to determine irrigation settings.

In O'Shaughnessy's system, an onsite computer — the brains of the \$3,000 system — processes data from the infrared sensors along with weather information. The computer compares these data against stress thresholds for that particular crop to determine how much to irrigate. Different zones within the circle may have unique thresholds based on soil type, drainage characteristics and other factors, and will get different amounts of water.

"At midnight, it takes this data ... and spatially calculates the crop water stress for each management zone," O'Shaughnessy said. "So if that is exceeded, it signals to the system that an irrigation is needed in that zone."

The system produces a map of the circle for the farmer to show which areas need water. It also creates a new irrigation schedule to provide the water each zone needs. The farmer either can allow it to go ahead, or change it if — in his own judgment — other factors need considering.

Flood, drip, flood

On most irrigated farm fields around the world, water arrives by some form of surface irrigation, usually by flooding water into open ditches fed by a river or pumped from the ground. It then gets to plants the way it has for millennia — via flooded furrows. This is the oldest and simplest form of crop irrigation.

Drip irrigation is an increasingly popular way to improve irrigation efficiency over this traditional approach. This technology disperses water in small, flexible water lines, either above or below ground. In most cases, an "emitter," or opening positioned at each plant, releases water at a measured rate based on the plant's need.

Many farms are converting to drip because it allows precise application of water, as well as application of fertilizers that are delivered with the water directly to the root zone. But to make it work, the water first must be pressurized in the field, and that requires ponds, pumps, filters and pressure regulators — which require investing in a power source and regular maintenance.

An Australian company, Rubicon Water, is working with the University of Southern Queensland to make surface irrigation as efficient as drip using an approach it calls "high-performance surface irrigation."

The basic principle involves flooding fields at a faster rate and with more limited quantities of water than that used by traditional methods. It seems counterintuitive, but it works because the speed and precision provided by soil-moisture sensors and automated canal gates means the water doesn't have an opportunity to run off the field or soak deep into the ground where the crops can't use it.

The canal automation saved 32,000 acre-feet of water per year from being diverted for crops, which was then used to improve habitat in the Murray River. In a government-funded program in the Murray River watershed north of Melbourne, canal gates were automated to reduce water loss across the Shepparton Irrigation Area from 30 percent to 10 percent.

The region is considered one of Australia's most productive, growing a wide variety of crops including grains, oil seeds, apples, pears and many other fruits. The canal automation saved 32,000 acre-feet of water per year from being diverted for crops, which was then used to improve habitat in the Murray River.

A study completed in March by Australia's Grains Research and Development Corporation found such tight control of surface irrigation reduced water losses below the root zone by more than 50 percent. It also reduced nitrogen losses and improved nitrogen uptake by plants. Farmers note that the technology saves time as well, because they no longer have to race through their fields to close and open canal gates by hand at just the right time.

Gauging absorption

Another new technology being used in California, primarily with drip irrigation, measures actual evapotranspiration — the movement of water from soil through plants to the atmosphere — on an entire farm field. Sensors long have been available to measure evapotranspiration for a single plant or a single point in a field, providing data farmers can use to estimate water use on a whole field. But that approach is imprecise.

The new approach, "surface renewal," measures the energy of wind eddies that contact plants. As wind moves across a field, water vapor moves from plants into the air. A sensor measures change in the wind's energy, which is then used to calculate the amount of water vapor transfer over the area the wind has traveled.

The farmer uses this information to gauge the amount of water absorbed by the crop. It can be compared against a predetermined stress level in the plant to decide how much water to apply for the best yield — or, in the case of wine grapes, the best balance of acids in the grapes to get the desired flavor.

Developed by researchers at the University of California at Davis, the system is being deployed commercially by Tule Technologies, a company formed with university support.

"In the same field and in the same season, we sometimes help with water savings, yield and quality," said Tom Shapland, CEO of Tule Technologies.

The company installs its sensors, which can cover as much as 10 acres, for \$1,500 each, and provides a growing-season-long data subscription. The system is being used with wine grapes, almonds, walnuts, citrus, pistachio, melons, strawberries, tomatoes and other crops.

Shapland said the goal is to both improve crop yield and save water.

"Tule is an efficiency technology," said Shapland, who developed the system while a Ph.D. candidate. "If a grower happens to start applying too much water, we tell them the plants are not using all the applied water. In the same field and in the same season, we sometimes help with water savings, yield and quality."

Time and money

Time is an important factor in any new irrigation technology, and one that's not often taken into consideration, said Daniel Howes, a professor of engineering and irrigation technology at California Polytechnic State University in San Luis Obispo.

Howes cites the example of data provided by soil moisture sensors buried 2 to 3 feet down at strategic intervals in a field. The sensors have become common across the U.S. for many types of crops to help farmers decide how much water a field needs and when.

But the large volume of data they spit out can be overwhelming. Howes says that time management studies have shown farmers have as little as 5 percent of each day to make irrigation decisions.

[<ReadMore>](#)

Humans have already used up 2015's supply of Earth's resources – analysis

Earth 'overshoot day' – the day each year when our demands on the planet outstrip its ability to regenerate – comes six days earlier than 2014, with world's population currently consuming the equivalent of 1.6 planets a year

By Emma Howard

Humans have exhausted a year's supply of natural resources in less than eight months, according to an analysis of the demands the world's population are placing on the planet.



The world's population currently consumes the equivalent of 1.6 planets a year, according to analysis by the Global Footprint Network. Photograph: NASA

with the planet's ability to regenerate such resources and naturally absorb the carbon emitted. That implies the excess demands being placed on natural systems are doing more permanent harm that cannot be easily undone.

The GFN estimates that human consumption first began to exceed the Earth's capacity in the early 1970s and the overshoot day has been falling steadily earlier ever since, due to the growth in the global population alongside the expansion of consumption around the world.

Mathis Wackernagel, president of the GFN told the Guardian: "The big problem is not that our deficit is getting bigger, it is that it cannot be maintained in the long-run. Even though we are in a deficit equation we are not taking measures to take us in the right direction. The problem is psychological – somehow we are missing this basic physical law. It is obvious to children, but for 98% of economic planners it is a minor risk not worth our attention. In the end the question is – does it matter to the government?"

The GFN estimate that the world's population currently consumes the equivalent of 1.6 planets. This figure should rise to two planets by 2030 based on current trends. On a per capita basis, the UK consumes around three times more than the equivalent level that ecosystems can renew, but its relative share is dropping as developing economies grow and consume more.

The impact of this "ecological deficit" can be witnessed through deforestation, soil erosion, depletion of water resources and the accumulation of greenhouse gases in the atmosphere.

Wackernagel added that the UN's crunch international climate change conference in Paris in December and global diplomatic efforts were providing hope for change.

"The conference in December is sparking conversations and we are seeing unheard of agreements between the US and China," he said.

"The two biggest emitters are starting to co-operate and the G20 leaders have recognised we have to move out of fossil fuels by the end of this century – although this is a bit too slow in my opinion."

[<Source>](#)

Drought's silver lining: Attracting investors to sustainability

By Francis Malone

Earlier this summer, California Gov. Jerry Brown announced mandatory water restrictions that renewed concerns about water availability in California and the potential economic impacts of the restrictions.



Among the many stakeholders who can benefit from finding solutions to the drought are California investors, who have the capital to help influence which companies thrive and which are left out to dry.

Every company wants to be attractive to investors by being a low-risk, high-reward stock option. Now, there's another way to appeal to investors, and it is grounded in investors' personal interests. Socially conscious investing describes the attention investors are paying to companies that solve environmental and social problems such as the drought.

By the start of 2014, nearly \$6 trillion — one in every six American dollars under professional management — was invested through a strategy that considered both financial return and social good. That's nearly double the amount recorded by the same U.S. Sustainable Investment Foundation study two years prior, which found 3.5 trillion American dollars being invested through similar strategies in 2012.

While your company's credit rating, based largely on your financial responsibility and good earnings potential, always will be the most important criteria any investor will consider, this kind of evidence suggests that a company's appeal to social or environmental interests is beginning to translate into actual investment dollars.

Socially responsible companies can capitalize on this trend by better understanding what exactly captures investors' interests. In a recent Morgan Stanley survey of high-net-worth investors in Los Angeles, 56 percent of respondents indicated that issues of personal importance affect their actual investment decisions. Age factored heavily into this finding, with younger investors edging out respondents age 65 and over by 20 percent.

In the same poll, respondents also demonstrated a specific interest in water. Water conservation was ranked as investors' top issue of personal importance, cited by 94 percent of respondents. This could translate into more investment dollars for companies whose mission it is to help other businesses conserve water.

Investing in sustainable companies is not just attractive because it's personally or morally compelling. Sustainable investments now are often financially competitive with less sustainable options in many industries. Recognizing this growing trend, some financial institutions have created risk-adjusted platforms that help guide investors through socially responsible investing. These platforms can include a range of available products, research and strategies to help investors align their financial and societal goals.

The popularity of these programs suggests that this trend is only increasing, and investors are willing to consider your company's corporate values and practices along with your credit rating.

Your practices still can influence investors' decisions from a personal standpoint even if it is not your company's goal to solve the drought or reverse climate change. One way that investors express their personal concern about an issue or a company is by refusing to purchase "sin stocks" or companies that are either directly involved in or associated with activities widely considered unethical or immoral.

Hopefully you have other reasons for not developing disreputable corporate practices, but reckless water usage now may be reason enough for investors to put a company on their list of sinners.

[<ReadMore>](#)

New Zealand Waves Goodbye to Coal

SustainableBusiness.com News

New Zealand made a big announcement: the era of coal is about to end.

In late 2018, the last two coal-fired power plants will shut down.

"Historically coal has played an important role in ensuring the security of New Zealand's electricity supply, particularly in dry years where our hydro-lake levels are low. But significant market investment in other forms of renewable energy in recent years, particularly in geothermal, means that a coal backstop is becoming less of a requirement," explains Simon Bridges, Minister of Energy and Resources.

The utility, Genesis Energy, decided to close the plants because of the "development of lower cost renewable generation, principally wind and geothermal, investment in the HVDC link, and relatively flat growth in consumer and industrial demand for electricity," says CEO Albert Brantley.



"Advance notice of the unit closures will give the energy industry time to consider further investment in renewables," says Bridges, noting that significant geothermal projects have been approved and are waiting for development.

Hydro is the main source of electricity, and combined with geothermal (about 14%), supplied 80% of power last year. Geothermal is growing rapidly, surpassing natural gas for the first time in 2014. The goal is to run on 90% renewable electricity by 2025.

New Zealand greatly lags developed nations for solar with just 13 megawatts because of the lack of any policy support. The industry is expected to begin growing anyway now prices are so low, but right now a mere 13 MW is installed, according to *Renewable Energy World*.

Last month, New Zealand submitted a fairly weak climate target to the UN - emission cuts of 30% by 2030 from 2005 levels. 46% of emissions come from agriculture (even though it leads on organic acreage), in contrast to 11% in most developed countries, according to the Ministry for the Environment. The country has been running a cap-and-trade system since 2010, but it doesn't include agriculture.

[<Source>](#)

Dutch Trains Run on 100% Wind, Airports on Solar

SustainableBusiness.com News

While the Dutch government recently lost in court for not moving on climate emissions fast enough (and is appealing), the country is leading in one exciting way: its entire train network will run on 100% wind by 2018.

About half its energy will come from wind this year and by 2018, the 1.2 million daily passengers will travel on a system that consumes 100 gigawatt-hours of wind each year.

The contract involves Eneco, which will supply the power, and joint buying group VIVENS, which consists of Netherlands Railways, rail freight companies, Veolia, Arriva and Connexxion.

"What makes this contract and partnership unique is that a whole sector decreases its CO2 footprint enormously and sets an example for other sectors to follow. Mobility is responsible for 20% of CO2 emissions in the Netherlands, and if we want to keep travelling, it is important that we do this without burdening the environment with CO2 and particulate matter. This contract offers all Dutch citizens the option to make a climate neutral trip, regardless of distance," Michel Kerkhof of Eneco, told *Railway-Technology.com*.

A completely green train journey



Half the energy will come from Dutch wind farms developed by Eneco and the other half from wind farms in Scandinavia and Belgium. The idea is to increase renewable energy both in the Netherlands and in Europe by encouraging new wind farms.

Ticket prices are not expected to rise because the rail company continuously improves energy efficiency - reducing it 30% over the past decade by using new trains and more efficient driving techniques. And the 10-year wind electricity contract is under "attractive commercial conditions."

Recently, the Netherlands approved a major offshore wind project, the 600 megawatt (MW) Gemini project, expected to come online in 2017. It will add to the 2.7 gigawatts (GW) of wind capacity, mostly onshore. The country's goal is for 4.45 GW of wind by 2023.

India Turns to Solar

In India, SunEdison just finished installing 1.9 MW of solar systems on eight of India's Delhi Metro Rail Corporation's rail lines. They are on the roofs of rail stations, where millions of people travel each day - and another 1.7 MW are under construction.

India is also home to the first airport that runs solely on solar. Cochin International, its fourth largest airport in terms of passenger traffic, will consume most of the 12 MW of solar, with a few MW leftover to send to the grid. More airports are following suit, such as Netaji Subash Chandra Bose International Airport, which is planning a 15 MW system.

Mexico Too

A \$9.2 billion international airport is under construction in Mexico City, one of the biggest in the world and "most sustainable," say the developers. 120 million people are expected to pass through the 6 million-square-foot structure each year. The entire structure will be covered in solar and will collect rain water.

[<Source>](#)

Food production shocks 'will happen more often because of extreme weather'

Poorer countries will be hit most by falls in production for major crops but UK and US will also be exposed to resulting instability, says taskforce

By Emma Howard

Major "shocks" to global food production will be three times more likely within 25 years because of an increase in extreme weather brought about by global warming, warns a new report.

The likelihood of such a shock, where production of the world's four major commodity crops - maize, soybean, wheat and rice - falls by 5-7%, is currently once-in-a-century. But such an event will occur every 30 years or more by 2040, according to the study by the UK-US Taskforce on Extreme Weather and Global Food System Resilience.

Such a shortfall in production could leave people in developing countries in "an almost untenable position", with the US and the UK "very much exposed" to the resulting instability and conflict, said co-author Rob Bailey, research director for energy, environment and resources at Chatham House.



Extreme weather events could cause global food production falls to happen more frequently to major crops such as rice, seen here flooded in Indonesia. Photograph: Romeo Gacad/AFP/Getty Images

Prof Tim Benton, professor of population ecology at the University of Leeds and co-author of the report, said that the compound effects of climate change and rising demand from a growing population could create a "very frightening" situation.

"The food system is increasingly under pressure because demand is growing and our ability to supply it is much more constrained. On top of that we have climate change affecting where we can grow things.

"If we are coping with demand increases by sustainable intensification but then suddenly we have a catastrophic year and lose a significant chunk of the world's calories, everybody will feel it."

Such shocks could plausibly see the UN's food price index - which measures the international price of major commodities - rocket by 50%, based on an analysis of how the market would likely respond.

The report, which was supported by the Foreign and Commonwealth Office, stresses that extreme weather events such as floods or droughts are just as significant as rising average temperatures and rainfall.

Increased food production volatility will mostly affect developing countries experiencing high levels of poverty and political instability, such as countries in the Gulf or Sub-Saharan Africa.

Bailey said: "The most vulnerable countries, which will be the worst affected - whether at the macroeconomic level or at the household level - the poorest households spend upwards of 50% of their income on food. If you are in a situation where food prices are increasing by 50-100%, that leaves them in an almost untenable position."

But while larger economies would be less directly impacted and more able to absorb rising food prices, he said "countries like the UK and the US are very much exposed to the indirect consequences". Such consequences could include the likely increased instability of countries in North Africa, where the inflation of food prices was a factor in causing the Arab Spring and which relies heavily on food imports.

As climate change causes temperatures to rise even higher in the second half of the century, even more serious food shocks - where production drops by up to 10% - are also likely to occur much more often by 2070.

Extreme weather events in North and South America and north-east Asia - where production of the four major crops is concentrated - are likely to have the biggest impact on global food production. In 1988/89, droughts in the US and South America lead to drops in the production of maize and soybean by 12% and 8.5% respectively.

The UN issued a warning last year that global food production must rise by 60% by 2050 in order to avoid social unrest and civil wars caused by serious food shortages. Rising demand is caused by increased wealth and a growing world population that is expected to reach 9.7 billion by mid-century.

The report recommends that governments need to work together on the international level, with significant investments from the public and private sectors required to make the global food system more resilient to climate change. It follows a warning last month by a UK foreign minister that climate change poses a risk equivalent to nuclear weapons, in part because of its impact on food security.

[<ReadMore>](#)

**Save Earth
for
your future generations**

Ousted: Australia's Anti-Environment Prime Minister

SustainableBusiness.com News

After Australia's far right prime minister turned off just about everyone in the country, he was ousted this week by his party and replaced by moderate conservative, Malcolm Turnbull.

Whether it be social issues, human rights or environment and climate change, Tony Abbott took his right-wing views too far afield even for conservatives. Turnbull will remain in power until next year's national election, and unfortunately doesn't plan major policy revisions before then.

"He's told the media that he's not going to improve the abysmal climate targets, despite what he's previously said. He's not going to legislate marriage equality. And he's also backed all the measures in the budget, that's the GP tax, \$100,000 degrees, cuts to pensions, and cuts to schools and hospitals," moans George Wright, national campaign director for the Australian Labour Party.

Despite global criticism of Abbott's weak climate targets - which would cut emissions 26-28% below 2005 peak levels by 2030, that will likely remain. He won't re-introduce Australia's carbon tax or cap-and-trade system (which was supposed to link with Europe's this year), but he may support returning the national Renewable Energy Target to previous levels, since the 25% cut infuriated voters, according to the press (Abbott wanted it cut more).

In fact, Turnbull's support for cap-and-trade was a major reason he lost against Abbott last time around.

Amazingly, a study shows that Australia's government has been exaggerating greenhouse gas emissions for years so that it could meet weak targets of lowering emissions 5% by 2020.

Latest Abbott Shenangigans

In July, Abbott ordered the Clean Energy Finance Corporation (which he earlier tried to eliminate altogether) to stop financing any new wind and small solar projects.

This was the last straw - Australia's solar industry vowed to oust him from office. "If the Abbott government is returned and has control of the Senate, our industry is finished," John Grimes, CEO of Australian Solar Council, told *Guardian Australia*.



Within a year of Abbott's 2013 election, Australia's investments in clean energy projects fell 70%, according to BNEF, after dismantling the country's progressive policies: he immediately scrapped the Climate Commission - which informs the public on climate change (and was forced to resurrect it); repealed the carbon tax (which was working well, cutting emissions) and cap-and-trade and forced through a steep cut in the national Renewable Energy Target (not steep enough, says Abbott).

Oh yes, and he also repealed a tax on mining. That's because Abbott's priority has been to expand coal mining,

approving huge new projects that together will produce an amount of coal equal to Germany's total emissions, says *The Guardian*.

After a court blocked the largest coal mine, Abbott repealed the law that allows citizens to challenge large developments in court.

Meanwhile, even utility AGL - Australia's biggest polluter - announced it won't finance or build any new coal plants unless outfitted with capture carbon technology, and will not extend the life of existing power plants that run on coal. Renewable energy now provides 17% of AGL's power, including development of the nation's largest solar project, the 100 MW Nyngan Solar Plant.

"The last two years has been the most frustrating in my 21-year career in renewables. I've never seen anything as bad as this, nothing as evil in terms of policymaking," Tobi Geiger, managing director of wind developer WestWind, told *The Guardian*.

As in the US, the fossil fuel industry, media mogul Rupert Murdoch and conservative politicians have been working overtime to misinform the public about climate change and lash out against environmental groups for wanting to crush the economy.

[<ReadMore>](#)

Air travel: Airlines' future tied with better biofuel

Source Name: [fayobserver.com](#)

As people in countries such as China, India and Indonesia get wealthier they are increasingly turning to air travel for vacation or business, creating an enormous financial opportunity for the airlines. The number of passengers worldwide could more than double, to 7.3 billion a year, in the next two decades, according to the International Air Transport Association.

But many in the industry believe that without a replacement for jet fuel, that growth could be threatened by forthcoming rules that limit global aircraft emissions.

"It's about retaining, as an industry, our license to grow," says Julie Felgar, managing director for environmental strategy at plane maker Boeing, which is coordinating sustainable biofuel research programs in the U.S., Australia, China, Brazil, Japan and the United Arab Emirates.

Cars, trucks and trains can run on electricity, natural gas, or perhaps even hydrogen someday to meet emissions rules. But lifting a few hundred people, suitcases and cargo 35,000 feet into the sky and carrying them across a continent requires so much energy that only liquid fuels can do the trick. Fuel from corn, which is easy to make and supplies nearly 10 percent of U.S. auto fuel, doesn't provide enough environmental benefit to help airlines meet emissions rules.

"Unlike the ground transport sector, they don't have a lot of alternatives," says Debbie Hammel, a bioenergy policy expert at the Natural Resources Defense Council.

That leaves so-called advanced biofuels made from agricultural waste, trash, or specialty crops that humans don't eat. United Airlines last month announced a \$30 million stake in Fulcrum Bioenergy, the biggest investment yet by a U.S. airline in alternative fuels. Fulcrum hopes to build facilities that turn household trash into diesel and jet fuel.

FedEx, which burns 1.1 billion gallons of jet fuel a year, promised recently to buy 3 million gallons per year of fuel that a company called Red Rock Biofuels hopes to make out of wood waste in Oregon. Southwest Airlines had already agreed to also buy some of Red Rock's planned output.

These efforts are tiny next to airlines' enormous fuel consumption. U.S. airlines burn through 45 million gallons every day. But airlines have little choice but to push biofuels because the industry is already in danger of missing its own emissions goals, and that's before any regulations now being considered by the U.S. Environmental Protection Agency and international agencies.

The industry's international trade group has pledged to stop increasing emissions by 2020 even as the number of flights balloons. By 2050, it wants carbon dioxide emissions to be half of what they were in 2005.

Like airlines, the U.S. military is also supporting development of these fuels for strategic and financial reasons. For biofuels makers, it is a potentially enormous customer: The military is the biggest single energy consumer in the country.

Making biofuels at large, commercial scale is difficult and dozens of companies have gone belly up trying. The logistics of securing a steady, cheap supply of whatever the fuel is to be made from can take years. Financing a plant is expensive because lenders know the risks and demand generous terms. A sharp drop in the price of crude oil has made competing with traditional fuels on price more difficult.

The airlines are now seeing some of these difficulties up close. A United program to power regular flights between Los Angeles and San Francisco with fuels made from agricultural waste was delayed when the fuel producer, AltAir, had trouble retrofitting the existing refinery. The companies now say the flights should begin in August. Red Rock's planned deliveries to Southwest have also been pushed back, to 2017 from 2016, and construction of the plant has not yet started.

But many in the industry say they are not surprised, or daunted, by the time and effort it will take to bring large amounts of biofuels, at competitive prices, to market.

"We really are trying to create a brand new fuel industry," says Boeing's Felgar. "We've always known this is a long term play, and our industry is long term."

And if any industry is going to crack fuel from waste on a big scale, the airline industry might be the best bet.

Instead of having to build the infrastructure to distribute and sell these fuels at hundreds of thousands of gas stations, jet fuel only has to be delivered to a small number of major airports. For example, nearly half of United's passengers fly through its five hubs in Houston, Chicago, Newark, San Francisco and Denver.

Still, after the many disappointments that have plagued biofuel development, few want to promise an imminent biofuel revolution. "I'm not Pollyannaish about this," says Felgar. "I'm not optimistic, I'm not pessimistic, but I'm determined."

[<ReadMore>](#)

Tree plantation is the best option against pollution

Without India, you can forget about achieving a sustainable palm oil sector

All eyes are on India, the world's largest palm oil importer, and whether companies can help shift consumers towards sustainable choices

By Sarah Hucal



A woman cooks vegetables in palm oil outside her house in Delhi, India. Photograph: Donatella Giagnori/Con/Latin Content/Getty Images

In a food stall on a dusty New Delhi street corner, a woman in a bright orange sari drops samosas into a skillet of bubbling liquid, which crackles and pops as it laps up the potato-filled dough.

She is cooking with palm oil, the ingredient often met with controversy in

the west due to concerns about deforestation and habitat loss. In India, however, the world's top importer of palm oil, its sustainability goes largely unquestioned.

India's 1.2 billion citizens consume approximately 15% of the global supply of palm oil. The vast majority of the commodity (95% according to WWF figures) is used as edible oil, with the remainder added to haircare and beauty products. The country imports nearly all of its palm oil, more than two-thirds of which is sourced from Indonesia.

Minimal consumer pressure

At the annual World Bank conference on land and poverty held in Washington in March, Prabianto Mukti Wibowo, assistant deputy minister for forestry in Indonesia's economic affairs ministry said: "We know that our primary customers are not concerned about deforestation."

Unlike the boycotts and consumer awareness in Europe and the US, interest in sustainably sourced palm oil in India is minimal, putting little pressure on the domestic market to shift to more sustainable sources.

"There is no real 'burning platform' for companies to decide to move towards certification, especially for products aimed at the internal market," says Stefano Savi, global outreach and engagement director at the Roundtable on Sustainable Palm Oil (RSPO).

Nandikesh Sivalingam, a senior campaigner at Greenpeace India, believes there is scope for change: "Indian companies have the power to pressure their Indonesian suppliers towards sustainability," he says, adding that the consumer outcry in the EU and US over palm oil-related deforestation was an important driver in bringing about global sustainability commitments.

Such pressure is unlikely to come from the average Indian consumer anytime soon, however. Sivalingam believes citizens are more familiar with issues of national concern, such as coal mining and harmful agricultural practices. "I think it's only the most elite circles of people who are aware of issues related to palm oil," he says.

India must step up

"As the largest importer of palm oil, India can play a fundamental role in influencing a shift towards sustainable production," says Savi.

Yet to date the Indian market has undergone little change, in large part due to cost. Certified sustainable palm oil comes at a higher price due, in part, to low demand in the present market. As well as higher production costs in producer countries, transporting and processing low quantities of palm oil adds to the overall costs. In a country where over 21% of the population lives below the poverty line, a slight price increase has the ability to make a big difference.

"Can you tell the Indian vegetable oil consumer who's buying only in the cheap shops that it's bad for the environment in south-east Asia?" asks MS Sriganesh, head of sourcing at Galaxy Surfactants Ltd, one of the first Indian refineries to be RSPO certified. "They won't know what that means."

The government, likewise, has little incentive to absorb the surplus cost, which would quickly add up. It is predicted India could import 8.4m tonnes of palm oil this year.

The future

However, change is apparently on the horizon. "Certain companies have made commitments to sustainable palm oil, in particular fast-moving consumer goods multinationals," says Philip Tapsall, director of sustainable business at WWF India. "We are starting to see these commitments extend to the Indian market."

Savi is in agreement: "Global procurement policies from multinational companies demanding certified sustainable products are definitely having an impact in driving change locally."

Tapsall cites Hindustan Unilever as one of the primary drivers of sustainability policies to Indian suppliers. The company's Sustainable Living Plan includes a goal for all palm oil to come from traceable, sustainably certified sources by 2020.

Galaxy Surfactants Ltd, which supplies Hindustan Unilever, was one of the first to offer mass-balance certified sustainable palm oil under the RSPO. The latter lauded the move as a significant milestone, similar to those achieved by companies in other overseas markets. The mass balance method allows certified sustainable palm oil to be mixed with equal parts non-certified palm oil.

While not yet reaching the ideal of supplying 100% segregated certified sustainable palm oil, something Unilever is aiming for, this is a step up from RSPO-supported GreenPalm certificates: pieces of paper that can be bought by anyone, rather than physical oil, which previously dominated India's sustainable palm oil market.

[<ReadMore>](#)

World's cheapest solar power in Madhya Pradesh at Rs 5 per unit

Source Name: Hindustan Times

Madhya Pradesh is set to be home to the cheapest solar power not only in India but the entire world, finally offering a cost-effective alternative to the environmentally-harmful thermal power.

Companies that have bid for projects floated by the Madhya Pradesh Power Management Company are ready to sell solar energy to the state for as less as Rs 5 per unit for a period of over 20 years. According to energy experts, the offer is lower than the global average price of Rs 6.10 per unit and even beats the cost at which the Delhi government buys from thermal power companies.

The price of solar power has seen a global decline in the last few years with India too witnessing a dramatic fall – fastest in the world – since 2010 when the Jawaharlal Nehru Solar Mission was launched. A unit of solar energy cost Rs 17 then.

The plummeting prices can be attributed to an increase in Chinese export of low-cost photovoltaic cells that has in turn led to an 80% drop in prices of solar panels over the last five years. Also, the efficiency of the panels to convert solar energy into electricity has improved from 13% to 18%, resulting in cheaper power.

India is a major investment destination for major international and domestic energy firms with Prime Minister Narendra Modi announcing a five-fold increase in target for generating solar power to 100,000MW. All state governments revamped their solar energy policies to meet the new target and Madhya Pradesh was the first to announce the setting up of special solar energy parks with single-window clearance.

A senior official in the Madhya Pradesh renewable energy department termed it the beginning of a new trend which could witness the price of solar energy falling further at a time when thermal power continues to get costlier with an increase in prices of coal.

The Union Ministry of New and Renewable Energy (MNRE) too expects the price of solar energy to go down further when states like Rajasthan, Gujarat and Uttar Pradesh invite bids for their projects.

A senior ministry official said Madhya Pradesh has given a boost to their estimate that solar power will cost less than thermal power across India by early 2016.

"What has happened in India in solar sphere in five years took 15 years in Germany," Christian Redl of Agora Energywende, a German energy think tank, had told this correspondent during a visit to Germany in May this year.

According to Arunbha Ghosh, chief executive officer of the Delhi-based Centre for Energy Environment and Water, solar technology is seeing a major transformation across the world. "Solar is for energy what internet is for communication. In coming years, you will see solar energy run-equipment in homes like computers," he said.

Some experts, however, fear that falling prices of solar energy may lead to its doom if corrective policy initiatives are not taken.

[<Source>](#)

Vadodara lawyer turns to energy conservation

Source Name: The Times of India

Amid the growing popularity of initiatives to conserve energy, a lawyer from the city has taken to energy and water conservation in a unique way. Hitesh Patel along with youths from Shanpur village of Padra taluka have invented an 'Automated Waterworks System' to save electricity used in pumps on borewells.

"The idea stemmed from the reckless attitude of people towards electricity and water. We wanted to make optimal use of available resources. The mechanism was invented with the support of villagers," said Hitesh, who is also a member of Shanpur panchayat.

There are two borewells in Shanpur, one used for drinking while the other is used for miscellaneous uses. While a timer was developed for one well, they implemented a water level sensor at the other well. The electric motors at the wells operate twice a day for two hours, while in many villages the electric pump runs nonstop.

In the other well, the water level sensor mechanism automatically stops the electric motor once the water tank is full and also turns on when water depletes. Both Hitesh and Manish built the system at a cost of around Rs 10,000.

"After implementing the device we are now able to save around Rs 7,000 in electricity bills. Earlier, water was available for eight hours, while now we have 24 hours of water supply in the village," said Hitesh's father Kanchan Patel, who is the sarpanch of Shanpur.

[<Source>](#)

Punjab, Maharashtra show the way in harnessing agri-waste

Source Name: Hindustan Times

Farmers like Amolak Singh in the farm rich state of Punjab are making money and also helping clean the air in cities like Delhi and Chandigarh just by selling agricultural waste.

Every year in November, farmers in the northern states of Punjab, Haryana and Rajasthan used to burn agricultural waste jacking air pollution levels in the national capital and neighbouring cities - home for over 25 million people.

Things have changed as Amolak, and other farmers like him, now sell the waste to Sukhbir Agro, a subsidiary of a company owning rice mills in the region, at a mutually negotiated price.

"No one believed the company guys when they came first about three years ago proposing to buy green waste lying in our fields," says Amolak, whose family owns huge tracks of paddy fields in Muktsar region.

There is not a single home in his village that does not sell paddy straw to the collection centre set up by the company a few kilometres away. "I get paid by the same company for both rice as well as the waste," an elated Amolak said, adding that the waste now generates enough money to partially pay for his annual farm labour cost.

It was easier for Sukhbir Singh to set up of one of Punjab's first agri-based biomass plants as his family owned rice mills in the region thereby providing a ready infrastructure to collect waste - the biggest hurdle in setting up these plants.

The company added to its 40 existing paddy centres to collect straw after the harvesting season and it provided them with the network to collect agriculture waste from the districts of Muktsar, Bathinda, Mansa and even from the neighbouring states.

Sukhbir said because the quality of paddy straw is good, its power load factor (efficiency) is about 80% - almost the same as that of thermal power and way above that of solar photovoltaic which ranges between 13% to 18%. It also means a good return for the investment.

The waste collected is enough for the company's biomass plant to generate green electricity around the clock which is then sold to the Punjab government at a price higher than thermal power.

At Punjab's renewable energy summit, its renewable energy minister Bikramjit Singh Majithia had said biomass plants, like the one started by Sukhbir Singh, have been awarded and the state has committed to buy electricity at an "attractive price".

Over a dozen such biomass plants will start operation in the state in the next few years generating around 200 MW of power and disbursing over Rs. 50,000 crore to farmers for waste on an annual basis.

Maharashtra shows the way

Sukhbir Agro, however, is an exception in the otherwise dismal biomass production in the country.

A 2012 IIT Kanpur study said since farmers do not find buyers for the waste they either burn it - which releases huge amount of emissions - or dump it leading to soil and water contamination because of high residue of toxic chemicals.

India generates about 350 million tonnes of agricultural waste every year and the ministry of new and renewable energy estimates this waste can generate more than 18,000 MW of power every year apart from generating green fertiliser for farms. The country so far failed to find its productive use in the absence of enough government push and business model to work for farmers.

Maharashtra's Sitara district has, however, shown how it can be done by processing sugarcane molasses for twin benefit - generate electricity for the grid and fertiliser for fields.

A unit, set up by a company in collaboration with Sugarcane Farmers' Cooperative and German federal technical agency GIZ, collects the waste from around 10,000 sugarcane farmers. The waste is then treated and fed into a boiler at the unit to generate electricity. And, the waste is then transported back to farmer fields free of cost.

Suresh Aklekar, chairperson of the cooperative, told HT it is a win-win situation for the farmers. "The productivity has improved since the fertiliser was used and the problem of dealing with the waste has also been taken care of," he said, adding many other cooperatives in Maharashtra have now started adopting the new sustainable development model.

Push for bio-fuel

The income of these farmers is likely to go up further and the slow and steady biomass revolution in the country will get an impetus as the government plans to introduce vehicles running fully on bio-fuel produced from the waste. Brazil, California, Paris and some Chinese cities have vehicles which use 100% bio-fuels.

The road transport ministry, earlier this month, notified draft rules providing basic ground for setting up facilities to manufacture vehicle engines than can run on 100% bio-diesel. These will be known as B100 vehicles like that of BS-III or BS-IV and will help in reducing toxic emissions.

Ministry officials said the draft will boost setting up of agri-waste based biomass plants across India and oil companies can collect the bio-fuel from these plants to purify and then blend them with diesel. Like petrol and diesel, bio-diesel can also be sold through the company outlets throughout the country.

A government official said a clear policy on integrating bio-fuels in the fuel supply chain will be formulated to provide clarity on the new business network.

Because of a poor network of oil companies for collecting sugarcane molasses, the government's decision to blend petrol with 5% ethanol has really not taken off. It is estimated that this blending can replace around 1.8 million barrels of crude oil.

Car manufacturers say that the government's intervention is necessary for the development as well as survival of these plants.

"There are no technological issues regarding manufacturing of the vehicles running fully on bio-fuel or bio-diesel in India. But, the cost of such vehicles are very high and they will not survive the highly competitive market without price subvention from the government," said an official with a car manufacturing company, which had tested a bio-fuel run vehicle a few years ago.

Biomass mission

While Punjab and Maharashtra have taken a lead in setting up biomass plants with attractive power tariff, other major states like Uttar Pradesh, Haryana, Gujarat and Madhya Pradesh - which contribute half to India's annual agricultural waste worth Rs 50,000 crore - are lagging behind primarily because of low tariff.

[<ReadMore>](#)

India offers technology to Pacific island countries to cope with climate change

Source Name: Social story

India offered its expertise and technology to the 14 resource-rich countries of the strategically important South Pacific region to help them combat the threat of climate change, a major concern for the island nations. Leaders and delegates of these countries have arrived here in New Delhi to attend the second Summit of the Forum for India- India offered its expertise and technology to the 14 resource-rich countries of the strategically important South Pacific region to help them combat the threat of climate change, a major concern for the island nations. Leaders and delegates of these countries have arrived here in New Delhi to attend the second Summit of the Forum for India- Pacific Islands Cooperation (FIPIC) on August 21 in Jaipur. In an address at a reception for FIPIC member-countries, External Affairs Minister Sushma Swaraj said India stands ready to share its expertise and technology with the island nations for mitigation and adaptation to climate change.

"India also urges the Pacific Island countries to forge a global partnership to harness technology, innovation and finance to put affordable, clean and renewable energy within the reach of our countries", she said. The island countries taking part in FIPIC Summit include Fiji, Papua New Guinea, Cook Islands, Tonga, Tuvalu, Nauru, Kiribati, Vanuatu, Solomon Islands, Samoa, Niue, Palau, Micronesia and Marshall Islands. Some of the countries have oil and gas reserves. Identifying climate change as a major challenge, Swaraj said India has started pricing carbon, incentivising afforestation and expanding the use of low carbon and renewable technologies and would like to share the expertise with FIPIC countries.

"India also urges the Pacific Island countries to forge a global partnership to harness technology, innovation and finance to put affordable, clean and renewable energy within the reach of our countries", she said. Swaraj said it will be India's endeavour to further strengthen and deepen its partnership with Pacific Islands countries. At the Summit, India will push for greater cooperation with the island countries in sectors like oil and natural gas, mining, IT, healthcare, fishing and marine research besides many other areas.

FIPIC was formed and its first meeting held during Prime Minister Narendra Modi's visit to Suva in Fiji in November last year. "The meeting was a great success and it has provided our leaders, at the highest level, a platform to enhance our engagement and to share ideas", Swaraj said. India had announced a number of new initiatives and mutually beneficial cooperation programmes during the Suva Summit last year. These include increase in grant-in-aid to Pacific Islands countries from USD 125,000 to USD 200,000 annually.

[<Source>](#)

Centre proposes to develop 200 city forests in the country in next five years

Source Name: The Economics Times

As part of its effort to increase and protect green cover in urban areas, the Centre has proposed to develop 200 'city forests' in the country in next five years and launch a 'school nursery' scheme to create awareness about environment protection.

Idea is to develop at least one 'city forest' initially on forest land, ranging from 20 hectare to 100 hectare, in cities having municipal corporations.

"The environment ministry will provide one time financial support for development of these city forests", said Union environment and forests minister Prakash Javadekar on Tuesday.

Responding to a Parliament Question, the minister in his written response informed the Lok Sabha that the scheme, namely "Nagar Van-Udyan Yojana", was proposed to be launched on pilot basis.

"The scheme aims to create 200 city forests in the country in next five years", he said.

As part of its effort to increase and protect green cover in urban areas, the Centre has proposed to develop 200 'city forests' in the country in next five years and launch a 'school nursery' scheme to create awareness about environment protection.

Idea is to develop at least one 'city forest' initially on forest land, ranging from 20 hectare to 100 hectare, in cities having municipal corporations.

[<Source>](#)

India closer to nod for 100% biofuel

Source Name: The Economic Times

Setting the stage for manufacturing of vehicle engines that can ply on 100% bio-diesel soon, the road transport ministry on Friday came out with draft notification for mass emission standards for such vehicles. These will be known as "B100" vehicles like that of BS-III or BS-IV.

Bio-diesel is both renewable and less polluting in comparison to diesel. B100 vehicles have been plying in Brazil and cities such as California and Berkeley in United States. The move aims at reducing dependence on import of crude oil and also to help reduce vehicular pollution. Nearly 80% of diesel is used only for transportation purposes in India.

The ministry has also included the standards for test requirements for type approval and extension for four-wheeled and three-wheeled vehicles using both B100 and diesel as fuel, or either of the two. The newly manufactured vehicles fitted with compression ignition engine compatible to run on diesel or mixture of bio-diesel up to 100% bio-diesel will be type approved as per the prevailing diesel emission standards.

"After receiving and going through the suggestions and objections, we will come out with final notification. The manufacturers can then make engines that can run on the clear fuel," said a road transport ministry official. According to the draft notification, the compatibility of vehicle to level of bio-diesel blend will be defined by the vehicle manufacturer and the same will also be displayed on the vehicle.

[<ReadMore>](#)

IIT-Bombay team ready with a natural system to treat Powai lake water

Source Name: The Indian Express

In the next six months, researchers at the Indian Institute of Technology-Bombay (IIT-B) are looking at treating water from Powai lake through their natural "constructed wetland" treatment system.

The constructed wetlands use the natural processes of exchange between the root, soil and surrounding microbes to treat organic and inorganic pollutants present in sewage, in a controlled environment.

Through this technology, Canna, a flowering plant sourced from a roadside marshy pool in Panvel, has been able to reduce the biological oxygen demand (BOD) from IIT-B's raw sewage by up to 86 per cent since 2013, according to Shyam Asolekar, professor at the Centre for Environmental Science and Engineering (CESE), IIT-B.

The 13m x 3m x 0.6m pilot 'constructed wetland' abuts the lake near the sewage well of the campus. At the same spot, the researchers hope to create a wetland four times the size as a test plant to show the possibility of in situ treatment of water from Powai lake. The logic is simple, says Asolekar. "We know plants absorb water and use up the nutrients in it and in the case of waste water, the pollutants are nutrients for the plant. We settled for Canna as it removes maximum pollutants in the least amount of time. In waste water treatment, bringing water to the treatment plant is the most expensive part. In our case, the system uses natural plants, pumps operated using solar energy and requires minimal construction. The plant is situated right next to the lake and can be further used in nullahs, eliminating the need to carry water to the treatment plant," he adds.

[<ReadMore>](#)

CNG-run vehicles emit dangerous nanocarbon, CSIR study finds

Source Name: The Economic Times

The compressed natural gas (CNG)-run buses are harmful for humans as they emit "nanocarbon" particles which can cause cancer, according to a study conducted by Council of Scientific and Industrial Research (CSIR).

Though the study was conducted on a very limited sample size in Delhi, CSIR took the findings seriously owing to the health hazard it poses to humans and alerted the central government for further follow up. CSIR's director general Dr MO Garg said on Thursday.

According to him, the study can change the perception that natural gas is a clean fuel as it does not emit any visible smoke, which is in contrast to smoke emitted by diesel-run vehicles and perceived as harmful for humans.

"Natural gas is supposed to be a clean fuel when used in internal combustion engines, right? But, I don't think people realize that what you see (smoke) is perhaps better than what you don't see (no smoke from CNG vehicles)," said Garg during his address at the Global Green Energy Conclave held here.

"We did a study with a professor of Alberta University, who have developed a device to measure and analyze particles emitted by vehicles. We have installed this machine on the exhaust of a natural gas-run DTC bus in Delhi," he said.

Can you imagine that we found nanocarbon particles coming out of from natural gas combustion. These particles are moving around in the atmosphere and going straight into your lungs through your nose. It then enters into your blood through membranes," Garg said.

According to him, these nanocarbon particles are carcinogenic. Garg also said that he has alerted the government about its effects.

"These nanoparticles are rich in polynuclear aromatic, having huge surface area. They are also carcinogenic. I have been telling government that we need to look at this situation more seriously," he said.

"Imagine what will be its effect when all the commercial vehicles, such as buses, run on natural gas in Delhi. You can see smoke coming out from diesel engine and tell that it is dangerous. But, nanocarbon particles coming out from vehicles is something we need to look at," Garg added. ...

[<Source>](#)

Punjab to establish unit to generate power from industrial waste

IANS | Chandigarh

Punjab Deputy Chief Minister Sukhbir Singh Badal on Friday gave in principle approval for establishment of a renewable energy project which will use industrial waste to generate power.

Badal gave this approval on the spot after a demonstration at Ersekvadkert town in Hungary, which he is visiting with a delegation from Punjab, in which scientists of Fakon Vallalkozasi KFT company showcased the new technology which uses scientific invention to heat sulphur using photovoltaic cells to produce power.

"Fakon Vallalkozasi managing director Laszlo Pakh assured the deputy CM that it would install a one MW renewable energy plant using the company's patented invention in Punjab within six months. He said the project would usher in a new revolution in the renewable energy business in Punjab," a Punjab government spokesman said here.

Badal is visiting Poland, Hungary and Czech Republic during his tour.

[<Source>](#)

NDMC to levy environmental compensation fee

Source Name: The Economic Times

Following the directives of National Green Tribunal, the New Delhi Municipal Council (NDMC) has decided to levy environmental compensation fees in areas under its jurisdiction with effect from July 1.

NGT had in May this year directed Delhi govt, Delhi Jal Board and all Municipal Corporations, Cantonment Board, electricity companies like BSES and all other civic authorities to levy environmental compensation fee from every household which is generating sewage in the national capital.

"In view of the directions of NGT, it has now been decided that the minimum sewerage charge to be collected from every household would be Rs 100. If the amount of sewerage charge in a billing cycle works out to be more than Rs 100, the actual amount of sewerage charge would be collected," the civic body said in a statement.

"Households which are not in the water billing network of NDMC, shall be required to pay environmental compensation fees as per the formula based on sanctioned load of electricity, that is up to Rs 100 for upto 2 kW, Rs 250 for up to 5 kW, Rs 500 for up to 10 kW and for more than 10 kW, Rs 1,000," it added.

According to NGT directive, every household in the city will now have to pay a minimum environment compensation of Rs 100 for generating sewage. The compensation in this regard would be directly proportional to the property tax or water bill whichever is higher and for those who reside in unauthorised colonies or not paying water bills, it would be in the range of Rs 100-500.

"Households which have water connection (sewered and unsewered) and are availing any kind of rebate in water charges or getting or will get free water at any stage in future would also be required to pay environmental compensation fees in accordance with the slab of fee," the civic body said.

[<Source>](#)

MNRE's solar pump scheme gaining steam

Source Name: Energy Next

India is witnessing increase in solar energy application in agricultural sector, and a total of 34,941 solar water pumps have been installed in the country so far. This was informed by Piyush Goyal, Minister for Power, Coal and New & Renewable Energy, in the Parliament.

In a written reply to Rajya Sabha, Goyal stated that 1,38,267 solar pumps have been sanctioned in the country out of which 34,941 pumps have been installed till date. Rajasthan led the list with installation of 23,603 solar-powered pumps, against sanctioned 31,505 units. In the second place is Punjab with 1,857 installed solar pumps, followed by Madhya Pradesh 1,806 units and Uttar Pradesh with 1,653 units.

Goyal informed the House that the Ministry of New and Renewable Energy (MNRE) is implementing a programme for installation of 1 lakh solar-powered pumps across the country. The Ministry has already issued supplementary guidelines for 1 lakh solar pumps during the current fiscal, and a total amount of Rs 353.50 crore has been released to various agencies.

Goyal said that some states have come forward to provide subsidies for solar-powered pumping systems, which will help in popularising among the farming communities. He added that the MNRE has made provision in guidelines for injecting surplus power into the grid to help farmers get some returns on their investments.

For drinking water, the government has sanctioned 15,330 solar water pumps out of which only 200 pumps have been installed.

[<Source>](#)

Indian American develops technology for water purification

Source Name: *BusinessLine*

An Indian-American has developed a self-assembling synthetic membrane that can aid in better water purification, drug delivery and DNA recognition by transporting a billion water molecules per channel per second.

The biomimetic membrane has been developed by Manish Kumar, assistant professor of chemical engineering in Penn State.

The membrane is composed of lipids - fat molecules - and protein-appended molecules that form water channels that transfer water at the rate of natural membranes and self-assembles into 2-dimensional structures with parallel channels.

"Nature does things very efficiently and transport proteins are amazing machines present in biological membranes," said Kumar.

"They have functions that are hard to replicate in synthetic systems," he added.

The researchers developed a second-generation synthetic water channel that improves on earlier attempts to mimic aquaporins - natural water channel proteins - by being more stable and easier to manufacture.

Kumar and co-authors report their development in a recent issue of the Proceedings of the National Academy of Science.

"We were surprised to see transport rates approaching the 'holy grail' number of a billion water molecules per channel per second," Kumar was quoted as saying by Science Daily.

"We also found that these artificial channels like to associate with each other in a membrane to make 2-dimensional arrays with a very high pore density," Kumar said.

The researchers consider that the PAP membranes are an order of magnitude better than the first-generation artificial water channels reported to date. The propensity for these channels to automatically form densely packed arrays leads to a variety of engineering applications.

"The most obvious use of these channels is perhaps to make highly efficient water purification membranes," said Kumar.

[<Source>](#)

Temp in India increased by 0.6 degree Celsius over the last 110 years

Source Name: *The Economic Times*

Mean temperature in India has increased by nearly 0.6 degree Celsius over the last 110 years in line with rising temperature across the globe, said the government in Parliament while informing the Lok Sabha that the heat wave phenomena this year were "abnormally" high which had led to 2,037 deaths across the country.

Andhra Pradesh and Telangana faced the maximum casualties with both these states together recording 93% of the total deaths due to heat wave in 2015.

"All India mean temperature has risen nearly around 0.6 degree Celsius over the last 110 years in line with the rising temperature across the globe", said Union science & technology minister Harsh Vardhan while stating that the last decade 2001-2010 happened to be the warmest decade for the country as well as for the globe as compared to the previous four decades.

He, in his written reply, also referred to the latest Intergovernmental Panel on Climate Change (IPCC) report which highlights that the mean surface temperature of the globe has risen by 0.85 degree Celsius (in the post-industrialization period).

"Using daily maximum temperature data of 103 stations uniformly distributed over the country for the period 1961-2010 from Indian main land during the hot weather season (March to July), it was observed that many areas of the country (north, northwest, central and northeast Peninsula) have experienced more than eight heat wave days on an average per season", ..

DEATHS DUE TO HEAT WAVE IN DIFFERENT STATES IN 2015:

Andhra Pradesh - 1369

Telangana - 541

Odisha - 67

Uttar Pradesh - 22

West Bengal - 13

Gujarat - 10

Madhya Pradesh - 10

Delhi - 5

[<Source>](#)

CSE welcomes Delhi govt move to use recycled C&D waste

Source Name: *The Economic Times*

A green body today welcomed the Delhi government's decision to mandate recycled products from construction and demolition (C&D) waste for its building projects in future and urged it to announce a composite policy on such wastes for improved collection.

"This is an important move forward as construction and demolition of buildings cause enormous waste, about half of all materials used, that degrades land and environment," said Anumita Roychowdhury, head of Centre for Science and ..

The Delhi government has issued an advisory on the use of products made out of recycled waste by the Public Works Department (PWD).

The government has acknowledged that processing of construction and demolition waste has great potential to save urban space, reduce negative environmental impacts, conserve natural resources and address the shortage of building materials, the green body said in a statement.

"We urge the Delhi government to take the next steps to announce a composite policy on C and D waste like other states for improved collection, segregation and handling of waste.

"Organise more decentralised collection and recycling centres. Penalise wrongful disposal and littering and implement tax measures to lower cost of recycled products to make them competitive. At the same time, take steps to build public awareness," Roychowdhury said.

CSE said that the advisory has asked for use of such recycled products as a first choice in all construction works.

All Delhi government agencies will be required to incorporate a clause in their tenders that mandates use of a minimum of 2 per cent recycled products from construction waste in all future contracts for building works and 10 per cent recycled products for road works, CSE said.

The green body said that Delhi is estimated to generate about 4,000-4,600 tonnes per day (TPD) of C and D waste. This waste is inert but bulky and is either dumped in city landfills or in open spaces, water bodies and flood plains.

[<Source>](#)

Railways on track to bring down energy bill, says Suresh Prabhu

Source Name: *BusinessLine*

Union Railways Minister Suresh Prabhu announced on Tuesday that his ministry is thinking of setting up solar thermal power plants on Railways lands.

The aim is to bring down greenhouse emissions and reduce the energy bill.

The Railways Ministry is studying the feasibility of such projects under the public private partnership (PPP) model, he said at the India Business and Climate Summit, which was organised by the CII and World Resource Institute here on Tuesday.

Solar thermal power plants not only produce electricity but also heat, which can be put to industrial use. A couple of power companies have successfully implemented such projects in Rajasthan.

Pointing out that the Railways is one of the largest consumers of electricity and diesel in the country, Prabhu said there is a need to reduce its carbon footprint. The Railways administration cannot continue to depend on non-renewable resources if carbon emissions have to be curtailed, he added.

"After salaries, the second biggest bill that the Railways has to foot is the energy bill. The use of renewable sources of energy would definitely impact the bottom line," he said.

The Railways has plenty of land nationwide, where such solar thermal projects can be set up, he added.

Prabhu further said his ministry has already started the process of installing rooftop solar panels on Railways buildings for electricity generation.

Energy audits

Some innovative initiatives, such as to harness solar power from the roofs of Railways coaches, are also being taken. There is also a need to conduct energy audits in order to keep a control over carbon emissions and effective use of electricity, the Minister observed. Prabhu in his maiden Railway Budget, had said the Centre will be setting up 1,000 MW solar plants in the next five years.

Environmental Advisor to the Railway Board, K Swaminathan, told BusinessLine on the sidelines of the summit that the total electricity requirement of the Railways is in the range of 3,500 to 4,000 MW. Therefore the plan by 2020 is to generate 1,000 MW of green power from solar and other renewable sources, he said.

[<Source>](#)

The IASTEM- 3rd International Conference

on

Environment and Natural Science (ICENS)

November 6, 2015

SINGAPORE

The IASTEM- 3rd International Conference on Environment and Natural Science (ICENS) will be held on November 6th, 2015 at Singapore. ICENS is to bring together innovative academics and industrial experts in the field of Environment and Natural Science to a common forum. The primary goal of the conference is to promote research and developmental activities in Environment and Natural Science. Another goal is to promote scientific information interchange between researchers, developers, engineers, students, and practitioners working in and around the world.

The conference will bring together leading researchers, engineers and scientists in the domain of interest from around the world. Accordingly, Topics of interest include: Environmental Science and Technology, Environmental dynamics, Global environmental change and ecosystems management, Climate and climatic changes, Global warming, Ozone layer depletion and Carbon capture & storage.

[<ReadMore>](#)

ISHWMCON 2015:

The International Conference on

Hospital waste Management and Infection Control

November 14 & 15, 2015

AIIMS, New Delhi

ISHWMCON 2015, the International Conference on Hospital Waste Management and Infection Control will be held on November 14 and 15, 2015. It is a joint venture of All India Institute of Medical Sciences, New Delhi and Indian Society of Hospital Waste Management. This international conference will address the challenges in achieving sustainable waste management solutions and showcase best practices in infection control. The conference will also be a platform to showcase the value of new technologies, economic viability, and ecological preservation in all stages of waste handling, management and infection control. The conference will provide an opportunity for co-ordinated learning, to present and share knowledge on good practices and innovative facilities.

The conference shall be held over a period of two days. The deliberations shall consist of six sessions, whose scientific content shall be enriched by eminent speakers and scientists in the field. The sessions shall consist of the following themes:

1. Statutory requirements
2. Operational issues in hospitals
3. Technology and innovations
4. Occupational health
5. From policy to practice : The human element
6. Environmental management for hospitals

The conference aims at Tabling the current status of waste management and infection control practices across the globe, Studying the impact of such practices on the healthcare delivery, Evaluating technology available to deal with waste management and infection control issues, Formulating strategies for safe patient outcomes in terms of hospital infection and Encouraging the spirit of innovation and creativity in finding compatible solutions for a sustainable environment.

[<ReadMore>](#)



EWEA 2015 Annual Event: Every year, (European Wind Energy Association) EWEA brings together over 60 nationalities from across the world, making the EWEA Annual Event truly international and a great place to find new suppliers, check out new developments and build partnerships. This event is taking place this year in Paris (France) between 17th and 20th November 2015. One of the key innovations of the conference this year is that it will be the first to feature the best of industry and science & research content *within every session*. In response to delegates feedback, rather than presenting content from the scientific community in a separate 'track' of sessions, it will now be incorporated into the relevant topics. Organizers hope this will achieve the objective of further improving the coherence of the programme, increasing the value of sessions for delegates and building bridges between research into future technologies and the challenges that industry is solving today.

Europe's premier wind energy event gathers high-level decision makers. With an array of insightful sessions, bustling exhibition, impressive networking events and the whole of the value chain present, it provides the ideal platform to meet valuable contacts and achieve great business performance.

[<ReadMore>](#)

Asia Pacific Youth Forum 2015

21st and 22nd November, 2015

Calicut

The Asia Pacific Youth Forum (APYF) is a common platform for the youth of Asia Pacific region organized by OISCA to promote friendship and co-operation among the youth of different countries. Oisca Head Quarters in a meeting held at Tokyo has decided to conduct 17th Asia Pacific Youth Forum for Community Development 2015 in India to be hosted by OISCA South India Chapter from 21 - 25 November 2015 at Kozhikode. The International conference of APYF on the topic "Conservation of Biodiversity through Environment awareness" will be an important event for sharing ideas for the conservation of Biodiversity and Environment. The objective of this is to encourage youth to take the global initiative for the actions towards sustainable future.

Major themes of the conference are: 1. Biodiversity and Environment 2. Furusato* Movement and 3. Environmental Issues and Challenges. (*FURUSATO is a Japanese word for home, hometown or home country. FURUSATO is a place that comes down from our ancestors, who have cultivated harmony with nature. FURUSATO Movement envisions a world where people live in harmony with diversity of all life forms, appreciating and cooperating among them. We envision YOUTH actively and dedicatedly serving their FURUSATO development in a spirit of cooperation.)

[<ReadMore>](#)

The Economic Times, Delhi dated July 27, 2015

India's Climate Action Plan to Provide Clear CO2 Reduction Target

Urmi.Goswami@timesgroup.com

New Delhi: India's national climate action plan will provide a clear target for reducing the amount of carbon dioxide produced for every dollar of economic output or gross domestic product, rather than detailed, sector-wise goals. Every country is supposed to provide its climate action plan, or intended nationally determined contributions (INDCs), ahead of the United Nations-sponsored climate summit in Paris in December.

Senior government officials indicated that India will submit its plan to the UN climate secretariat "as soon as possible," suggesting that it could be earlier than September.

India will pledge to reduce the carbon emission intensity of its economy, or the amount of carbon dioxide produced for every dollar of GDP, by a specific target by 2030. New Delhi will include in its pledge a qualitative description of the measures it will take to meet the target. In doing so, it will

set aside earlier plans of providing quantitative targets for each of the measures it proposes to take to reduce its carbon dioxide emissions over five or 10 years beginning 2020.

The range of emission intensity reduction is yet to be determined. Dispelling questions about whether New Delhi would be aggressive in setting its target, a senior official involved in the preparation of the national climate plan said, "India's contribution will be ambitious but achievable."

New Delhi's contribution would include the renewable energy push, planned afforestation efforts and the

cess on coal and its use for research and development of clean technologies. At Copenhagen in 2009, India had voluntarily pledged to reduce carbon dioxide emissions for every unit of economic output by 20% to 25% from 2005 levels by 2050. The Planning Commission-appointed Expert Group said that with an 8% to 9% growth, India can take measures to effect a reduction of 42% in emission intensity from 2007 levels.

The Times of India, Delhi dated July 27, 2015

Metro Ph III to bring green benefits

Rumu.Banerjee @timesgroup.com

New Delhi: Greater connectivity is not the only benefit Delhi Metro's Phase III project will offer. According to a study commissioned by DMRC, the new corridors will help decongest some roads, reduce air pollution and save fuel costs as well.

Said a Delhi Metro spokesman, "There will be a significant dip in the emission levels. For instance, the reduction in carbon dioxide emission will be about 4.808 million tonnes by 2025."

The Phase III network comprises two new corridors—Mukundpur to Shiv Vihar and Janakpuri West to Botanical Garden—besides extension of several existing corridors of the network.

Apart from helping cut the pollution levels, the Phase III of the Delhi Metro is expected to have an impact on the surface transport as well. The study, which was undertaken by RITES, says, "The requirement of buses is estimated to come down to 1,760 in 2025 if the Phase III is introduced according to the schedule. This will save an

CUTTING COSTS AND EMISSIONS

Vehicle	Reduction in no. of vehicles	Reduction in fuel consumption (litres/day)	Cost saving (Million Rs/year)
FOR 2016			
Bus	1,237	24,276	265.8
Car	51,870	1,03,740	1,726.7
2-wheeler	47,401	42,661	934.3
FOR 2025			
Bus	1,760	34,540	378.2
Car	73,748	1,47,496	2,454.9
2-wheeler	67,395	60,656	1,328.4



QUANTIFIED BENEFITS OF PHASE I AND II

DESCRIPTORS	PHASE I (2007)	PHASE I & II (2011)	PHASE I & II (2014)*
No. of vehicles off the road daily	16,895	1,17,249	3,90,971
Annual reduction in fuel consumption (tonnes)	24,691	1,06,493	2,76,000
Annual reduction in pollutants (tonnes)	31,520	1,79,613	5,77,148
Savings in time per trip (minutes)	31	28	32
Annual reduction in fatal accidents (no.)	21	111	125
Annual reduction in all accidents (no.)	93	591	937

* Ridership of 27 lakh

amount equal to Rs 4,682 million towards capital cost of the bus system."

That's not all. The Phase-

III is expected to have an impact on savings in road infrastructure too. According to the RITES study, to accommodate

the vehicles, the government will have to acquire 55 hectares of land for parking and another 106 hectares (530km

to create additional road infrastructure. "The savings due to road infrastructure will be about Rs 10,600 million. In addition, the cost of 161 hectares of land will also be saved on implementation of the DMRC Phase III project," the study goes on to say.

The Phase III will also help towards savings on fuel consumption, which is expected to be in millions of rupees per year. These savings are, in fact, one of the primary aspects of the study, said officials.

Delhi Metro had in its previous phases also helped significantly in cutting fuel costs as well as reducing emissions. According to data by the Delhi Metro, in Phase I of its network (2007), the number of vehicles that went off roads daily was 16,895. This went up to 3,90,971 last year, by which time Phase I and II came about. Meanwhile, the annual reduction in pollutants was 31,520 tonnes in 2007 and 5,77,148 tonnes in 2014. The savings in time per trip was 31 minutes in 2007 and 28 minutes in 2011, when Phase I and II became functional. It was 32 minutes last year.

The Times of India, Delhi dated July 28, 2015

Record-making event

More than 20,000 volunteers planted 2,00,000 saplings in Faridabad during an event which has been registered into the *Limca Book of Records*

In what is yet another moment of pride for the city of Faridabad, the Faridabad Navchetna Trust conducted 'The Largest Plantation' drive in the city under the chairmanship of Vipul Goel, MLA, Faridabad. The drive was supported by District Administration, Faridabad, and Department of Forest, Government of Haryana. After installation of the world's "Tallest Tiranga" in Faridabad, the Trust organised the "Ek Din Go Green" campaign at the road between HUDA office in Sector 12 and Open Air Theatre and on the road between Town Park and Khel Parisar, Sector 12, Faridabad.

In one of 'The Largest Plantation' drives in India, around 20,000 volunteers planted two lakh plants in three hours in a single day - registering Haryana in the *Limca Book of Records*!

The occasion was graced by Chief Minister of Haryana, Manohar Lal Khattar, along with a host of other senior dignitaries including Dr Anil Jain, National General Secretary & In charge -Haryana, BJP; Krishan Pal Gujjar, MoS, Social Justice and Empowerment, Government of India; Captain Abhimanyu Singh Sindhu, Minister of Environment, Government of Haryana; Rao Narbir Singh, Minister of PWD (B&R) and Public Health Engineering, Government of Haryana; Subhash Barala, President, Haryana BJP, among others. They took the green pledge amidst a 'Green Carnival', the day when trees were planted at schools, homes, offices, roads, IMT, green belts and just about any patch where trees could be grown and nurtured.

Schools, colleges and institutions across the city participated in huge numbers in the campaign. Citizens



CM Manohar Lal Khattar watering a sapling

across the city voluntarily adopted a tree and pledged to nurture the trees throughout their life.

Manohar Lal Khattar planted a Rudraksh tree at the venue.

The Trust also conducted a Green Carnival which was an integral part of The Largest Plantation drive to make Faridabad green and a happier place to live. Schools, colleges and institutions across the city participated in huge numbers in the in the carnival. It was an eclectic mix of cultural and fun sessions for people of all age groups. Around 40 institutions/corporates of Haryana displayed their tableaux at the venue. More than 6000 students from schools across the city participated in a series of cultural presentations.

"I want to congratulate Vipul Goyal for this great initiative," said Capt. Abhimanyu Singh.



(L-R) Vijender Kumar with Dr Amit Bhalla, Vipul Goel and Dr Parshant Bhalla

The Times of India, Delhi dated July 29, 2015

3 scientists probing warming may have been killed: UK prof

Alexandra Sims

A Cambridge professor has reportedly claimed three scientists investigating the effect of global warming upon melting Arctic ice may have been assassinated.

According to Times, Peter Wadhams, a professor of ocean physics, said Seymour Laxon of University College London, Katherine Giles also at UCL and Tim Boyd of the Scottish Association for Marine Science had been murdered, after all three died within a few months of each other in 2013. Wadhams also believed he had been targeted by assassins after claiming that a driver in an unmarked lorry attempted to push his car from the M25.

He hinted that the oil industry or government forces



The three scientists, probing the effect of warming upon melting Arctic ice, died within a few months of each other in 2013. The Cambridge professor hinted the oil industry or government forces could be behind the killing

could have contributed to the killing of the three scientists who he has declared as "leaders" on ice levels in the Arctic.

Professor Laxon, 49, a director of the Centre for Polar

Observation at UCL, died after falling down the stairs at a New Year's Eve party in Essex; Dr Boyd, 54, was killed instantly after being struck by lightning while walking his dogs in Port Appin, Argyll, Scotland in January 2013 and Dr Giles, 35, died in April 2013 when struck by a truck in Victoria, central London while cycling to work.

Wadhams' theories have been disputed by Dr Laxon's partner, Fiona Strawbridge, head of e-learning at UCL and a close friend of Dr Giles, who has labelled the allegations "ridiculous conspiracy theories", reports Times. Despite reporting the alleged assassination attempt against his life to the police, Wadhams told Telegraph that he had not announced his theories fearing he may be seen as a "looney". THE INDEPENDENT

The Times of India, Delhi dated July 31, 2015

Changing The Climate, Together

World leaders unite to accelerate the clean energy revolution

Piyush Goyal, Ségolène Royal, Ernest Moniz, Wan Gang, Miguel Arias Cañete, Pedro Joaquín Coldwell, Suhail Mohammed Al Mazrouei

More than 20 countries from six continents met recently at the sixth Clean Energy Ministerial, or CEM, in Mérida, Mexico and discussed a path forward to accelerate a global clean energy revolution that is already underway. Underpinning this revolution are technology innovation and increasing market share that combine to drive down clean energy costs.

The countries that met in Mexico may have different priorities for advancing clean energy while fostering economic growth - addressing climate change, increasing fuel diversity and energy security, eliminating air and water pollution, lowering energy costs for remote communities, and, for many, all of the above.

What we all agree on is the importance of supporting the rapid growth of our global clean energy economy, in particular, energy efficiency and a diversity of renewable resources such as solar, wind, hydro, sustainable biomass and geothermal.

Founded in 2009, CEM advances cooperation on clean energy among a group of countries encompassing around 90% of global clean energy investment. Having tasted success over the first five years, our countries and the European Commission are the inaugural members of a new CEM steering committee that will help guide the effort into a more ambitious stage of 'CEM 2.0'.

Here are just two examples of CEM success to date. Drawing upon collaboration in the CEM, India became the first country in the world to comprehensively set quality and performance standards for super-efficient LED lighting, potentially avoiding the equivalent of 90 coal-fired power plants of emissions. Since 2011, CEM's Clean Energy Solutions Center has provided no-cost, high-quality and real-time expert advice to more than 80 countries around the world. For example, the Solutions Center helped Caribbean countries set an ambitious sustainable energy target of 47% for 2027



that will help reduce their dependence on expensive oil-fired electricity generation.

We know that we can do more, and our Merida Ministerial set us on this course: We kicked off a Global Lighting Challenge to set in motion a race to collectively reach cumulative sales of 10 billion high-efficiency, high-quality, affordable advanced lighting products.

If we were to replace the world's existing lighting with these products, we could save hundreds of billions of dollars and reduce annual CO₂ emissions by over 500 million metric tonnes. The enabler of near-term success in this challenge is the technology innovation that has lowered LED costs by a factor of 10 in just a few years. If we can continue this trend, our target may soon prove to be too modest!

We created a new Power System Challenge that will help us toward the clean, efficient, and reliable electricity grids of the future and to increased access. A big part of this effort is likely to be more widespread use of micro-grids and information technology for system

India has an ambitious target to scale its renewable energy capacity from 30 gigawatts presently to 175 gigawatts by 2022. Our economies all need to be bolstered and our shared climate urgently needs these advancements

reliability and resilience.

We also received new commitments to help significantly scale up the Clean Energy Solutions Center with a wider network of technical advisers and with a new Finance Portal to provide access to the world's best clean energy finance expertise - quite literally turning policy into practice.

And President Obama announced that the US would host next year's ministerial, and China announced its intention to

host the following one, demonstrating the commitment to clean energy by the world's two largest economies and carbon emitters.

With the active leadership of the world's largest countries behind it, CEM 2.0 stands ready to accelerate global progress on clean energy. In this way, the CEM complements the international climate change discussions by serving as a premier forum to efficiently help each other achieve our respective clean energy goals and to promote global clean energy solutions.

The time is ripe to further deploy clean energy technologies and policies as well as to boost investment by mobilising all sources of financing, public and private. New investments in renewables, energy efficiency, and smart grids will not happen without a huge concerted effort in this field. The CEM platform can help in this respect.

We are in the midst of a global clean energy revolution. Amidst China's newly installed capacity of 94 million kilowatts in 2013, about 60% came from non-fossil energy sources. India has announced an ambitious target to scale up its renewable energy capacity from 30 gigawatts presently to 175 gigawatts by 2022. Mexico in 2015 reached 22.8% of its power generation from clean energy technologies, and has set a target of 35% by 2024. The European Union has reduced primary energy consumption in 2013 by 15.5% compared to 2020 projections and with full implementation and monitoring of already-adopted energy efficiency legislation can achieve its 20% energy efficiency target in 2020.

By working together, we will accelerate this revolution. Our economies all need to be bolstered and all of our citizens need to be served by affordable clean energy and by the clean energy jobs of the future. And our shared climate urgently needs these advancements.

Piyush Goyal is Minister of State for Power, Coal and New & Renewable Energy, India; Ségolène Royal is Minister of Ecology, Sustainable Development and Energy, France; Ernest Moniz is Secretary of Energy, US; Wan Gang is Minister of Science and Technology, China; Miguel Arias Cañete is Commissioner for Climate Action and Energy, European Commission; Pedro Joaquín Coldwell is Secretary of Energy, Mexico; Suhail Mohammed Al Mazrouei is Minister of Energy, UAE

India closer to nod for 100% biofuel

Dipak.Dash@timesgroup.com

New Delhi: Setting the stage for the manufacture of vehicle engines that can function on 100% bio-diesel soon, the road transport ministry on Friday came out with a draft notification for mass emission standards for such vehicles. These will be known as 'B100' vehicles, like the BS-III or BS-IV categorization.

Bio-diesel is a renewable as well as cleaner source of energy in comparison to diesel. B100 vehicles have been plying in Brazil and cities such as Berkeley in California, US. The move aims at reducing dependence on import of crude oil and curbing pollution. Nearly 80% of diesel is used only for transportation purposes in India.

The ministry has also included standards for test requirements for type approval and extension for four-

and three-wheelers, using both B100 and diesel as fuel, or either of the two.

"After receiving and going through the suggestions and objections, we will come out with a final notification. The manufacturers can then make engines that can run on the clear fuel," said a road transport ministry official. According to the draft notification, the compatibility of a vehicle to the level of bio-diesel blend will be defined by the manufacturer and the same will also be displayed on the vehicle.

Sources said quite a few vehicle manufacturers are keen to produce such engines, which they are already doing for other countries. In an official release, the ministry said the new standards allowing such vehicles will provide an alternate source of income to farmers and forest dwellers, who can cultivate jatropha and other non-edible oilseeds.

The Times of India, Delhi dated August 01, 2015

Building a plane from leather waste

U Tejonmayam @timesgroup.com

Chennai: While leather is used to make shoes and other accessories, leather waste can be used to make an aircraft.

Don't think too hard, scientists at Central Leather Research Institute (CLRI) have found a way to use leather solid waste to make a nano-composite material that is tough enough to make the body of a car, bike or aircraft, besides light weight construction material, electrical switches and computer cabinets.

Dust generated from buffing leather, a process to get a smooth surface on the leather, is combined with a polymer and certain nanoparticles to make the material that is al-

MAKING THE MOST OF WASTE

Scientists have found a way to make use of solid waste generated by leather by creating a nano-composite material

- The nano-composite material can be used to make
- ▶ Body of a car, bike or aircraft
 - ▶ Light-weight construction material
 - ▶ Electrical switches
 - ▶ Computer cabinets
 - ▶ Soles for shoes

How material is created:

- ▶ Dust from buffing, a process used to get a smooth surface on leather, is combined with a polymer and certain nanoparticles like titanium dioxide and silicon dioxide
- ▶ This is then cured through heat additives to harden or toughen it

most close to metal in terms of strength. The polymer could be epoxy or synthetic rubber while nanoparticles, which act as reinforcement, could be titanium dioxide or silicon dioxide. Scientist V Sivakumar said once combined, they undergo a curing process in

which heat is passed to harden or toughen the material. "The proportion of the three components used in developing the composite material varies with the thickness and toughness required," he said. CLRI director S R Wate said that the technology, developed as part

of CSIR-CLRI Zeris project under the 12th research plan, has been patented. Buffing dust is a micro fine solid particulate that has chromium, synthetic fat, oil, tanning agents and dye chemicals. Nearly 745kg of solid waste is generated during the processing of 1,000kg raw hide into leather. Approximately 1% of it will be buffing dust. About 2kg to 6kg of buffing dust is formed per tonne of hide processed.

Unused, the chemicals present in leather solid waste which includes buffing dust cause pollution. But when the same buffing dust is combined with polymer and nanoparticles, it adds porosity and heat resistance to the composite due to the presence of chemicals like chromium.

The Times of India, Delhi
dated August 01, 2015

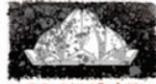
The Times of India, Delhi dated August 03, 2015

NDMC to charge green fee

Following NGT Order, Residents To Pay A Minimum Of ₹100

TIMES NEWS NETWORK

New Delhi: The New Delhi Municipal Council (NDMC) has decided to charge residents 'environmental compensation fee' on directions of the National Green Tribunal. The additional charge, which will be minimum Rs 100, will reflect in the water bill for the month of July. In May, NGT had ordered the civic agency to charge the fee and utilize the fund to provide new sewage treatment plants (STPs) and other technologies to clean up the Yamuna.



LET DELHI BREATHE

Currently, NDMC charges 50% of the total water bill as sewerage maintenance charge. Officials said households which have water connection will be charged as per

the bill. There are close to 25,000 water connections in the area, of which 22,000 are metered. Sources said the civic agency is working on expanding the water network so that more people have metered connections.

Officials said many households pay less than Rs 100 as sewerage maintenance charges. "These people will have to pay at least Rs 100 now. In case, a person pays Rs 500, he will continue to pay as per actual usage," said an official.

For households which are not in the water billing network, the civic agency will charge them based on their sanctioned electricity load. The amount will vary from Rs 100 to Rs 1,000. "For up to 2KW

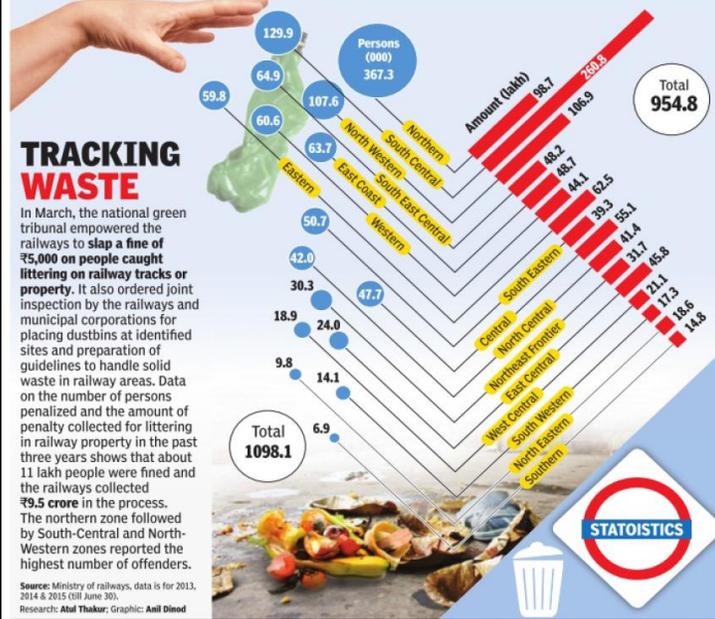
load, people will have to pay Rs 100 and Rs 250 for up to 5KW. For electricity load up to 10KW Rs 500 will be charged, and Rs 1,000 for above 10KW," said an official. NDMC is currently levying sewerage maintenance charge based on water consumption by each household. But it is taken only from those who get metered supply. "But now the sewerage maintenance charge will have to be paid by all," said an official.

The tribunal had ordered civic agencies to charge environment compensation fees while hearing a petition regarding severe pollution in Yamuna. NGT had also directed the agencies to utilize the funds for installing STPs so that treated water is released into the river. Officials said the money collected will be given to DJB for setting up STPs in colonies without sewers.



ACTING TOUGH

LITTERING AT RAILWAY PREMISES - PERSONS PENALIZED AND AMOUNT COLLECTED



TRACKING WASTE
In March, the national green tribunal empowered the railways to slap a fine of ₹5,000 on people caught littering on railway tracks or property. It also ordered joint inspection by the railways and municipal corporations for placing dustbins at identified sites and preparation of guidelines to handle solid waste in railway areas. Data on the number of persons penalized and the amount of penalty collected for littering in railway property in the past three years shows that about 11 lakh people were fined and the railways collected ₹9.5 crore in the process. The northern zone followed by South-Central and North-Western zones reported the highest number of offenders.

Source: Ministry of railways, data is for 2013, 2014 & 2015 (till June 30).
Research: Abil Thakur; Graphic: Anil Dheed

The Times of India, Delhi dated August 03, 2015

POLES APART - A breath of toxic air for Punjabi Bagh

Suraksha p
New Delhi

Pollutants Emanating From Najafgarh Drain Corrode Metals, Appliances; Malaria & Dengue Threats Prevail

The Najafgarh drain that flows from Dwarka to Wazirabad before reaching the Yamuna crosses Punjabi Bagh during its long journey through Delhi. The filth it carries not only leaves the area stinky but also makes the air toxic.

"We can't keep any silver idol or utensil in our puja room. All such items and even silver anklets and toe rings blacken in a few days. The air here is that toxic," said Nidhi Garg, a resident of Road 16 in East Punjabi Bagh.

"No retailer here gives warranty cards for electrical appliances. We get our AC gas refilled twice every season. Even refrigerators are damaged," she added. "Copper wires and pipelines gather a black coating in no time," said a guard working at Nijhawan's, one of the upscale bungalows on Road 77.

Health is also an issue Garg does not allow her children to step out after dusk because of the stench and makes sure they wear full-sleeve tops to save them from mosquito bites.

Sumita Behl applies repellents every two hours. "This place is full of

The housing society of Punjabi Bagh has been fighting a case in the HC for more than a decade for stopping discharge of untreated effluents into the drain

mosquitoes. We use nets, repellants and what not. One would think ACs give respite from mosquitoes, but in our area even ACs are corroded," she said.

"Each yard of land in West Punjabi Bagh costs around Rs 4 lakh. You won't find such fancy houses at this rate in Connaught Place and south Delhi," said Ishwar Bansal, vice-chairman, Punjabi Bagh Cooperative Housing Society.



DANGER IS IN THE AIR: While swanky bungalows may lead one to believe that everything is hunky-dory at Punjabi Bagh, the area has to grapple with the stench and harmful effects of the drain (right)

West Punjabi Bagh has four prominent educational institutions--Guru Harkrishan Public School, Guru Nanak Institute of Management, NC Jindal Public School and Ch. Jaswant Lal Public School. Shilpa Narag, Rubal Sahni and Deepika Kal ra, waiting to pick up their children near Road 72 in the afternoon, said dengue and malaria cases are quite common in the area.

"Fumigation is done once in a blue moon," said Sahni while Deepika added, "There are so many schools in the area. Children's health is affected because of the stench and mosquitoes."

Mechanics with shops in jhuggis situated parallel to the drain in West Punjabi Bagh said sulphur dioxide damages air conditioners and coolers. Sarabdeep Singh, a self-employed businessman residing on Road 51, said, "I have read newspaper reports that confirm that Punjabi Bagh is the most polluted area in the capital. Such toxic air cannot be found anywhere else." In the past, the residents along the Yamuna and the Shahdara drain in Noida had complained of similar problems.

Punjabi Bagh Cooperative Housing Society has been fighting a case in the Delhi high court for more than a decade for stopping discharge of untreated effluents into the drain and get it covered.



In Punjabi Bagh, Najafgarh drain flows in front of Iskcon temple right up to Rohtak Road near Ashok Park Main Metro station. Roads 13, 16, 18, 5, 6 and 7 in East Punjabi Bagh are close to the Najafgarh drain with Road 11 running parallel to it. In West Punjabi Bagh, Road 77 runs parallel to the drain while Roads 78, 75, 73, 72 and 71 are perpendicular to it

Government officials, however, feel covering the drain would only compound the problem. Dr K K Bhalla, deputy health officer of Karol Bagh zone, said, "We spray BTI insecticide to prevent breeding of mosquitoes. But hyacinth plants clog many areas and make spraying difficult. Building parapets will stop people from dumping waste, helping maintain a steady flow."

Punjabi Bagh Club, with over 8,000 members from the area as well as outside, stands a couple of kilometres from the drain. A one-time membership here costs Rs 11 lakh. It offers them various sports and recreational facilities but nothing can beat the stench and the toxic air.

The Times of India, Delhi dated August 03, 2015

Obama unveils bold emission cut plan today

To Announce New Rules For Coal-Based Power Plants

Coral Davenport & Gardiner Harris

Washington: In the strongest action ever taken in the United States to combat climate change, President Obama will unveil on Monday a set of environmental regulations devised to sharply cut planet-warming greenhouse gas emissions from the nation's power plants and ultimately transform America's electricity industry.

The rules are the final, tougher versions of proposed regulations that the Environmental Protection Agency announced in 2012 and 2014. If



WINDS OF CHANGE: If they withstand the legal challenges, the regulations will set in motion policy changes that could shut down hundreds of coal-fired power plants, freeze construction of new ones and create a boom for wind, solar and other renewable energy sources

they withstand the expected legal challenges, the regulations will set in motion sweeping policy changes that could shut down hundreds of coal-fired power plants, freeze construction of new coal plants and cre-

ate a boom in the production of wind and solar power and other renewable energy sources.

As the president came to see the fight against climate change as central to his legacy, as important as the Affordable

Care Act, he moved to strengthen the energy proposals, advisers said. The health law became the dominant political issue of the 2010 congressional elections and faced dozens of legislative assaults before surviving two Supreme Court challenges largely intact.

"Climate change is not a problem for another generation, not anymore," Obama said in a video posted on Facebook at midnight on Saturday. He called the new rules "the biggest, most important step we've ever taken to combat climate change." The most aggressive of the regulations requires the nation's existing power plants to cut emissions 32% from 2005 levels by 2030, an increase from the 30% proposed in the draft regulation. That new rule also demands that power plants use more renewable sources of energy like wind and solar power. While

the proposed rule would have allowed states to lower emissions by transitioning from plants fired by coal to plants fired by natural gas, which produces about half the carbon pollution of coal, the final rule is intended to push electric utilities to invest more quickly in renewable sources, raising to 28% from 22% the share of generating capacity that would come from such sources.

In its final version, the rule retains the same basic structure as the draft proposal: It assigns each state a target for reducing its carbon pollution from power plants, but allows states to create their own custom plans for doing so. States have to submit an initial version of their plans by 2016 and final versions by 2018.

But over all, the final rule is even stronger than earlier drafts and can be seen as an effort by Obama to stake out an

uncompromising position on the issue during his final months in office. The anticipated final climate change regulations have already set off what is expected to be broad legal, legislative and political backlash as dozens of states, major corporations and industry groups prepare to file lawsuits challenging them.

In the video, Obama said that global warming and the reasons behind it were backed up by scientific data — some Republican opponents dispute its existence and others cast doubt on whether humans are to blame for the phenomenon. The Washington Post quoted an unnamed White House official: "This is the most significant action any US president has taken to curb greenhouse gases. It will form the foundation of the country's efforts to take on climate change for decades to come." NY NEWS SERVICE

The Times of India, Delhi dated August 04, 2015

PLANT A TREE AND CLEAN THE AIR

TOI Starts Plantation Campaign In Build-Up To Greening Of Tilpat Valley On Aug 30

Times News Network

New Delhi: Delhi's alarmingly poor air quality has been making headlines round the world. Scientific reports and testimonies of people have given enough proof of the respiratory and cardiovascular diseases both children and adults have been suffering from. Even stepping out for a morning walk, a cycle ride or a trip to the market can make you sick. Against such a gloomy backdrop, TOI has been introspecting on what can be done while the state government, Centre and judiciary are engaged in debating and driving policies to improve air quality.

Perhaps, the most effective step that one can take to improve air quality is to plant saplings and nurture them till they grow into big trees. This can protect us and the future generations from the adverse effects of air pollution. These trees can also make neighbourhoods less scorching in summer by improving the micro-climate. They will attract a variety of birds, improve biodiversity and restrict desertification in Delhi.

With this objective in mind, we are launching a TOI Green Drive with Hero MotoCorp and the Delhi Development Authority (DDA) on August 4. It aims to plant at least one lakh saplings on August 30 in Tilpat Valley in Maidan Garhi, south Delhi, a part of the Delhi ridge.

In the run-up to the big plantation day that is likely to see participation of more than

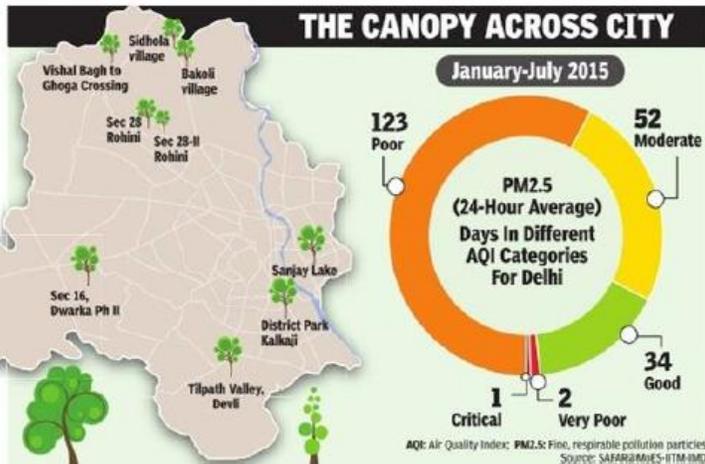
10,000 people—along with several spiritual organizations—TOI will organize plantation drives at Sanjay Lake in Mayur Vihar, Phase II; Sector 16, Dwarka; district park in Kalkaji (Aastha Kunj); Sidhola village, NHI, G T Road; Vishal Bagh to Ghoga Crossing; Bakoli village, NHI, G T Road; and Sector 28, Rohini. More than 2,000 saplings of Delhi's native species will be planted in each area.

Lieutenant governor Najeeb Jung will inaugurate the drive on Tuesday at Sanjay Lake in Mayur Vihar, Phase II. Residents and children from 10 schools will be planting saplings here.

Though air pollution can primarily be checked by regulating its sources, such as vehicles, thermal power plants, burning of waste such as dry leaves or garbage, and dust, scientists and experts TOI consulted said plantations can have multiple benefits for Delhi's degraded environment.

CR Babu, Professor Emeritus, Delhi University, and the brain behind the biodiversity parks in the city believes apart from reviving several Aravalli forest species, the plantation drive can even bring back animals and bird species that disappeared long ago.

"Greenery can help in three ways. It can reduce the urban heat island effect which causes air pollution levels to rise. Green belts can stop the wind-blown



dust from entering the city or neighbourhoods. It, of course, absorbs carbon dioxide which is a greenhouse gas...there are so many ways plantations can help," said Gufraan Beig, project director, System of Air Quality and Weather Forecasting and Research (SAFAR).

Delhi suffers massively from the urban heat island phenomenon—certain urban areas are extremely hot compared to others with less concretization or more green cover. A study by Indian Institute of Technology, for instance, had found several parts of Delhi were sizzling in summer—Connaught Place, Sitaram Bazar and Bhikaji Cama Place, for instance, had recorded a difference of about 8.3 degree Celsius in temperature from their surrounding

areas. Ozone, a highly hazardous gas, is known to rise in heat islands because it's created due to chemical reactions between oxides of nitrogen, volatile organic compounds and carbon monoxide in the presence of sunlight and high temperature. PM2.5 particles also remain suspended in the heat at these pollution hotspots.

A US Forest Service and Davy Institute study on impact of trees on PM2.5 (fine, respirable pollution particles) found that urban trees and forests are saving an average of one life every year per city. In New York City, trees save an average of eight lives every year by countering particulate pollution. Delhi, often described to be a harsh city because of its extreme and prolonged summer, requires shade.

Urban forests can create the much-needed canopy cover and a carbon sink, bring back birds, grow fruits and flowers and bring down the temperature in the area.

Environmentalists are excited that the TOI Green Drive will help rejuvenate a part of the Delhi ridge that has become highly degraded over the years. Wedged between Sainik Farms and Asola Bhatti Wildlife Sanctuary, the 80ha Tilpat Valley is important because of its ability to retain water in several natural deep pits in the area. The catchment has degraded because of the shrinking forest cover here.

The TOI Green Drive is supported by BLK Super Specialty Hospital as medical partner, WWF-India as NGO partner and Times NIE.

SAVING EARTH

Obama steps up climate fight

■ Actions face opposition from Republicans, Democrats who fear impact on economy

Washington, Aug. 3: President Barack Obama on Monday has announced even steeper greenhouse gas cuts from US power plants, a challenge to the rest of the world to take serious action as a global summit to finalise a landmark climate change treaty approaches at the end of this year.

Obama's actions on climate change have faced opposition from Republicans and even some Democrats who fear the impacts on the US economy.

The issue is already being raised among candidates for next year's presidential election, as much of the work will lie with his successor. Democratic front-runner Hillary Rodham Clinton has already expressed support.

Some changes cut the heat-trapping gases blamed for global warming. Other changes delay implementation and eliminate certain options that states could use to show they're cutting emissions, making it harder to comply. Some states will be given a more lenient target, while others will have tougher targets to meet. The Obama administration has yet to disclose those state-specific targets. Obama's proposal from last year set the target as a 30 percent nationwide cut by 2030, compared to the levels in 2005. His new plan calls for a 32 percent cut in the same time period.

Left unchanged is Obama's overall goal for U.S. emissions cuts from all sources of pollution. As the U.S. commitment to a major global climate treaty that Obama is championing, the U.S. committed to cutting its emissions 26 percent to 28 percent by 2030, compared to 2005. — AP

Left unchanged is Obama's overall goal for U.S. emissions cuts from all sources of pollution. As the U.S. commitment to a major global climate treaty that Obama is championing, the U.S. committed to cutting its emissions 26 percent to 28 percent by 2030, compared to 2005.

Left unchanged is Obama's overall goal for U.S. emissions cuts from all sources of pollution. As the U.S. commitment to a major global climate treaty that Obama is championing, the U.S. committed to cutting its emissions 26 percent to 28 percent by 2030, compared to 2005.

Left unchanged is Obama's overall goal for U.S. emissions cuts from all sources of pollution. As the U.S. commitment to a major global climate treaty that Obama is championing, the U.S. committed to cutting its emissions 26 percent to 28 percent by 2030, compared to 2005.

Left unchanged is Obama's overall goal for U.S. emissions cuts from all sources of pollution. As the U.S. commitment to a major global climate treaty that Obama is championing, the U.S. committed to cutting its emissions 26 percent to 28 percent by 2030, compared to 2005.

Left unchanged is Obama's overall goal for U.S. emissions cuts from all sources of pollution. As the U.S. commitment to a major global climate treaty that Obama is championing, the U.S. committed to cutting its emissions 26 percent to 28 percent by 2030, compared to 2005.

Left unchanged is Obama's overall goal for U.S. emissions cuts from all sources of pollution. As the U.S. commitment to a major global climate treaty that Obama is championing, the U.S. committed to cutting its emissions 26 percent to 28 percent by 2030, compared to 2005.

Left unchanged is Obama's overall goal for U.S. emissions cuts from all sources of pollution. As the U.S. commitment to a major global climate treaty that Obama is championing, the U.S. committed to cutting its emissions 26 percent to 28 percent by 2030, compared to 2005.

CONTROLLING DAMAGE

REDUCING HEALTH DAMAGE

■ \$ 55 bn- \$ 93 bn is the amount the US would save by 2030 through clean climate

■ The benefits include avoiding over 6,600 premature deaths and over 1,40,000 asthma attacks

THE CLEAN POWER PLAN, ANNOUNCED ON MONDAY, WILL MAINTAIN A RELIABLE ENERGY SYSTEM, WHILE CUTTING THE POLLUTION

WHAT HAS BEEN CHANGED

30% carbon emission has to be cut by 2030 was Obama's proposal in 2014

32% emission should be controlled during same period, Obama said today



BARACK OBAMA, US PRESIDENT

WHAT'S LEFT UNCHANGED

■ Obama's goal for US emissions cuts from all sources of pollution.

■ As the US commitment to a global climate treaty that Obama is championing, the U.S. committed to cutting its emissions 26% to 28% by 2030, compared to 2005.



Existing power plants can still dump unlimited amounts of harmful carbon pollution into the air weekly. For the sake of our kids, for the health and safety of all Americans, that's about to change

The Times of India, Delhi dated August 04, 2015

Fuel retailers bet on solar power with easy loans

Sanjay.Dutta@timesgroup.com

New Delhi: Oil companies betting big on solar doesn't sound ironic any more. Setting up solar plants — either for generating electricity or steam — is no more a token of commitment to environment. Instead, it is making business sense.

No wonder India's state-run fuel retailers are offering petrol pump owners easy loans to help them go green by setting up solar power units. IndianOil Corporation is offering loan of up to Rs 5 lakh. Hindustan Petroleum and Bharat Petroleum too have joined the bandwagon on the back of government directives. But it is the economics of solar power that is making the scheme tick.

There are nearly 52,000 petrol pumps in the country. Power supply from the grid in rural areas and the hinterland is patchy and only fills up the gap between long blackouts. Petrol pump owners in these places depend on generators, which pushes up costs of operation and eats into their income.

IndianOil's initial experiments have shown it would be economical to run its 24,400 petrol pumps and Kisan Seva Kendras — low-cost filling stations catering to farmers and rural communities — on solar power than burn diesel in generators.

In this backdrop, investing in a rooftop solar system is in-

GREEN ENERGY

Company	Green Outlets	Target	
		2015-16	2016-17
IOC	2,663	1,500	2,000
BPCL	235	350	700
HPCL	227	300	700
Industry	3,125	2,150	3,400

WHO MAKES THE CUT FOR SOLAR LOAN

- Pumps with average monthly sales of 50 kilolitre for retail outlet, 25 kilolitre for Kisan Seva Kendra
- Credit worthiness to be assessed by IndianOil, based on banker's recommendation
- New outlets or Kendras to be considered eligible after six months in operation



WHAT MAKES THE LOAN

Facility up to Rs 5 lakh
11% interest (currently)
In the case of a default, an additional 1% interest charged over SBI's prime lending rate

Loan and interest to be recovered in 36 instalments

creasingly beginning to make sense as it provides a reliable source of power, reduces electricity bill and pollution from diesel generators. IndianOil executives said over 150 dealers have already availed of the loan scheme to set up solar plants at their pumps.

Depending upon the size of the petrol pump, a 24 kw (kilowatt) photovoltaic system on the rooftop can bring down costs by more than Rs 7 lakh a year. This is almost 50% less than the average annual electricity bill currently. Petrol

pumps have to pay commercial rates, which is much higher than domestic tariffs, for electricity from grid.

There are other benefits too such as accelerated depreciation and associated benefits (80% depreciation in the first year and 20% depreciation in the second year). It is no surprise that solar energy has found wide acceptance among dealers of IndianOil, the largest retailer. The period between April 2014 and January 2015 witnessed 1,175 new outlets joining the solar club.

The Times of India, Delhi dated
August 05, 2015

Haryana plans eco-zone in NCR

Activists Call For Bigger Buffer Zone Around Asola-Bhatti, Link To Sariska

Jayashree.Nandi
@timesgroup.com

New Delhi: In what is a piece of good news for those concerned about the welfare of wildlife in Delhi's Asola Bhatti Sanctuary and the adjoining Aravalis, the Haryana government has finally decided to declare an eco-sensitive zone around its border—particularly that with Delhi's forests.

An ESZ is a buffer green area where any activity that can impact ecology is restricted.

The exact radius of the ESZ will be finalized only once geo-referencing of the area is complete. The ESZ will also cover sacred grove Mangar Bani, off the Gurgaon-Faridabad highway.

Activists, however, fear an ESZ of a few hundred metres or even a kilometre radius will be of no help. The Faridabad Aravalis, which are covered with scrub forests, comprise a large area. The hills, themselves, are under threat from real estate projects. They also have large tracts of private land that



UNDER SIEGE: Large parts of Haryana's Aravalis are privately owned

could be built up anytime.

"The catch is this—the Aravalis in Faridabad are not notified forest, so they have no protection. A kilometre will not even cover the distance up to Badkhal lake. It may only touch Mangar but not cover the entire area. Why doesn't the Haryana government declare the Faridabad Aravalis forest?" said environmentalist Chetan Agarwal.

The Delhi government has been pursuing the ESZ issue with Haryana for a long time now because the states share an important wildlife

corridor. Leopards, striped hyenas and jackals have been reported to use this corridor from either side. However, increasing encroachments and infrastructure projects have been eating into the corridor. On the Haryana side of Asola sanctuary, the large green space not yet notified as forest is an important wildlife habitat. The Snow Leopard Trust had documented presence of leopards in the area.

"The width of ESZ will depend on the practical situation on the ground. Existing houses or habitation cannot be moved. There are also

Haryana's ESZ will cover the sacred grove Mangar Bani, but activists say an ESZ of a few hundred metres or even a kilometre radius will be of no help. They say the state should declare the entire Faridabad Aravalis a forest. But the Haryana CM has only promised a 500m buffer zone so far



roads in some parts. On the forest area shared with Delhi, the CM has assured a 500m buffer zone. Mangar Bani will be covered," said a senior official of the Haryana forest department.

Delhi forest officials, however, maintained that Haryana has promised a buffer zone of 1km. The ministry of environment, forest and climate change had issued guidelines following a Supreme Court order to all state governments to declare ESZs around their respective forests. "In cases in which sensitive corridors and ecologically im-

portant patches, crucial for landscape linkage, have width even beyond 10km, these should be included in the eco-sensitive zone," say the guidelines.

"The Haryana Aravalis are already part of a natural conservation zone which is a no-construction area. Only construction for recreational purposes is allowed—within a limit of 0.5%. The ESZ notification should be even more stringent and it should help connect Sariska National Park to the Asola wildlife corridor through the Faridabad Aravalis," Agarwal said.

The Economic Times, Delhi dated August 07, 2015

IFC to Invest in India's Green Projects

Karnika.Bahuguna
@timesinternet.in

New Delhi: International Finance Corporation (IFC) has big plans to invest in India's renewable energy space as the sector is evolving with competitive commercial bidding unlike the subsidy-driven growth in the West, a top executive at the World Bank's investment arm said. IFC joins other global players such as Goldman Sachs, SoftBank and SunEdison in plans to invest in the country, which is aiming to make a quantum leap in the production of solar and wind energy.

Sujoy Bose, IFC's global head of infrastructure and natural resources, said there were several positives about India's renewable energy dreams and IFC would invest in projects that come up as part of the country's ambitious target of adding 1 lakh megawatts of renewable power.

IFC, which has a \$5-billion commitment in India, has already funded companies such as Mahindra Solar and NSL Renewable, and

recently issued a 'green Masala bond', raising ₹315 crore for private sector investments that address climate change.

Bose also highlighted certain factors that renewable projects should focus on to be successful. "For these projects, there are three factors — the project cost has to be viable, the operation and maintenance have to be extremely tight and the financing has to be attractive," Bose told ET.

He said the cost of renewable power was coming down, approaching the level of conventional electricity. In the recently held competitive bidding for solar projects, tariffs fell to as low as ₹5.05 per unit in Madhya Pradesh and ₹5.17 in Telangana.

"The fact that these projects have been able to come up and supply power at these attractive prices shows that the financing packages are there to support them and hence the sector has a lot of legs going forward. So, we expect to definitely continue to invest in India and it is going to be a large part of our portfolio going forward in the renewable space as well," he said.

Set Up a Bank of Credible Renewable Projects

ET VIEW

India has set out an ambitious plan for adding 175 GW renewable energy capacity by 2022. The solar component of this plan, 100

GW, alone would require investment to the tune of \$120 billion. India needs to leverage the interest that financial institutions are evincing in the renewable energy sector. This would help it to increase the share of renewable energy capacity, reduce dependence on imported fossil fuels, and improve the country's carbon emission profile. Many financial institutions are withdrawing from coal-based projects. India must tap these funds to augment its clean energy sector. To this end, it must ensure it has a bank of credible renewable energy projects.

IFC has withdrawn from investing in coal-based projects given its commitments to environment, Bose said.

IFC's last investment in the black-fuel based project was Tata Power's Mundra power project.

"It is something that has been agreed with our board over the

last few years. We operate in a pretty restricted framework for coal and have not got any request within that framework for any project," Bose said when asked if IFC had completely exited from investing in coal-based projects.

IFC had invested \$400 million in Tata Power's Mundra project in

2008 through debt and provided guidance on environment and social practices.

IFC, which follows a July-to-June financial year, has its biggest portfolio exposure in India. As of June 30, 2015, its committed portfolio in India was about \$5 billion, accounting for about 9-10% of its global portfolio.

Riding the renewable wave, IFC expects to increase its investment in the infrastructure segment. Currently, it invests around \$500-600 million per year in India's infrastructure segment, over a third of which is renewables.

Reducing transmission and distribution losses would be the key driver of the government's plan of providing 24x7 power to all by 2019, Bose said. IFC is keen to engage in opportunities in the transmission and distribution segment as well.

"I realise that in the Indian context there are challenges but to me making the distribution companies more efficient and reducing transmission losses will go a long way in helping us solve the problem of the power sector in India," he said.

The Times of India, Delhi dated August 08, 2015

MoEF finally admits air pollution kills

Ministry Links It To 35,000 Deaths In Over 9 Yrs

Vishwa.Mohan
@timesgroup.com

New Delhi: Union environment ministry, which generally avoids sharing details of air pollution-linked deaths, made an exception on Thursday when it said in Parliament that more than 35,000 people had died due to acute respiratory infections (ARI) across India in over nine years. More than 2.6 crore cases were reported every year during the period.

Although international studies have attributed far more deaths to air pollution in India, this was a rare official admission that pollution could be causing deaths on a large scale. The number of annual ARI cases reported by environment and forest minister Prakash Javadekar was

More than 2.6 crore cases of acute respiratory infection reported every year in the country

high by any measure. "Air pollution is known to be one of the aggravating factors for many respiratory ailments and cardiovascular diseases," Javadekar stated, sharing the data provided by the health and family welfare ministry.

According to the data, 3.48 crore cases came to light in 2014, which means more than 95,000 Indians of all ages were reporting acute respiratory infection every day.

Responding to a Parliament question on impact of air pollution, the minister in his written response in the Rajya Sabha stated, "Asthma,

chronic obstructive pulmonary disease, chronic bronchitis etc are the diseases caused by exposure to increasing air pollution."

The environment ministry had in the past maintained that there was no "conclusive evidence" that air pollution had led to loss of lives of patients suffering from respiratory diseases.

Although it continued to stress that air pollution may just aggravate the condition as it was not the only cause of respiratory diseases, this time the ministry shared statistics related to ARI deaths from 2006 to 2015. The ministry, at the same time, also listed a number of measures being taken by it to minimize the impact of air pollution.

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

POISON IN AIR



Telangana became a separate state in June 2014; Total of AP & Telangana figure do not include figures of Telangana's 10 districts after July last year

Most of the states/UTs shared their figures till May 2015; Couple of states shared data only till February and couple of others till April 2015

Source: Ministry of Health & Family Affairs

CNG cleaner than diesel, but its smoke hides dangers too

Jayashree Nandi & Durgesh Nandan Jha | TNM

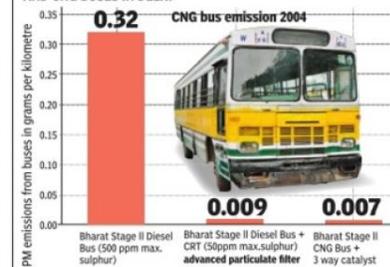
New Delhi: Compressed natural gas (CNG) was pitched as a silver bullet for Delhi's air pollution problem, but new research suggests exhaust emissions of CNG vehicles may also be harmful. They may not be as toxic as diesel smoke but, scientists at Council of Scientific and Industrial Research (CSIR) say, CNG emissions contain carbon nanoparticles that are suspected to cause cancer.

Referring to a study by CSIR-Indian Institute of Petroleum and University of Alberta (Canada), M O Garg, director general of CSIR, said nanoparticles have lower mass than particles found in diesel smoke but are far more numerous. "This is a result of combustion which causes carbon disintegration. We have to see if the nanoparticles arise from CNG or the lubricant used," Garg told TOI, adding that systematic studies are needed besides trials to find out whether particulate filters can remove nanoparticles from exhaust gases.

The researchers analyzed smoke from a DTC bus, and carried out similar studies on die-

NOT QUITE GREEN

RESULTS OF ARAI TESTS ON EURO II DIESEL AND CNG BUSES IN DELHI



sel, petrol and hybrid vehicles. They pointed out that technological improvements have enabled other fuels to become cleaner over the years. "About 15 years ago, when Supreme Court ordered the implementation of CNG, diesel had 500ppm (parts per million) sulphur content. Now there are catalytic converters and particulate filters (that make diesel engines cleaner)," said Garg.

The advocacy group Embarg studied emissions from buses run on different fuels in

For now, CNG can't be labeled a highly polluting fuel because its particulate emissions are lower than those from diesel. Anumita Roychowdhury, head of Centre for Science and Environment's Clean Air campaign, said European countries have started measuring ultrafine particles because they have addressed the problem of particulate emissions from diesel. India, however, should focus on reducing PM emissions that are a leading cause of death, she added.

Even some leading medical researchers TOI spoke to said more evidence is required to draw conclusions about the harmful effects of CNG emissions. "The fact that carbon nanoparticles are emitted by CNG-run vehicles does not establish their health impact. Evidence available so far shows that extremely fine particles are not responsible for any significant respiratory health issues since they are too light and are exhaled by healthy individuals," said Dr Arup Basu, chest specialist at Sir Ganga Ram Hospital. But, he cautioned, these particles can deposit inside patients with chronic obstructive pulmonary disease (COPD).

2nd vehicle may cost more

Govt Tells NGT Plans For Clean Air; Can't Stagger Office Hours

TIMES NEWS NETWORK

New Delhi: The Delhi government told National Green Tribunal (NGT) on Friday that there is a proposal to increase the registration fee for the second or third vehicle bought by a person. The proposal is yet to be approved. It also said that office, school and college timings in Delhi cannot be staggered to ease up traffic.

The government was responding to the various queries and proposals the tribunal had put before it and the Centre regarding air pollution in Delhi.

On the suggestion to cap the total number of vehicles registered and set a life span

for vehicles in the city, the government represented by Amit Tiwari, additional secretary, transport department, said it would implement it if the Centre sets such a cap in the Motor Vehicles (MV) Act. "We have no problem, we are okay with it," Delhi government's lawyer said.

"What do you mean that we are okay with it? We want your opinion on this?" the bench headed by NGT chairperson Justice Swatanter Kumar said. "When we pass orders we are accused of judicial activism. For the past

two months you have not given clear answers. You say if law is amended we will follow. We are trying to find out ways and means to curb pollution," the bench said.

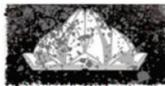
Regarding hybrid buses, the government said there is no proposal to introduce them but it is already providing subsidy of Rs 50,000-1.5 lakh for e-rickshaws.

"We also told the bench that Delhi roads will be able to accommodate more than 10,000 buses easily," said the government's lawyer, Naren-

der Pal Singh. "Delhi is adding 1,000 cars every day. It takes an hour to travel 10km today. If you introduce buses simultaneously, what would be the status of roads? Will you be able to move an inch? Have you thought about this? Encourage public transport but what is your scheme on this," the bench asked.

The government, however, said the city has a high road density (road length per sq km) of 21.2 km and a total road length of 30,000km. Delhi has far fewer buses than cities like Sao Paulo, Paris, Beijing and London, it said.

The bench also inquired how the government will upgrade its pollution-under-control (PUC) system.



LET DELHI BREATHE

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

Concrete choking trees even two years after NGT order

TIMES NEWS NETWORK

New Delhi: In April 2013, the National Green Tribunal directed authorities to remove concrete from within 1.25m radius of the base of every tree in the capital. That order has gone largely unimplemented. What's worse, in many places, the agencies have done a shoddy job, further endangering the trees' survival.

As a result, despite their great potential to clean the air and improve micro-climate, many trees in Delhi are in a precarious state and many others are dead, having been deprived of essential nutrients.

Municipal corporations, NDMC, DDA and PWD were agencies supposed to carry out the deconcretization order. But court-appointed commissioners who inspected various parts of the capital have told **TOI** that hardly any effort was put into completing the de-concretization project in any zone. Whatever was done was done in patches and haphazardly, often leaving roots exposed or injured and causing danger of toppling.

A court commissioner said in 99% of cases cavities weren't filled with fresh soil. "They have tried to de-concretize a few trees in each area but haven't completed the job. Without fresh soil to hold them, they are obviously vulnerable," he said.

Three localities—RK Puram, Hauz Khas and Ashok Vihar—were taken up for de-concretization. Only work in RK Puram and Hauz Khas has been partially completed, said commissioners.

Prabhakar Rao of Kalpvriksh pointed out that even in places where it appears that the concrete has been removed, only a thin layer has been dug out and filled with fresh soil. If one looks closely, one finds that underneath, it's still concrete.

"I think the official responsible for clearing a certain project should be held responsible for the damage done to the trees. Officials can easily ensure the contractor leaves a space of 1m around the tree. I also feel this



clause should be inbuilt in the contract," Rao said.

Deconcretizing is like first aid for trees that cannot be healed completely, said the expert. These trees are prone to all kinds of diseases—their bark starts decaying and they have growths and pests. The fact that there are so many of them in residential areas indicates that many trees here may be dying or are dead already, said Rao.

Meanwhile, court commissioners, too, found only the top layer of concrete removed in

Ashok Vihar as well as construction waste at the bottom of trees. "I don't think the agencies have managed to protect trees from concrete anywhere except in NDMC areas," said Aditya Prasad, who had filed a petition in NGT against the pathetic condition of trees.

Trees may also be affected by severe air pollution. "The ultrafine pollution particles are affecting their health," said Chirashree Ghosh of the environmental sciences department of Delhi University.

The Times of India, Delhi dated August 08, 2015

The Times of India, Delhi dated August 10, 2015

With song on lips, kids paint green future

2,000 Saplings Planted At Astha Kunj Near Nehru Place On Friday

Times News Network
New Delhi: Delhi became greener by 2,000 more trees when a few hundred students from five city schools planted saplings at Astha Kunj near Nehru Place on the third day of the TOI Green Drive on Friday morning. The campaign, which will cover select spots in the city in the coming days, aims at planting 1 lakh saplings at Tilpath Valley by August 30.

Officials from the horticulture department of DDA, who were present at the venue, said that tree species like bottle palms, pistal palm, pilkhon, fistula palms etc were selected keeping their habitat in mind.

TOI's initiative, with Hero MotoCorp and Delhi Development Authority (DDA), was launched on Tuesday by lieutenant governor Najeeb Jung at Sanjay Lake in east Delhi with the planting of 2,200 saplings.

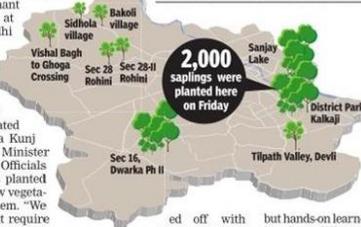
The 154-acre ground between Bahal House of Worship and ISKCON Temple was renovated and reopened as Astha Kunj in 1998 by then Prime Minister Atal Bihari Vajpayee. Officials said most of the trees planted enrich the soil and allow vegetation to grow around them. "We usually avoid trees that require more water," said a DDA official.

Students enrolled with Times NIE had reached the ground around 9am and were enthusiastic about the drive. Schools that joined the drive were DPS RK Puram; Amity International School, Saket; Indian School, Sadiq Nagar; Bloom Public, Vasant Kunj; and Ryan International School, Vasant Kunj.

"Plant a tree for a better tomorrow to save Delhi and India. Make a promise today," a group of 20 students from Ryan International School, Vasant Kunj, started off with this self-composed song about planting trees. "Every time we plant a tree, we sing a song for it. That brings out life in these plants. The children have composed the song themselves and sing at every programme to create awareness," said Nirmaljit, a teacher accompanying the students of classes VII and VIII.



GREEN WARRIORS FIGHT ON: Students from five city schools and ISKCON monks take part in the drive



but hands-on learning is a different thing altogether. I love the smell of soil. I would come back to see how my tree has grown," said Sarthak, a 14-year-old.

Applauding TOI for the venture, students from Amity International School, Saket, said they would like to participate again. "This is a good extra-curricular activity for us. Usually we do activities that are smaller in scale, but this is big. Planting 1 lakh trees would definitely change Delhi's air," said Sanya.

The children were joined by monks from ISKCON Temple who helped plant 20 saplings. "We are happy to sow one more life in our backyard," said Dayanand, a monk.

Plant 1 lakh trees at Tilpath Valley, Block M, Devli, Sainik Farms, right next to Igno. On August 30, 7am onwards. For more details log on to: to.in/greendrive facebook.com/toigreendrive twitter.com/toigreendrive

The Times of India, Delhi dated August 11, 2015

Natural gas is a cleaner answer to pollution

When was natural gas discovered?

Natural gas, which is inflammable hydrocarbons consisting primarily of methane and ethane, has been known to human beings for thousands of years. It is believed that the concept of eternal fires in the fire worshipping religion of ancient Persia came from natural gas seeps found abundantly in the region. The first intentional drilling for extraction of natural gas was done in ancient China where bamboo poles were used to extract natural gas which was used to dry rock salt.

Since when did the commercial use of gas as a fuel start?

The first modern commercial drilling for natural gas was done in 1821 in the US when the extracted gas was supplied to consumers through small-bore lead pipes. It took much longer to develop technology for widespread use of the fuel as, unlike petrol and diesel, it was difficult to store and transport natural gas. The breakthrough in commercial use of natural gas came after the development of leakproof pipeline coupling

in 1890, after which it was possible to supply gas to a distance of about 160 km from the source. Major improvements in gas transportation came after World War 2.

From where is natural gas extracted?

Natural gas is often found dissolved in oil or as a gas cap in oil reserves. This gas found with oil is often called associated or wet gas. There are many non-associated sources of natural gas as well. Some of the gas reserves have a high methane content and the field-production gas from them can be directly used as fuel.

What share of world energy comes from natural gas?

According to a 2014 report of the International Energy Agency, in 2012 oil provided 31.4% of the total global energy consumption. It was followed by coal (29%) and natural gas, which accounted for 21.3% of the global energy use. At present, the biggest use of natural gas is for power generation followed by industrial, domestic and commercial use. Unlike petrol and diesel, the combustion of natural gas is rela-

tively free of soot, carbon monoxide, nitrogen oxides and sulphur dioxide and hence is less harmful for the environment. Also, there are huge reserves of natural gas which can outlast those of petroleum. For these reasons, many countries are encouraging the use of natural gas over petrol, diesel and coal.

What are LPG, LNG and CNG?

Liquefied petroleum gas (LPG), widely used as a cooking fuel in India, is a by-product of the refining process of natural gas as well as petroleum. Liquefied and compressed natural gas (LNG & CNG) are the different forms in which natural gas is transported and utilized by end users.

Which countries have the largest reserves of natural gas?

According to the US Energy Information Administration, as of 2014 the proven global reserves of natural gas were 6,973 trillion cubic feet. Russia alone has about one fourth of this. It is followed by Iran, Qatar and the US. India has 47.8 trillion cubic feet of natural gas reserves. Unfortunately, a huge amount of natural gas is wasted annually in petroleum extraction.



LEARNING WITH THE TIMES

CNG is safe, as clean as Euro-VI compliant diesel

CSE Explains Study, Highlights Need To Leapfrog Standards

Times News Network

New Delhi: NGO Centre for Science and Environment has critically analyzed a Council of Scientific and Industrial Research study, jointly carried out by Indian Institute of Petroleum and the University of Alberta, on presence of pollution-causing nanoparticles in CNG and diesel bus exhausts.

This was in response to claims made by M O Garg, director general of CSIR, who had recently shared the findings of the study—that the number of nanoparticles released from CNG buses is higher than that from diesel buses but the mass of nanoparticles emitted from CNG buses is relatively lower.

CSE's analysis, however, reveals that the CSIR study findings are different from what Garg's briefing may have conveyed. Garg had been referring to nanoparticle emissions from an Indian CNG bus and a Canada-made diesel bus meeting advanced US tier-II standards. US tier-II norms are tighter than Euro VI norms.

CSE accessed the draft study by CSIR only to find that CNG buses performed way better than diesel on almost all pollution parameters—including nanoparticles. CNG's performance is close to or better than Euro VI emission standards for diesel that are yet to be imple-

Your car might not run over someone but it can still KILL.



POLLUTION FRIGHT

AIR QUALITY INDEX

City	PM2.5	Quality
Delhi	70	Good
Tomorrow	83	Good
Pune	36	Good
Tomorrow	30	Good
Hyderabad	56	Good
Chennai	48	Good
Mumbai	31	Good

Source: SAFAR/MAES-ITRA-IRD (30 stations)

US Embassy data calculated as per Indian standards by SAFAR/MAES-ITRA-IRD

Based on 1 Station Data Per City at 4pm

2020 to cut dangerous diesel emissions. The government of India is dragging its feet in face of strong opposition from the diesel industry." CSE's statement issued on Monday said.

The study involved carrying out emission tests on two Indian CNG buses and two diesel buses (when they were mobile)—one of a Canadian make that meets US tier II standards fitted with advanced particulate filters and another an Indian diesel bus without any filter or diesel trap.

The results showed that nanoparticle emissions from Indian diesel buses were 600 to 2,000 times more than those from the CNG bus. But when the CNG bus was compared with the Canadian diesel bus with particulate matter traps and advanced nitrogen oxides control meeting US tier-II standard, the study found nanoparticle levels for CNG to be 12-40 times higher. The Indian diesel bus without particulate matter trap was found emitting 28,000 times more nanoparticles compared to the Canadian bus.

CSE highlights that CNG performed much better on other pollution parameters as well—carbon monoxide, non-methane hydrocarbons and nitrogen oxides. Both CO and NMHC emissions from CNG buses in use are close to the limits of Euro VI norms.

"CSIR should have put out a

red flag immediately and urged the government to leapfrog to Euro VI emissions standards for diesel. Nanoparticles, being of 0.1 micrometres in width, are 25 times smaller than PM2.5 and go directly into the bloodstream. In conjunction with PM2.5 and PM1, they cause irreparable damage. PM2.5 is already the fifth largest killer in India," a CSE researcher added.

Anumita Roy Chowdhury, head of CSE's Clean Air campaign, said, "CSIR has omitted



LET DELHI BREATHE

to mention the serious health risk associated with diesel emissions. It is now well known that WHO has concluded that diesel exhaust is a human carcinogen and is in the same class as tobacco for its strong link with lung cancer."

In its report on August 8, based on interviews with Garg and other experts, TOI highlighted that CNG is far cleaner than non-low sulphur diesel. Its nanoparticle numbers, though, can be marginally higher than that in emissions from low-sulphur diesel vehicles meeting Euro V/V1 norms.

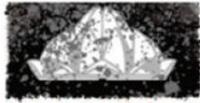
Centre to start awareness campaign on air pollution

TIMES NEWS NETWORK

New Delhi: Environment minister Prakash Javadekar on Thursday said his ministry will soon launch a, "massive people-oriented awareness campaign", to check air pollution. While releasing action points submitted by NCR states of Delhi, Haryana, UP and Rajasthan, in the past few months, Javadekar said he has adopted a "consultative and cooperative" approach to improve the air quality in NCR.

So far, three review meetings with the states have taken place on April 6, April 13 and on July 24. On vehicular pollution, Delhi government has submitted that it has launched

a surveillance programme against adulteration of fuel—both diesel and petrol by the food supplies and consumer affairs department. Among other



er things, it has also claimed to have impounded 3,734 overloaded vehicles in the past seven months. The government also said that the transport department is planning to implement a remote sensing based Pollution Under Control (PUC) checking system in-

spired by Kolkata, and plans to deploy 1,380 semi-low-floor buses, 500 mini buses and 1,000 cluster buses by the end of 2016 to augment public transport. Haryana has submitted that only BS-IV compliant vehicles are being registered.

On other aspects such as waste burning and industries, thermal power plants in Delhi are to comply with 100% utilization of fly ash; 57 of 333 polluting industries in Ghaziabad have been identified for action or closure; NDMC has constructed 38 compost pits (26 in south zone and 10 in north zone) in major parks, colony parks, and nurseries. Similar action plans were submitted by UP and Haryana as well.

The Times of India, Delhi dated August 14, 2015



'Sinking' island nation calls for coal mining ban

Kiribati Suffering Coastal Erosion As Ice Caps Melt Due To Warming



© George Steinmetz/Corbis

Oslo: The president of the low-lying Pacific island nation of Kiribati called on Thursday for a global moratorium on new coal mines to slow global warming and a creeping rise in world sea levels.

Kiribati's 1,00,000 people live on 32 atolls in the central Pacific, most of which are less than six metres above sea level and are suffering coastal erosion as the world's ice caps melt. "Let us join together as a global community and take action now," President Anote Tong wrote in a letter to world leaders, ahead of a UN summit on climate change in Paris in December. "I urge you to support this call for a moratorium on new coal mines and coal mine expansions," he wrote.

A draft negotiating text for the Paris meeting of world leaders, due to agree a UN climate pact, includes options for cutting carbon emissions to net zero, perhaps by 2050 or 2100. No mention is made specifically of coal mining. When burnt, coal releases more heat-trapping gases than oil or natural gas. That has increasingly made it the target of calls for a shift to renewable energies such as wind or

solar power to stem global warming.

Welcoming Tong's appeal, Nicholas Stern, of the London School of Economics and president of the British Academy science group, said coal caused both warming and air pollution. "The use of coal is simply bad economics, unless one refuses to count as a cost the damages and deaths now and in the future from air pollution and climate change," he said in a statement. Among other appeals, Pope Francis said in an encyclical in June that the use of "highly polluting fossil fuels needs to be progressively replaced without delay", at odds with some investments in coal by the US Catholic church. The head of environmental group Greenpeace, Kumi Naidoo, who was visiting Kiribati on Thursday, said 80% of coal reserves should be left in the ground. "We know the science and we know the end of the age of coal is coming," he said.

Last year, Kiribati bought 6,000 acres of land on higher ground in Fiji to back up food production, under threat from erosion and storms blowing salt water onto farmland. REUTERS

The Times of India, Delhi dated August 15, 2015

Air pollution kills over 4,000 every day in China

Much Of Beijing's Toxic Smog Comes From Coal-Burning Factories: US Study

Dan Levin

Beijing: Outdoor air pollution contributes to the deaths of an estimated 1.6 million people in China every year, or about 4,400 people a day, according to a newly released scientific paper.

The paper maps the geographic sources of China's toxic air and concludes that much of the smog that routinely shrouds Beijing comes from emissions in a distant industrial zone, a finding that may complicate the government's efforts to clean up the capital city's air in time for the 2022 Winter Olympics. The authors are members of Berkeley Earth, a research organization based in Berkeley, California.

According to the data in the paper, about three-eighths of the

Chinese population breathe air that would be rated "unhealthy" by United States standards. The most dangerous of the pollutants studied were fine airborne particles less than 2.5 microns in diameter, which can find their way deep into human lungs, be absorbed into the bloodstream and cause a host of health problems, including asthma, strokes, lung cancer and heart attacks.

The researchers analyzed four months' worth of hourly readings taken at 1,500 ground stations in mainland China, Taiwan and other places in the region. Berkeley Earth's analysis is consistent with earlier indications that China has not been able to tackle its air pollution problems. Greenpeace found in April that, of 360 cities in China,



SILENT PROTEST: A 2014 file picture shows Kong Ning, a performance artist, posing in a wedding dress decorated with 999 face masks in Beijing. Her performance signifies her frustration with air pollution

more than 90% failed to meet national air quality standards in the first three months of 2015.

The Berkeley Earth paper's findings present data saying that air pollution contributes to

17% of all deaths in the nation each year. The authors calculate that the annual toll is 95% likely to fall between 7,00,000 and 2.2 million deaths, and their estimate of 1.6 million a year is the midpoint of that range.

The Chinese government is sensitive about public data showing that air pollution is killing its citizens, or even allusions to such a conclusion.

Researchers concluded that much of the smog afflicting Beijing came not from the city but from coal-burning factories 200 miles southwest in Shijiazhuang, the capital of Hebei province and a major industrial hub. Promises to clean up Beijing's air were a centerpiece of the nation's bid to host the 2022 Winter Olympics. REUTERS SERVICE

The Times of India, Delhi dated August 15, 2015

Deccan Chronicle, Hyderabad dated August 18, 2015

Electric highways to charge ultra-low emission vehicles

London, Aug. 17: In a first-of-its-kind trial, UK is testing a road surface that can charge low-emission electric vehicles on the go.

Off road trials of the technology needed to power electric cars on England's major roads are due to take place later in 2015.

The trials are the first of their kind and will test how the technology would work safely and effectively on the country's motorways and major roads, allowing drivers of ultra-low emission vehicles to travel long distances without needing to stop and charge the car's battery.

The trials follow the completion of the feasibility study commissioned by Highways England into "dynamic wireless power transfer" technologies.

"The potential to recharge low emission vehicles on



Off road trials of wireless power technology will help to create a more sustainable road network in England

the move offers exciting possibilities. The government is already committing 500 million pounds over the next five years to keep Britain at the forefront of this technology, which will help boost jobs and growth in the sector," said transport minister Andrew Jones. "As this study shows, we continue to explore options on how to improve

journeys and make low-emission vehicles accessible to families and businesses," said Jones. "Vehicle technologies are advancing at an ever increasing pace and we're committed to supporting the growth of ultra-low emissions vehicles," said Highways England Chief Highways Engineer Mike Wilson. — Agencies

Warming threatens tourism in Spain, Italy

Doug Bolton

The tourism industry in southern European, countries like Spain and Italy, could be under threat due to climatic change, an European Union report has warned.

In a study, entitled 'Time is of the essence: adaptation of tourism demand to climate change in Europe', it has been found that changing climate conditions could make sunny southern tourist destinations less attractive.

Hotter and drier summers in countries like Spain and Bulgaria could potentially lead to higher rates of droughts, forest fires, and the death of wildlife. The temperature rise could also make it too hot to comfortably visit Mediterranean countries in the height of summer.

However, the report also said that countries further north, with more temperate summers, could experience a resulting rise in tourist income. Thus it spells good news for northern Baltic states like Latvia, Estonia, Slovenia and Slovakia. However, the report's predictions are focused on the year 2100 and presently there seems to be no reason to panic.

It is estimated that the southern Mediterranean countries could lose tourism revenues worth up to 0.45% of GDP every year. In the case of Spain, that could mean a loss of up to 5.6 billion (£4 billion) a year. THE INDEPENDENT



TOO HOT TO HANDLE?

The Times of India, Delhi dated August 19, 2015

Parking curbs ready for Old City

After NGT Order, N Corpn Outlines Proposal To End Pollution Crisis, Traffic Mess

TIMES NEWS NETWORK

New Delhi: North Delhi Municipal Corporation has come out with a proposal to solve the parking problem in areas under its jurisdiction.

Responding to National Green Tribunal's directions to all government agencies that no parking will be allowed on tarred roads and that parking spaces should be distinctly earmarked, the civic body has proposed a policy with a long list of no-parking zones. If implemented, there will be parking curbs in Nai Sarak, Chandni Chowk, Karol Bagh, Paharganj, Sadar Bazar and Daryaganj, among others.

The proposal quotes Environment Pollution Control Authority's report submitted in relation to the M C Mehta vs Union of India case on air pol-

lution in Delhi, which called for designing a parking policy to manage travel demand in the city. Based on the apex court's directions, the Delhi government submitted a parking policy but many of the proposals were not implemented.

The North Corporation, in its report, indicated the magnitude of parking problems in the capital—cars use about 10% of the total urbanized area and walkways are encroached upon due to unregulated parking. The proposal plans to divide parking into five categories in north Delhi—authorized parking lots, no parking zone, parking with regulation charges, clear ways, residential and business parking.

The corporation will invite tenders to allot authorized parking lots—these can be broadly categorized into multi-

PLAN ON THE TABLE

AREAS THAT MAY BE DECLARED NO-PARKING ZONE

1 Chandni Chowk and the Rest of Walled City

Nai Sarak, Naya Bazar Road, Main Chandni Chowk Road, Shardhanand Marg, SP Mukherjee Marg, Sita Ram Bazar Road, Chawri Bazar, HC Sen Marg, Church Mission Road, Bazar Chitli Qabar Road, Netaji Subhash Marg between Nukkar Faiz & Chhata Rail

2 Boulevard Road, Rani Jhansi Marg, Roshanara Road, Kamala Market

Sadar Bazar, Karol Bagh, Paharganj, Daryaganj, Kamla Nagar, Kingsway Camp and Mukherjee Nagar



Raja Garden mall area, Club Road, Mayapuri

4 Road No 41, Rohini, Azadpur Mandi, MZK Mal, Pitampura and surrounding areas

5 No parking to be imposed on roads of 60 feet or less

level parking, enclosed and unenclosed surface parking. The current charges will apply to

these parking lots. For no-parking zones, the corporation plans to appoint a

concessionaire. For regulated parking, the area will be auctioned zone wise. The contractor for these areas will be authorized to collect parking charges and will be paying a monthly fee to North Corporation. The contractor will use handheld GPS devices with which numberplates can be scanned, duration and location of parking can be assessed and electronic receipt can be issued.

There is also provision for a 'clear way', which prevents parking during peak traffic for one hour in both directions so that the entire road space is available. Vehicles parked during the clear-way hour may be towed away. There are also provisions for concessional charges for each residential and commercial unit for a maximum of one car and one two-wheeler with conditions.

Students plant to clean city air



TIMES NEWS NETWORK

New Delhi: Joining the fight against air pollution in the city, over 500 students from 12 schools planted 3,200 saplings on the fifth and sixth days of TOI Green Drive just after Independence Day.

On August 17, students from five schools planted 1,200 saplings in the green belt near Vishal Bagh on GT Karnal Road while the next



Delhi Development Authority

day seven schools contributed by planting 2,000 saplings in a 6-acre plot opposite Bakoli village, also on GT Karnal Road.

Green Drive, a TOI initiative along with Hero MotoCorp and Delhi Development Authority (DDA), aims at planting 1 lakh saplings in Tilpath Valley, Maidan

Garhi, on August 30 after covering several areas across the city. At least 7,700 saplings have been planted since lieutenant governor Najeeb Jung launched the drive at Sarjay Lake in east Delhi on August 4.

Species like chakrassia and cassia semia were found suitable for Vishal Bagh while cassia semia, oleander and pongamia glabra were planted opposite Bakoli.

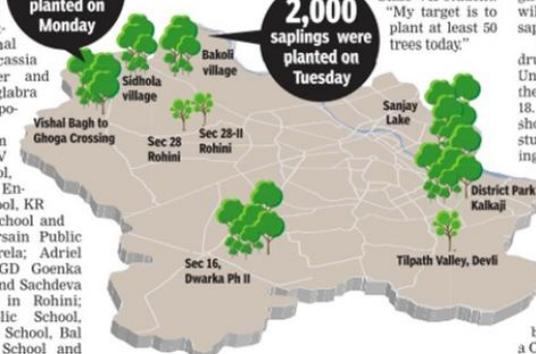
Students from 12 schools—DAV Public School, Pushpanjali Enclave; DAV School, KR International School and Maharaja Agarsain Public School in Narela; Adriel High School, GD Goenka Public School and Sachdeva Public School in Rohini; Goodley Public School, Bal Bharti Public School and

Jagannath International School in Pitampura; and Modern Public School in Shalimar Bagh—participated in the drive. All these schools are enrolled with Times NIE.

Several students carried placards with slogans like 'Let's make

1,200 saplings were planted on Monday

2,000 saplings were planted on Tuesday



Photos: Vipin

GO GREEN: Students from 12 schools took part in TOI Green Drive on August 17 and 18

Delhi greener"; "The best time to plant a tree was 20 years ago, the next time is today"; and "Tree and plants what a sight, being with them is a true delight".

"I have planted 30 saplings all by myself and I am going to plant more. We learnt from our teacher about the rising level of pollution in Delhi and I have promised myself to plant lots of trees whenever I can," said Jatin Harshit, a Class VII student. "My target is to plant at least 50 trees today."

Shobit Bansal, a Class VIII student, said, "I plant trees in my school and in the park near my house. My mother has taught me how to plant a tree and she keeps telling me about different species and their impact on our environment. I am happy that we have been invited to take part in such a drive."

To boost the students' enthusiasm and make the drive a little competitive, TOI also announced special gifts for the students who will plant most number of saplings.

A Delhi-based group of drummers, DjembeFola United, joined the drive for the second time on August 18. Drum beats and mild showers also prompted the students to break into singing and dancing in between planting the saplings.

Many students didn't even want to leave. "It is good at times to go out and do something different. I thank TOI for organizing such a wonderful event. I wish to come back," said Ayush Mittal, a Class IX student.

Plant 1 lakh trees at Tilpath Valley, Block M, Delhi, Sainik Farms, right next to Ignou

On August 30, 7am onwards

For more details log on to: to.in/greendrive

[facebook.com/toigreendrive](https://www.facebook.com/toigreendrive)

twitter.com/toigreendrive

The Times of India, Delhi dated August 21, 2015

The Economic Times, Delhi dated August 24, 2015

All flyovers, bridges must install rainwater harvesting systems: NGT

TIMES NEWS NETWORK

New Delhi: The National Green Tribunal on Thursday directed that no government project, including flyovers and bridges, will be approved until it's stipulated in their tender documents that a rainwater harvesting system will also be developed on it. NGT was hearing a petition by environmentalist Vinod Kumar Jain to implement rainwater harvesting projects on flyovers in the capital.

"We direct the Delhi government, all authorities and the Centre to ensure that rainwater harvesting systems are installed in every project without default. Each department as well as the corporation would notify an officer who shall be responsible for ensuring that the already installed rainwater

harvesting systems and those installed in future work efficiently and are maintained properly," the order stated. There are about 35 flyovers in Delhi with rain harvesting structures but many don't function, say activists.

NGT directed that every government department and municipal cor-

MANAGING RESOURCES

porations notify an officer who shall be responsible for ensuring that the already-installed rainwater harvesting systems and those that will be installed "work efficiently and are maintained properly". The bench also directed that the name and phone number of the officer be publicized on respective department websites.

"A quarterly report shall be submit-

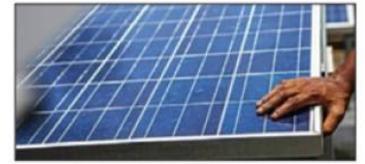
ted to a committee which will be constituted by the chief secretary and the ministry of environment, forest and climate change. The committee shall perform all supervisory functions," the order stated.

"We asked NGT to consider the fact that rainwater harvesting systems cannot be installed on every flyover," said Narender Pal Singh, a lawyer representing the government.

Every project except those located in areas where the water table is high will have to follow this order. The committee has to "personally certify" where a rainwater harvesting system may not be required. "The report on the construction of the rainwater harvesting systems on flyovers would be submitted within one month from today," the order added.

The Times of India, Delhi dated August 21, 2015

Renewable Energy Ministry Okays Plan to Develop 50 Solar Cities



Press Trust of India

New Delhi: The ministry of new and renewable energy has approved a proposed master plan to develop 50 solar cities, including three in the national capital region.

Out of the proposed 60 solar cities, sanctions have been issued for 50 cities that include New Delhi, Agra, Chandigarh, Gurgaon, Faridabad, Amritsar, New Town (Kolkata), Howrah, Madhyamgram, Kochi and Bhopal, according to the information available on the ministry's website.

Of these 50 cities, master plans have been prepared for 46 cities, including Agra, Gandhinagar, Rajkot, Surat, Thane, Shirdi, Nagpur, Chandigarh, Gurgaon, Faridabad, Bilaspur, Raipur, Agartala, Guwahati, Mysore, Shimla, Hamirpur, Jodhpur, Vijayawada, Ludhiana, Amritsar, Dehradun, Panaji and New Delhi (NDMC area), it added. Further, in-principle approvals have been given to five cities namely Thiruvananthapuram, Jaipur, Indore, Leh and Mahbubnagar, it said.

"Master plan of Indore has been prepared and the other corporations/state nodal agencies are in the process of engaging consultants for preparation of master plans," the ministry said. The ministry had empanelled 26 consultants in June 2009 to prepare master plan for the development of solar cities.

The Times of India, Delhi dated August 24, 2015

This July was the world's hottest month in history

1st 7 Months Warmest Ever, Says US Body

Miami: The world broke new heat records in July, marking the hottest month in history and the warmest first seven months of the year since modern record-keeping began in 1880, US authorities said on Thursday.

The findings by the National Oceanic and Atmospheric Administration showed a troubling trend, as the planet continues to warm due to the burning of fossil fuels, and scientists expect the scorching temperatures to get worse. "The world is warming. It is continuing to warm. That is being shown time and time again in our data," said Jake Crouch, physical scientist at NOAA's National Centers for Environmental Information.

July's average temperature across land and sea surfaces worldwide was 16.61 degrees Celsius, marking the



IN THE HEAT OF THE MOMENT

hottest July ever. The previous record for July was set in 1998.

"This was also the all-time highest monthly temperature in the 1880-2015 record," said NOAA in its monthly report. "The first seven months of the

year were also all-time record warm for the globe."

When scientists looked at temperatures for the year-to-date, they found land and ocean surfaces were 0.85 degrees Celsius above the 20th century av-

erage. Africa also saw its second hottest July on record. However, parts of western Russia, eastern and southern Asia and scattered areas in central and northern North America were cooler than average. AFP

ISRO to develop Li-ion batteries to run vehicles

In its bid to check vehicular pollution in cities and to reduce dependence on diesel for transportation purposes, Indian Space Research Organization and government automotive agencies have come together to convert diesel-fuelled vehicles into electric ones. While ISRO will develop affordable high capacity lithium-ion (Li-ion) batteries to be used in buses and small vehicles, the road transport ministry will coordinate among agencies for early roll out of no-polluting vehicles. There will be a pilot to convert about two dozen state road transport undertaking buses to electric and hybrid electric mode. The decision was taken at a meeting chaired by road transport minister Nitin Gadkari and was attended by MoS in PMO, Jitendra Singh and scientists from ISRO. TNN

The Times of India, Delhi dated August 24, 2015

Raahgiri goes green with plantation pledge

TIMES NEWS NETWORK

New Delhi: TOI's Green Drive is entering its final week and is in full swing. On Sunday morning, Raahgiri Day at Connaught Place was used as a platform to mobilize people and make them aware of the importance of tree plantation.

Delhi-based theatre group, Asmita, and Delhi University volunteers from AIESEC, a student-driven organization, helped promote the drive through an interactive street play and a flash mob.

Green Drive, a TOI initiative along with Hero MotoCorp and Delhi Development Authority (DDA), aims at planting 1 lakh saplings in Tilpath Valley, Maidan Garhi, on August 30 after covering several areas across the city.

The inner circle at Connaught Place wore a colourful look as Raahgiri participants began trickling in at 7am. As they danced to popular Punjabi numbers, a call song by Asmita theatre group attracted their attention, inviting them to watch its street play.

The play sought to spread awareness about the importance of tree plantation. It showed how the changing climatic conditions and the increase in frequency of natu-



Piyal Bhattacharjee

CREATIVE APPROACH: A street play and a flash mob helped promote the campaign at Connaught Place

ral disasters like floods and earthquakes are a direct consequence of the increase in deforestation. The play sounded an alarm on how razing the existing tree cover for development for one generation would have a negative impact on the future ones.

"It is a very good initiative. If people take it seriously, we can prevent our natural



resources from depleting. What happened in Nepal and parts of Uttarakhand and Odisha should not happen in Delhi. The rate at which we

are cutting down trees in the city exposes us to grave disasters," said Shilpi Marwaha from Asmita theatre group.

The play received an overwhelming response as the artists interacted with people by raising questions.

"We have been performing this play for the past one month. People have understood that there is a

need for tree plantation," said Marwaha.

Members of AIESEC (International Association of Students in Economic and Commercial Sciences), too, promoted the Green Drive through a flash mob. The students made it a fun session for the onlookers by asking them to match steps with them. The organization will conduct walks and flash mobs in different parts of the city to spread awareness.

"We reach out to people through Facebook, emails and posters. The kind of future that we are looking for can only take shape if we plant trees," Mihir Datta, vice-president, marketing at AIESEC, said.

The Raahgiri participants joined TOI in pledging to plant trees by shouting "Green Drive" in unison.

"We are conscious about our fitness but we forget that we need clean air to breathe. Without these, no matter how much we jog or cycle, we won't be able to stay healthy. We need a healthy today and a healthier tomorrow," Jai Singh, a cyclist at Raahgiri, said.

The Green Drive has made attempts to reach out to schoolchildren, college students and corporates.

Surprise effect of war: Cleaner air

Satellite Data Finds Lower Levels Of Nitrogen Oxides In Strife-Torn West Asia

John Schwartz

Civil unrest and humanitarian crises can now be detected from space — because of, somewhat surprisingly, cleaner air. A paper published on Friday in the journal *Science* analyzed satellite data from observations of major cities in West Asia and found that measurements of nitrogen oxides in the air around those cities provided insights into the effects of war, civil unrest and other crises.

From 2005 to 2010, West Asia had some of the world's fastest-growing levels of polluting emissions, in step with economic development. According to the paper, however, in recent years many of the cities in the region showed a rapid decline in levels of



People flee a marketplace hit by airstrikes in Douma, Syria in this August 16 photo

nitrogen oxides, while levels continued to rise elsewhere in the world. That insight may not seem surprising, given war's dampening effects on economic activity.

Jos Lelieveld, the lead author of the study and a researcher at the Max Planck Institute for Chemis-

try in Germany, said that by using tools aboard the Nasa satellite Aura, he and his colleagues found decreasing levels of pollutants that corresponded to geopolitical crises that included armed conflict, trade sanctions and the rise of the Islamic State. "Each of these countries

has an individual story," he said.

International sanctions against Iran, he noted, caused an economic downturn that correlated with a steep drop in the pollutants after 2010. Nitrogen dioxide levels rose in Iraq after the war but have decreased sharply around the cities of Baghdad, Samarra and Tikrit with the rise of the Islamic State and its effect on the regional economy.

Uprisings in Syria could be tied to lower nitrogen dioxide levels over cities like Damascus and Aleppo; the Lebanese cities Beirut and Tripoli experienced increases in nitrogen dioxide levels that correlated with an influx of Syrians fleeing unrest. Public turmoil in Egypt can be associated with its decline in air pollution since 2011, he said. NYT NEWS SERVICE

The Economic Times, Delhi dated August 25, 2015

Climate Plan to Have Sectoral Goals

IN THE WORKS Switch to energy-efficient lighting, climate-friendly building code and improved technology for homes & industries

Anubhuti Vishnoi

New Delhi

India's climate action plan ahead of the United Nations' Paris summit in December will come with sector-specific emphasis on emission reduction.

The Union environment ministry has held at least five rounds of meetings with key infrastructure ministries to help clarify the definition, scope and approach for preparing India's Intended Nationally Determined Contributions (INDCs) to be submitted to the UN Framework Convention on Climate Change (UNFCCC), officials from various government departments told ET.

They said 'specific emphasis' is placed on ministries of heavy industry, power, new & renewable energy, water resources, urban development, steel, petroleum and natural gas, road transport and highways, railways, civil aviation, shipping, agriculture, coal, mines and rural development. Departments of commerce; animal husbandry, dairying and fisheries;

and, chemical and fertilisers, too, will play key roles in the country's efforts to check emissions and adopt climate friendly measures.

Environment minister Prakash

NO PEAK YEAR
 India will not declare a 'peak year' for emissions cut in view of local circumstances

PRAKASH JAVADEKAR

Javadekar on Monday said India is expected to submit its climate action plan by next month. Most nations, including biggest greenhouse gas emitters US and China, have already submitted their INDCs.

Paris will host the 21st Session of the Conference of Parties in December this year where a new climate agreement

for emission reduction post 2020 is expected to be finalised.

Key focus areas in India's action plan will include the country's efforts to switch to energy-efficient lighting systems, climate-friendly building code, and improved devices for homes, officials said. Improved energy efficiency and reduced energy intensity across industries will also be emphasised. While cement and fertiliser plants lead by example on global benchmarks, there is considerable improvement required as far the steel industry, pulp and paper are concerned among others. The big power efficient shifts that India's massive railway network is making are among inputs given to the environment ministry by the various government arms, they said.

The various government departments have been consulted to set targets to reduce emissions both by year 2020 and 2030 along with the requirement of finance, technology and capacity



building to achieve the targets for emission reduction.

Meanwhile, Javadekar on Monday reiterated India's stated position on the issue, pointing to the 'historical responsibility' of the developed world and maintained that India will not declare a 'peak year' for emissions reduction in view of countryspecific circumstances.

*Edited by: Prof. Sushil Kumar
 Centre for Business Sustainability,
 IIM Lucknow*