



Climate Change Community



Community Update No. 74: 1st March, 2016 In this Issue

FROM THE RESOURCE PERSON

Dear Members,

We are presenting the 74th Edition of the Monthly Community Update of the Climate Change Community of Practice (CoP).

We thank you for your continued cooperation and support to this unique knowledge sharing platform facilitated by UNDP which is now in its 7th year of continuous operation and increasing from strength to strength.

Thanks & best regards,
Ramesh Kumar Jalan
Resource Person & Moderator
Climate Change Community,
Solution Exchange-India
United Nations Development Programme, New Delhi

DEVELOPMENT IN THE SECTOR

GFFA 2016 Highlights Agriculture and Food Security for SDGs, Climate

The article is available at : <http://asiapacificsd.iisd.org/news/gffa-2016-highlights-agriculture-and-food-security-for-sdgs-climate/> .

The 2016 Global Forum for Food and Agriculture (GFFA) resulted in a Communiqué from the agriculture ministers of 65 countries in Africa, Asia, Europe, and Latin America. The ministers call for ensuring food security for cities and rural areas through: sustainable, productive and profitable agriculture; efficient, reliable supply and value chains; and vibrant rural areas.

The Communiqué underscores the contribution of agriculture to successful urbanization, and recommends prioritizing food security on the global agenda, including in national implementation of the 2030 Agenda for Sustainable Development and the Sustainable Development Goals (SDGs), the Paris Agreement on climate change, and the Group of 20 (G20) Action Plan on Food Security and Sustainable Food Systems, as well as in the expected New Urban Agenda.

GFFA 2016 was organized by Germany's Federal Ministry of Food and Agriculture, and took place from 14-16 January 2016, in Berlin, Germany, under the theme, 'How to feed our cities? Agriculture and rural areas in an era of urbanization.'

It focused on three aspects of urban food security:

- Modern, sustainable agricultural production;
- Efficient supply chains;
- Vibrant rural areas to ensure an adequate supply of healthy, diverse and sustainable food.

The Communiqué elaborates on the importance of creating a political, economic and social framework to address these areas, including actions on securing access to land, making agriculture more resilient and promoting sustainable natural resources management.

In a statement to the Forum, UN Secretary-General Ban Ki-moon said, "Ensuring that everyone in expanding urban areas has access to nutritious food is critical to achieving the goal of Zero Hunger set out in the 2030 Agenda."

He underscored the role of resilient, health-focused food systems in nourishing the environment, advancing local development and promoting women's empowerment and social justice, and called for boosting efforts to prevent food losses and waste.

High-level panels convened during the Forum on:

- Urban food security and nutrition issues within the context of SDG 11 (Make cities and human settlements inclusive, safe, resilient and sustainable);
- The contribution of rural areas to agriculture and food supply systems, including within the context of the Third UN Conference on Housing and Urban Development (Habitat III) and the New Urban Agenda to be developed by the UN Human Settlements Programme (UN-HABITAT).

The Food and Agriculture Organization of the UN (FAO) convened an expert panel on 'Promotion of urban food security and nutrition through redistribution of food at risk of loss or waste.'

The panel considered methodologies to assess the impact of food losses and waste on nutrition, the potential contribution of food recovery and redistribution to food security and nutrition in cities and urban areas and ways to ensure that food remains safe and nutritious for human consumption, among other topics.

Ministers attending the Berlin Agriculture Ministers' Summit, which convened on the final day of the GFFA, produced the final Communiqué.

The best thing a business could do for the environment is shut down : Of course, they're not going to do that. So how do managers balance their climate change fears and the reality of the business world?

The article is available at : <http://www.theguardian.com/sustainable-business/2016/jan/28/climate-change-capitalism-business-emotions-heathrow-protest-short-term-profits> .

Tim Sanderson, a former executive of the fossil fuel giant BP, wrote about the pride he felt for his daughter after her involvement in a climate change protest at Heathrow airport. With 12 others from climate activist group Plane Stupid, Rebecca Sanderson had occupied a runway to highlight the conflict between airport expansion and escalating carbon emissions.

Having spent most of his working life in oil exploration, Sanderson said he was an "unlikely apologist" for his daughter's actions. However, climate change had become a galvanising issue for his family. When his daughter and her colleagues were convicted for aggravated

trespass – and face a likely jail term – the former oil executive stood with other protesters loudly chanting: “No ifs, no buts, no new runways”. As with a growing number of business people, Sanderson’s story demonstrates how climate change has become an increasingly personal business.

In our book, *Climate Change, Capitalism and Corporations*, Daniel Nyberg and I explore how businesses and the managers who run them are responding to the climate crisis. A key finding of our research is that climate change poses a fundamental challenge to business as usual. While corporations frame climate change through the optimistic prism of innovation, technology and “green” products and services, the unpleasant reality is that our existing economic system fundamentally undermines a habitable climate.

For a number of managers, awareness of the environmental destruction that our economic system is exacting poses deep moral and emotional questions. Some chief executives have spoken candidly about their concerns for the future of humanity and their desire to change our trajectory. Often such epiphanies are cast from the personal and emotional realisation of the world they are leaving to their children. As the Californian venture capitalist John Doerr confided in a tearful TED talk about climate change and his teenage daughter: “I’m scared. I don’t think we’re going to make it.”

The emotional engagement with climate change is particularly relevant for those whose task is to make their companies more “sustainable”. Here, personal concerns about the environment run directly up against the competing logic of short-term profitability and shareholder value. This was highlighted with stark candour early on in our research by a sustainability adviser in a large Australian consulting firm who told us:

“I would say that most businesses’ efforts, probably with a genuine intent, are more about appearing to be environmental and reducing impact where possible where there’s a business case for doing so ... because the best thing a business could do for the environment would be to shut down ... But that’s clearly not a viable option.”

Many environmentally concerned managers thus operate in a conflicted space: they can advocate for greater corporate environmental sustainability but this must not threaten business growth.

Responding to the inevitable gap between corporate rhetoric and action requires significant emotional labour, although ironically the outcome may be that emotions need to be deliberately left aside. For example, a sustainability manager at a major Australian property developer explained how he often downplayed his environmental concerns and framed his appeals for renewable energy to the company’s chief financial officer around cost improvements: “There’s nothing [in the discussion] about climate change. You can’t talk about drought and floods. We looked at this stuff, but they can’t get hold of it.”

Many of those we spoke to also often compartmentalised their feelings about climate change between work and home. They might voice strong environmental values at home or among like-minded colleagues, but would moderate their views in the presence of more senior colleagues. As the sustainability manager at a national insurer admitted: “That’s the other challenge: how do you have passion without being seen as too passionate?” Essentially, fervour for the environment often needed to be tempered in the corporate space by fervour for the market.

However, many managers noted the need to sometimes stand strong and challenge business assumptions. Here the personal became the political by stepping outside convention and

opposing proposals entailing environmental harm. As a manager in a major global food company told us: "We have to be the voice of the environment ... so sometimes decisions are made and those considerations aren't there, and we've got to be the ones who stand up and say no." For some of the managers we interviewed, these were pivotal events for them that involved putting their jobs on the line, or even leaving their companies to pursue alternative careers.

Of course personal responses are not sufficient to change an economic system hard-wired for environmental destruction. However, they demonstrate the potential for an individual's emotional engagement to begin the process of corporate and political change.

Future visions of a climate-shocked world prompt strong emotional responses, whether our concerns focus on the extinction of animal species, humanitarian disasters, or the wellbeing of our society or our children. Rather than denying our emotional responses to the climate crisis, we need to use them to champion alternative narratives to business as usual.

Christopher Wright and Daniel Nyberg's book, *Climate Change, Capitalism and Corporations: Processes of Creative Self-Destruction*, explores the role of business in the climate crisis.

What a statement to come from a professor of a business school !!! Anyone with a holistic perspective of the true welfare of humanity cannot find fault with this statement. Our business/corporate environment has really become very bad.

How long before the entire society starts realising this folly of perpetual economic growth?

Call for Action on Water : United Nations, World Bank Group Launch High Level Panel on Water.

The press release is available at : <http://www.worldbank.org/en/news/press-release/2016/01/21/united-nations-world-bank-group-launch-high-level-panel-on-water> .

The Secretary-General of the United Nations and the President of the World Bank jointly announce their intention to form a new panel to mobilize urgent action towards the sustainable development goal for water and sanitation (SDG 6: Ensure availability and sustainable management of water and sanitation for all.) and related targets.

The announcement comes as countries experience water stress and water-related disasters that will grow worse due to climate change without better policy decisions.

"Water is a precious resource, crucial to realizing the SDGs, which at their heart aim to eradicate poverty," said UN Secretary-General Ban Ki-moon. "The new Panel can help motivate the action we need to turn ideas into reality. **The United Nations system, including through UN Water and the United Nations development system's universal operational presence, is committed to promote inclusive and country-led action on SDG6 and related targets.**"

The panel, to be co-chaired by the Presidents of Mauritius and Mexico, will comprise a group of heads of State/Government from developed and developing countries, convened by the United Nations Secretary-General and the President of the World Bank Group to:

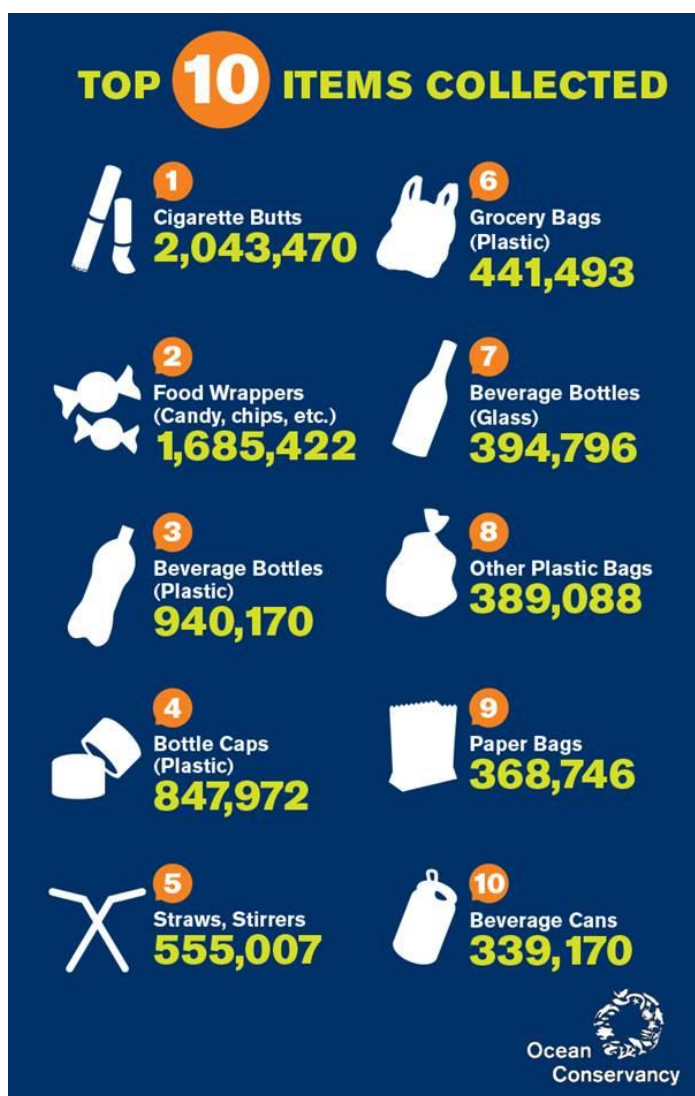
- **Motivate Action** – Focus public policy dialogue, private sector models and practices and civil society initiatives towards the Water SDG; and
- **Advocate on financing and implementation** – Promote efforts to mobilize

financial resources and scale-up investment for the Water SDG, including through innovative financing and implementation strategies.

"Achieving the water global goal would have multiple benefits, including laying the foundations for food and energy security, sustainable urbanization, and ultimately climate security" said World Bank Group President Jim Yong Kim. "My hope is that this panel accelerates action in many countries so that we can make water more accessible to all."

The World Bank and UN will facilitate access to a variety of technical organizations to support the panel, including OECD, Stockholm International Water Institute, World Economic Forum, World Water Council, and World Resources Institute.

Top 10 items collected from oceans



Rent your rooftop and get solar power at a cheaper rate.

The article is available at : <http://economictimes.indiatimes.com/industry/energy/power/rent-your-rooftop-and-get-solar-power-at-a-cheaper-rate/articleshow/50799537.cms> .

Give your rooftop and we will give you cheap solar power - this is the model being used by many solar power companies to rake up their rooftop solar installation capacities.

Industrial establishments, commercial buildings, malls and large gated communities are the target for these operators who would set up solar rooftops for free and sell you power at rates that are cheaper than the local utilities.

"Around 240 sq mt of rooftop space is good enough for setting up a rooftop solar power plant that can viably sell power to the building and earn some decent profits," said Sunil Jain, chief executive of Hero Future Energies.

"In fact, some five-six companies including Hero Future Energy have already entered the fray and are on the lookout for large rooftop space in industrial complexes, commercial buildings, malls and gated communities," he said.

According to officials, about 8sq mt of rooftop is required to set up panels to generate 1 kilo watt and a minimum capacity of 30 kW makes an installation viable. The power generated can help building owners cut down on power costs and gainfully use the roof which would otherwise remain unused.

However, there are no model lease agreements and there is no way of making these agreements between the solar company and the roof owner a binding agreement. This has been one of the factors holding back the success of the large scale rooftop solar installations.

"Nevertheless with the cost of solar photo voltaic cells on the decline at a rapid rate, the cost of power generated from solar installations has been on the decline," an official said.

Cost of generating power differs in different places due to difference in the intensity of sun's rays. For example, the sun is the strongest in Rajasthan and the intensity reduces as it moves towards east.

"In Delhi, solar power can be made available between Rs 6.25 and Rs 7 per unit from rooftop installations. This is cheaper for the companies that consume large volumes of power," said Jain.

Additionally, it offers a shield against frequent power cuts and hedge against rising power costs as rooftop owners enter into long terms, mostly 25-year, agreements for buying the power at a fixed cost.

In contrast, power tariffs of utilities are expected to rise at regular intervals. The model, popularly referred to as the OPEX - operational expense model - however, has its limitations when it comes to gated communities.

"A standard format for legal documents and agreements for rooftop solar plants will go a long way is increasing rooftop installations even on residential apartments," he said.

This is a novel concept already in vogue in some countries, and should be ideally suited for India. Large scale application of this concept will be needed if the target of 40 GW of rooftop solar power is to be realized by 2022.

Climate Knowledge product on Himalayan Rivers

The Atlas can be downloaded from the following link:

http://lib.icimod.org/record/31180/files/HKHwateratlas_FINAL.pdf .

The first ever Himalayan Climate and Water Atlas was just launched at COP 21 on International Mountain Day, to help policy makers tackle crucial adaptation issues in the Himalayan region.

The general consensus reached at COP 21 is that adaptation to climate change needs to begin now, and nowhere is this more true than in the world's mountain regions, which have been identified by the Intergovernmental Panel on Climate Change (IPCC) as among the most vulnerable to climate change.

Global water resources are facing increasing pressure from climate change and rising consumption, especially in the Hindu Kush Himalayan mountains, which are home to 210 million people and provide water to another 1.3 billion downstream. These people live in one of the most populous, disaster-prone and vulnerable regions in the world, yet knowledge about the changing climate in the mountains and possible climate change impacts is still limited and scattered.

To help address this problem, three organisations came together to produce the Himalayan Climate and Water Atlas: Impact of Climate Change on Water Resources in Five of Asia's Major River Basins, designed as a guidebook for policy makers. It was released jointly by the International Centre for Integrated Mountain Development (ICIMOD), GRID-Arendal and the Centre for International Climate and Environmental Research-Oslo (CICERO), and funded by the governments of Norway and Sweden.

The first of its kind, the atlas offers a comprehensive, regional understanding of the changing climate and its impact on water resources in five major river basins – the Indus, Brahmaputra, Ganges, Salween and Mekong. It uses maps and infographics to show how the region's climate is changing now and into the future, with severe consequences for populations, both local and downstream.

Drawing on several years of research under the Himalayan Climate Change Adaptation Programme (HICAP) (<http://www.icimod.org/hicap/?q=4779>), with external reviews from international experts, the atlas contains new findings about the impacts of climate change on the region, including:

- ✓ Temperatures across the mountainous Hindu Kush Himalayan region will increase by about 1–2°C (in some places by up to 4–5°C) by 2050.
- ✓ Precipitation will change with the monsoon expected to become longer and more erratic.
- ✓ Extreme rainfall events are becoming less frequent, but more violent and are likely to increase in intensity.
- ✓ Glaciers will continue to suffer substantial ice loss, with the main loss in the Indus basin.
- ✓ Communities living immediately downstream from glaciers are the most vulnerable to glacial changes.
- ✓ Despite overall greater river flow projected, higher variability in river flows and more water in pre-monsoon months are expected, which will lead to a higher incidence of unexpected floods and droughts, greatly impacting on the livelihood security and agriculture of river-dependent people.
- ✓ Changes in temperature and precipitation will have serious and far-reaching consequences for climate-dependent sectors, such as agriculture, water resources and

health.

The atlas also includes a number of key recommendations for policy makers to encourage the development of flexible and cooperative strategies, including between countries, to deal with increased variability and meet the challenges posed by either too much or too little water.

The Atlas can be downloaded from the following link:
http://lib.icimod.org/record/31180/files/HKHwateratlas_FINAL.pdf .

Little focus on polluted cities : Thirteen of the 20 most polluted cities in the world are in India including Patna, Amritsar and Raipur.

The article is available at : <http://www.deccanherald.com/content/526813/little-focus-polluted-cities.html>.

Delhi's air pollution crisis has triggered unprecedented media attention and a judicial as well as administrative response. Very few environmental issues in recent times have led to response that is so prompt.

The Delhi Government introduced the 'odd-even' scheme for use of private vehicles for a trial period and has received an overall positive response, the National Green Tribunal directed action against diesel vehicles and the Supreme Court followed by prohibiting the registration of SUVs and other categories of diesel cars.

Air Pollution has suddenly become an issue on which all the three courts situated in Delhi, the Supreme Court, the National Green Tribunal and the High Court, want to do something. The moot question one needs to ask now is: is all this really going to change things on the ground (or air)? Will it lead to cleaner air in Delhi? Is the 'Delhi model' capable of being replicated in other polluted areas in India?

In order to address this issue, one has to revisit previous administrative and judicial action on air pollution. One of the landmark judicial actions on air pollution in India was the Supreme Court's direction in 1996 to reduce air pollution around the Taj Mahal.

The court directed for a shift to cleaner fuel for all industrial units located in the Taj Trapezium Zone (TTZ): a zone comprising of Agra, Firozabad, Mathura and Bharatpur districts. Industrial units running on highly polluting coal had to swiftly move to natural gas. Subsidised gas was provided to encourage the shift to natural gas.

The intention was good, the implementation was quite satisfactory and a special authority, the Taj Trapezium Zone Authority, was set up to ensure effective implementation of Court directions.

However, the impact of these regulatory measures have not been too positive. Rather than a reduction in the level of pollution, the air pollution levels have increased. Firozabad, located within the TTZ, is on the list of the 20 most polluted cities in the world ranking 11 in the list.

Rather than a decrease, there has been an absolute increase in the level of pollution. The level of PM 2.5, PM 10, NOX are way above the permissible levels. The reason: the shift to subsidised gas encouraged greater industrialisation in the TTZ, massive capacity additions and expansion of existing units took place.

The new and enhanced capacity led to an increase in vehicular traffic, habitation,

shops/commercial establishments and other related activities which contributed cumulatively to increased pollution.

Though one cannot dismiss the wisdom of shifting from coal to natural gas, the judicial action missed some critical aspects: natural gas is cleaner than coal but is still polluting, subsidies can only encourage consumers to use more fuel and therefore lead to concentration and expansion of industries and related infrastructure.

Weighing our options

The Compressed Natural Gas (CNG) in Delhi is no different. The shift to CNG for public transport and taxis in Delhi led to cleaner air for a brief period. But the massive increase in private vehicles (about 1,400 new vehicles are added every day in Delhi) has off-set the benefits of shifting public transport to CNG. The restriction on diesel vehicles by the courts is likely to lead to the same result.

A massive increase in petrol vehicles will obliterate to a large extent the benefits of prohibiting diesel vehicles. Yet, without analysing the impact of previous initiatives, we continue to follow largely the same scheme.

At another level, air pollution raises serious issues of equity and environmental justice. The entire public discussion around air pollution is focussed on Delhi and the National Capital Region (NCR).

True, Delhi is top on the list of the most polluted city in the world. But then, 13 of the 20 most polluted cities in the world are in India. How many people know that the other cities in the list includes Patna, Amritsar, Raipur, Allahabad etc?

When concerns are raised about crop/stubble burning in Punjab and Haryana, the main focus is on how the smoke impacts adversely the air quality of Delhi. Not a mention is made as to how this pollution impacts people in Punjab and Haryana. There are now plans to close down the two coal-fired power plants in Delhi.

Not a thought is being given to the fact that the voiceless population of may be Jharkhand, Uttar Pradesh or Chhattisgarh will be forced to inhale toxic fumes from power plants to meet the extra demand in Delhi arising out of the closure of the power plant in Delhi.

Unfortunately, the heightened focus on air pollution in Delhi does not signify enhanced environmental consciousness: it is environmentalism of the politically powerful and the elite and a transfer of pollution from the nation's capital to the rest of the country. It is time that the judicial and administrative action on air pollution need to recognize that all citizens of India, irrespective of where they reside, and strata they belong to have the right to clean air as a Fundamental Right.

A paradigm shift to the way we treat the 'commons' (air, water and land) impacting all has become an urgent necessity.

New UDP report on uncertainty in greenhouse-gas emission scenarios.

The report can be downloaded at: <http://www.unepdtu.org/Newsbase/Nyhed?id=E5DA0C29-38E2-4C0C-8B19-FAF3A77ACDDE> .

UNEP DTU Partnership has released the report Uncertainty in Greenhouse-gas Emission Scenario Projections, which outlines approaches to quantify the uncertainty associated with national-level projections of greenhouse-gas emissions, by describing practical applications of those approaches in Mexico and South Africa.

The report aims to promote uncertainty quantification, because quantifying uncertainty has the potential to foster more robust climate-change mitigation plans. To this end the report also summarises the rationale for quantifying uncertainty in greenhouse-gas emission scenario projections.

At present few, mainly G20, countries are conducting uncertainty quantifications.

Their efforts are typically restricted to comparing projections obtained through different models. While valuable, the information provided by such comparisons tells only one part of the story: other, complementary approaches exist that remain under-utilised.

In any country, the larger the expenditure for climate change mitigation, the closer climate change plans will be scrutinised to ensure that they are robust to as many plausible future conditions as possible. Uncertainty quantification is central for achieving this goal.

ISGF White Paper on Electric Vehicles: A Sustainable Solution to Air Pollution in Delhi.

The report can be downloaded at:

<http://www.indiasmartgrid.org/reports/ISGF-Electric%20Vehicles%20for%20Delhi-%20Final.pdf> .

Emissions from automobiles may not be the single most source of air pollution in Delhi, but it is a significant contributor to the deteriorating air quality there. Transport sector accounts for about 20% of global energy use but different reports indicate that automobiles alone contribute 25-30% of the emissions globally. World over the key philosophy gaining momentum towards transition to low carbon economy is to electrify all human activities including transportation and agriculture (to the best extent possible) and take electricity sector to decarbonise it through measures such as dramatic increase in the share of renewable energy, nuclear power and carbon capture and sequestration from thermal power plants. Delhi has one of the most rapidly growing automobile market in India with number of vehicles having zoomed from 3 million in 2007 to 88 million in 2015! Electric Vehicles (EVs) represent one of the most promising pathways to increase energy security, reduce carbon emissions, and improve air quality.

ELECTRIFICATION OF TRANSPORTATION ESSENTIAL FOR CLEAN AIR IN CITIES

Electrification of transport sector is gaining popularity and congested cities are taking bold steps in this direction - hence the mushrooming of metros, electric trams, BRT corridors with EVs and promotion of EV adoption in general in several countries.

Emphasis on low carbon development and clean air is becoming the central theme in infrastructure planning. Successful and widespread deployment of EVs and its supporting infrastructure is key to reducing greenhouse gas emissions, and mitigating the effects of climate change. Realising the importance of EVs in reducing the intensity of emission, Ministry of Heavy Industries (MoHI), Government of India (GoI) launched National Electric Mobility Mission Plan (NEMMP) in 2013 with a target of 6 to 7 million EVs on Indian roads by 2022.

However, the EV rollout has not taken off as envisaged mainly due to non-allocation of funds

in the last two years for this mission. MoHI has conducted several brainstorming sessions with stakeholders in order to promote EVs in India. It is assumed that in the first phase public transport – buses, three wheelers, taxi fleet – will be given priority. NEMMP is expected to start in a big way provided Government of India allocates the approved amount of Rs 795 crores (US\$ 120 million) for the NEMMP in next year's budget. Considering that the customer-adoption of EVs follow the availability of adequate charging infrastructure, NEMMP funds can be used to setting up charging infrastructure, technology developments, incentives and pilot projects.

CARBON EMISSION COMPARISON

| Fuel Type | CO2 Emission (kg per km) |
|------------------|---------------------------------|
|------------------|---------------------------------|

| | |
|---------------|---------------|
| Petrol | 0.2325 |
|---------------|---------------|

| | |
|---------------|--------------|
| Diesel | 0.273 |
|---------------|--------------|

| | |
|-------------------------|---------------|
| Electric Vehicle | 0.1032 |
|-------------------------|---------------|

For ascertaining the above numbers it is assumed that in one litre of petrol/diesel an average car runs ten kilometres in cities; and an electric car can run 10 km with 1kWh of electricity. Even if electricity used for charging the EV is generated through fossil fuel, still CO2 emission is less than half the emissions from petrol and diesel cars.

In the case of EVs the electricity used for charging is produced in power plants located hundreds of kilometres away from the cities that are struggling with air pollution. If electric vehicles are charged through renewable sources of energy then emissions from EVs will be nil.

Several business houses and entrepreneurs are planning to start manufacturing facilities for electric vehicles and associated infrastructure and components in the country, but they are not sure of the market potential. When the government will take bold decisions to make EVs mandatory in cities in a phased manner, the industry will have the confidence to invest in production facilities. For example Tata Motors make EVs in Europe but not launched those models in India. Several international car makers presently operating in India such as Mercedes Benz, BMW, Toyota, Honda, Nissan, Ford, GM, Audi, Volkswagen, Mitsubishi etc., have EVs and they can quickly launch EVs in India provided a market is created through policy interventions.

Loss of monkeys and birds in tropical forests driving up carbon emissions.

The article can be downloaded at: <http://www.theguardian.com/environment/2015/dec/18/carbon-emissions-loss-of-monkeys-and-birds-in-tropical-forests> .

Overhunting affects seed dispersal and thus survival of hardwood trees, resulting in drastic reduction in Earth's natural carbon storage, study finds.

Large fruit-eating monkeys and birds in tropical forests have been revealed as surprising climate change champions, whose loss to over-hunting is driving up carbon emissions. This is because their seed-spreading plays a vital role in the survival of huge, hard-wooded trees.

Tropical forests store 40% of all the carbon on the Earth's surface and the slashing of trees causes about 15% of the greenhouse gases that drive global warming.

Long-lived, thick and hard-wooded trees are especially good carbon stores, but they have large seeds that can only be dispersed via defecation by large animals. These big creatures

have suffered huge losses from subsistence hunters, meaning hardwood trees are being replaced with softwood trees, which have smaller seeds but store less carbon.

"In much of the tropics these [large] animals are pretty much gone, outside of protected areas and sometimes even inside protected areas," said Prof Carlos Peres, at the University of East Anglia, UK, one of the international team behind the new study. "[Hardwood trees] require these big beasts to disperse their seeds. This is what is being lost."

"Policies to reduce carbon emissions from tropical countries have primarily focused on deforestation," Peres said. "But our research shows that a decline in large animal populations poses a serious risk for the maintenance of tropical forest carbon storage."

The new research was led by scientists at São Paulo State University in Brazil and published in Science Advances. It focused on the Atlantic rainforest of Brazil, where 95% of all trees rely on animals to disperse seeds, and analysed the interactions between 800 animal species and 2,000 tree species.

It found losses of large animals like woolly spider monkeys, tapirs and toucans leads to the loss of hardwood trees. These are replaced by softwood trees, whose smaller seeds (less than 12mm long) are spread by small fruit-eating marsupials, bats and birds which are not the target of hunters. The scientists estimated that 10-15% of the carbon stored in the original mixed forest is lost.

Peres said the same effects were likely to apply to other tropical forests, including the Amazon. "This is a fairly universal process," he said. "It is happening across the tropics, in Africa, southeast Asia, everywhere there are these species-rich forests."

The scientists concluded: "Our result highlights the fragility of carbon storage service in tropical forests under the current global change conditions. Halting the ongoing, fast-paced [animal loss in] tropical forests will not only save large charismatic animals and the plants they disperse but also have effects on climate change, carbon markets, and reforestation."

In November last year, the first comprehensive estimate of threatened species in the Amazon rainforest found that more than half of the myriad species could be heading for extinction. Among the species expected to suffer significant falls in numbers are the Brazil nut, and wild cacao and açai trees, all important food sources.

Is India starting to waver on coal?

The article is available at : [reneweconomy.com.auhttp://reneweconomy.com.au/2016/is-india-starting-to-waver-on-coal-84098](http://reneweconomy.com.au/2016/is-india-starting-to-waver-on-coal-84098) .

Seemingly unrelated events in the last few weeks suggest that coal's role in India's future may be far more tenuous than widely portrayed.

From court rulings over pollution, to private power companies dumping coal projects in favour of solar, to Coal India revealing it doesn't know what to do about huge stockpiles of unwanted coal, India's energy policy is in a state of flux.

The Goa State Pollution Control Board, after reviewing data which showed air pollution at up to double permitted levels, [directed](#) subsidiaries of Adani and JSW to cut coal imports by 25 per cent through their facilities at Mormugao Port.

They also imposed a set of other conditions to cut coal dust pollution at the port facilities where the two companies import 12.4 million tonnes of coal a year. While the court held open the possibility that it might relax the volume constraint if pollution levels dropped sufficiently, it gave no guarantees.

The ruling came on top of another judgement against Adani over the illegal destruction of mangroves for a port project at Surat in the state of Gujarat. In early January the National Green Tribunal (NGT) [agreed](#) with a legal action brought by the Hazira Fishermen Committee that environmental clearance granted by the Ministry of Environment and Forest for the construction of the port was “illegal.”

The legal action had been brought on behalf of 300 families who were displaced as a result of the port project and prevented from fishing. The NGT also imposed a fine of US\$3.7 million towards restoration costs. Adani’s appeal was recently [rejected](#) by the Supreme Court which directed the company to deposit its multi-million dollar fine within four weeks.

Not long before, Aswini Kumar Dhal, a social activist, had [challenged](#) the authority of the East Coast Railway to operate a railway siding at Jakhapura in Odisha for handling large volumes of coal and iron ore without authorisation from the State Pollution Control Board (SPCB).

Dahl argued before the NGT that air and water pollution from the operation of the railway siding adversely affected a large rural population without any mitigation measures being in place. The NGT backed Dahl and ordered the use of the siding be suspended.

Just as coal port and transport operators are facing challenges, the shifting economics of solar versus coal are sending shockwaves through the private power sector.

Solar shift: Two weeks ago Reliance Power, one of the three largest private power companies in India, announced that it wanted to abandon the proposed 4000 megawatt [Krishnapatnam ‘Ultra-Mega Power Project’](#) in Andhra Pradesh. Reliance Power had won the right to develop the project in 2007 but by 2011 was [unable](#) to attract finance. It was the [latest stage](#) in Reliance Power’s retreat from coal-centred expansion plans and consistent with its announced emphasis on solar and other renewables.

The strategic shift by Reliance Power away from coal has been underscored by last week’s [announcement](#) by RattanIndia Power – another major private power generation company – that it wants the Punjab government to approve the use of a 324-hectare site for a solar plant instead of a proposed coal plant. The economics of solar, the company stated, are better than that of coal.

With the prices for solar power in India having fallen by 20 per cent in 2015 and 80 per cent over five years, new coal power plants are facing stiffer competition far sooner than most expected.

Adding to the uncertainty around coal in India was the revelation by Coal India that – after increasing production by just under 10 per cent in the current financial year – it now has huge stockpiles of coal it can’t profitably sell.

Coal India – which produces about 80 per cent of all coal mined in the country – has been exhorted by the Modi Government to double its current production to one billion tonnes by 2020. The government has also stated it wants to even triple coal production from current levels in the medium term, in part by opening up the coal sector to private mining companies.

The Central Electricity Authority recently [released](#) data revealing that there was about 34 million tonnes of coal stocks at power stations, more than double the levels of a year ago. Coal India [has](#) a further 40 million tonnes of stockpiles.

A series of reforms aimed at resolving the mountainous debts of the loss-making state distribution utilities is likely to eventually result in under-utilised coal plants soaking up some of the domestic glut in the short to medium term. However, there are no guarantees on that.

High domestic stockpiles – with a desperate domestic seller – are likely to ensure Indian coal imports will decline significantly, at least in the short term. This will have the effect of slowing coal production and exports from Indonesia, South Africa, Australia and Mozambique.

With resistance to coal popping up in unexpected places, solar prices falling, private power producers shifting focus away from coal and Coal India groaning under huge stockpiles, the Modi Government's coal fixation may well melt away far sooner than is commonly considered likely.

Mr Shankar Sharma agrees with most of the above observations. The references the author has made have been appearing on major media houses here in India over the last few weeks. However, the above article has put them in proper perspective.

While it is perfectly logical to come to your conclusion on the basis of the issues discussed, the situation here is rather strange and our leaders are even more strange in their actions. Logic, economy and the societal level issues hardly matter to them. They cannot read even a clear writing on the wall.

While all of us would like to see the scenario in your conclusion, I cannot see anything of that sort happening here; at least it is not visible. The government is only talking about many mega coal power projects, auctioning of coal mines, and most importantly there have been massive efforts to encourage demand for more and more of electricity in the form of additional industries and businesses. **There is not even a passing reference to reducing the overall electricity consumption and reducing the GHG emissions w.r.t even the 2015 level.**

What the authorities are looking for is a scenario where there will be massive economic activities adding up to very high GDP growth rate (in excess of 7.5 % and wishing for double digit growth year after year indefinitely for many years to come). All our natural resources are assumed by them to be there just for such a scenario. With such an irrational approach there will be huge growth in demand for total electricity production capacity. Since REs are not in a position to fill the gap immediately, coal seem to be their best bet. Of course this cannot go on for ever; but for the time being there seems no respite from burning more coal.

What happens to pollution of air, water and soil in this madness seem to be of no concern to them. So it is hard for me to visualise how coal consumption in India will come down appreciably in the near future, unless some of the developments here and elsewhere bring about a major change in the approach for our leaders.

Build cities that work with nature not against it.

The report can be downloaded at: http://www.scidev.net/global/design/multimedia/build-cities-nature-audio-vink.html?utm_medium=email&utm_source=SciDevNewsletter&utm_campaign=international%20SciDev.Net%20up

[date%3A%201%20February%202016](#) .

"Water is one of our most pressing global risks," says Henk Ovink, special envoy for international water affairs for the Netherlands.

When floods or tsunamis strike coastal regions, the devastation can be immense, particularly in densely built, poorly constructed neighbourhoods in cities across the global South.

But crises like flooding shouldn't mean death, destruction and displacement. By constructing buildings and infrastructure that work with nature not against it, cities and countries will be far more resilient, Ovink says.

Architects such as Yasmeen Lari in Pakistan, Shigeru Ban in Nepal and Alejandro Aravena in Chile have been working with local people to pioneer new ways of designing safe and disaster-resilient buildings.

The idea of architects as "big heroes who will bring salvation to the world" is fast being replaced by architecture that involves and is shaped by the people who use it, Ovink says.

Announcements

There is more compelling evidence on the need to urgently address the air pollution has arrived; this time from WHO.

The article is available at : <http://www.firstpost.com/india/who-warns-about-air-pollution-calls-it-a-global-public-health-emergency-2588768.html> .

How much more scientific evidence do our governments need before they start acting rationally on such critical health issues?

The World Health Organisation is calling air pollution "a public health emergency" across the globe.

Toxic air is one of the biggest problems we are facing globally, with horrible future costs to society. Research has now found that polluted air is the cause of not only pneumonia or asthma but also of cardiovascular diseases and dementia, which will cost governments a lot of money in health care in the future, she said.

Improvement in public transport systems, for government to do the needful and for individuals to play their role by choosing a public transport vehicle over their own car is a dire necessity.

A study published in the journal Nature in September 2015 revealed that more than three million people die due to outdoor air pollution globally every year: a figure that is greater than the number of deaths from malaria and HIV/Aids combined, according to The Guardian.

Emissions from residential energy use such as heating and cooking, prevalent in India and China, have the largest impact on premature mortality globally, being even more dominant if carbonaceous particles are assumed to be most toxic.

In December 2015, the Centre for Science and Environment (CSE) released a report titled

Body Burden 2015: State of India's Health in which they stated that air pollution is responsible for 10,000 to 30,000 deaths annually in Delhi as it is the fifth leading cause of death in India.

"It results in about 6,20,000 premature deaths (in the country) which are caused by stroke, chronic obstructive pulmonary disease, ischemic heart disease, lower respiratory infections and trachea, bronchus and lung cancer, among others," the statement said, adding that the report highlights the heightened vulnerability of the poor and calls for stringent actions.

"The way forward would be to reduce the source of air pollution mainly revamping our transportation systems and forcing the industry to come up with cleaner technologies. But people are not aware of these linkages and continue to junk public transport," said CSE DG Sunita Narain.

The studies come at a crucial time: the Paris Climate Conference of 2015 saw 195 nations across the globe pledge to reduce carbon emissions and raised the hopes of the people.

"Paris represented a real sea change in seriousness in coming to grips with the issue," said Alden Meyer, a veteran climate analyst from the Washington-based Union of Concerned Scientists who has followed the UN process for nearly three decades.

Much of that seriousness was driven by a crescendo of deadly extreme weather and the growing confidence of science in connecting the dots with long-term shifts in climate.

"The most compelling thing you can say about Paris is not that it saved the planet, but that it saved the chance of saving the planet," said Bill McKibben, founder of the grassroots organisation 350.org and an architect of the worldwide movement to divest from fossil fuel companies.

NGOs and Cruise Lines Partner on Ocean Conservation, Sustainable Fisheries

The article is available at: <http://nr.iisd.org/news/ngos-and-cruise-lines-partner-on-ocean-conservation-sustainable-fisheries/> .

Environmental non-government organizations (NGOs) and the cruise industry are collaborating to restore and protect the world's oceans. The World Wildlife Fund (WWF) and Royal Caribbean Cruises Ltd (RCL) announced a five-year partnership to support global ocean conservation, reduce RCL's environmental footprint, and raise awareness about ocean conservation among RCL passengers. The Carnival Corporation participated in The Nature Conservancy's (TNC) two-day Mapping Ocean Wealth Forum, as part of the company's support to TNC's ocean conservation efforts.

WWF and RCL announced their partnership at an event in Donsol, the Philippines, where WWF implements a community-based ecotourism program.

Speaking at the event, WWF-US President, Carter Roberts, explained the WWF-RCL initiative centers on two core concepts: "first, committing to specific and measurable targets to reduce carbon emissions, increase sustainable sourcing and build destination stewardship; and second, comprehensively engaging their millions of travelers to learn about the ocean and then act to help save it."

RCL Chief Executive Officer, Richard Fain, said the new "partnership aligns all of us at RCL with WWF's mission to conserve the world's oceans."

As part of their partnership, WWF and RCL developed carbon emission and sustainable seafood targets and plan to announce additional targets on destination stewardship by June 20, 2016. The carbon emissions target aims to reduce RCL's greenhouse gas (GHG) emissions by 35% by 2020.

On sustainable seafood, RCL aims to, inter alia:

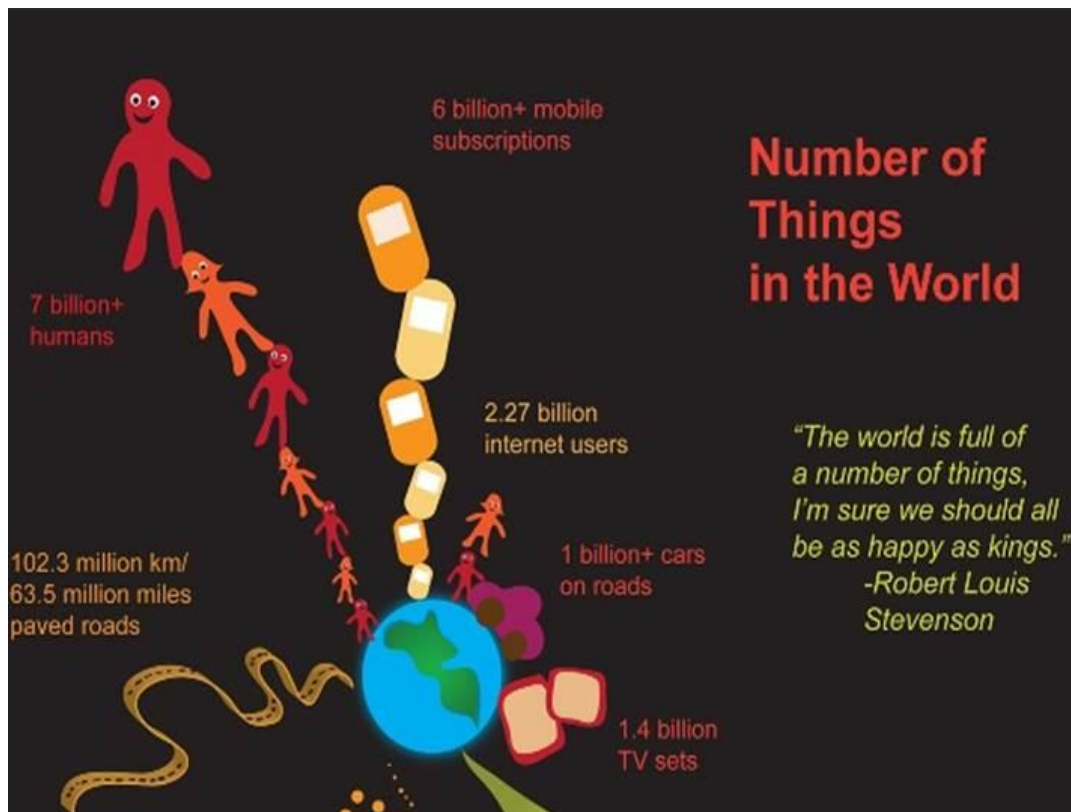
- Source 90% of wild-caught seafood by volume from marine stewardship council (MSC) certified sustainable fisheries;
- Source 75% of farmed seafood by volume from aquaculture stewardship council (ASC) certified farms in North America and Europe;
- Set traceability goals with targets to obtain MSC and ASC chain of custody.

RCL will support WWF's ocean conservation work through a US\$5 million contribution. RCL also made a US\$200,000 donation to WWF Philippines to support its work in Donsol.

Similarly, Carnival Corporation has provided support to TNC, including US\$2.5 million to support TNC's Mapping Ocean Wealth work and other marine protection activities, such as building coral nurseries in the Caribbean and installing reef enhancement structures to support future coral growth and fish habitat in Grenada.

The Mapping Ocean Wealth Forum highlighted research on protecting coral reefs, mangroves and coasts and enhancing the ocean's carbon sequestration potential. The Forum is part of the Mapping Ocean Wealth Initiative, which aims to generate knowledge about how and where ocean benefits are produced and to map these areas, with the broader goal of providing evidence to support investments in ocean conservation, restoration and management, and economic development.

Carnival Corporation's collaboration with TNC is part of the company's efforts to protect the environment. In 2015, Carnival announced 10, 2020 Sustainability Goals, including targets on reducing GHG and other emissions, increasing water efficiency, reducing waste production, and developing sustainable supply chains.



Emerging Climate Change Adaptation Issues in the Asia-Pacific Region”

The article is available at : <http://www.asiapacificadapt.net/resource/emerging-climate-change-adaptation-issues-asia-pacific-region> .

The report is available at: http://www.asiapacificadapt.net/sites/default/files/resource/attach/Emerging%20issues-APAN_0_0.pdf

This report aims to fill a need for the latest thinking on climate change adaptation (CCA) in the Asia-Pacific region, thus the members of the Asia Pacific Adaptation Network (APAN) produced this report titled Emerging Climate Change Adaptation Issues in the Asia-Pacific Region to address pertinent and relevant issues in the region and sub-regions. This report aims to raising awareness and building the capacity of policymakers to deal with CCA.

APAN is a regional network for managing and applying adaptation knowledge in the Asia-Pacific region and supports governments and other organizations working on adaptation, with emphases on knowledge management and capacity building. **APAN operates through its regional hub in Bangkok and through its sub-regional and thematic nodes located in Central Asia, South Asia, Southeast Asia, Northeast Asia and the Pacific.**

For the publication, each APAN node identified challenges, gaps and recent trends in CCA in their region. They have highlighted emerging priority issues at the national and sub-regional levels in addition to major developments, the latest policies and strategies, new institutional support frameworks and analysis of key studies within APAN. The nodes have provided practical examples of mainstreaming adaptation into national development in each sub-region.

The report addresses aspect of planning climate adaptation projects, seeking and mobilising funds and implementing adaptations APAN sub-region or within climate sensitive sectors. New terminologies and trends in climate change policy and strategy development are described along with the strengths and weaknesses of the institutional frameworks underpinning project implementation.

The research undertaken has aimed to keep track of recent concepts and relevant issues in the region and factor in the latest scientific consensus from the Intergovernmental Panel on Climate Change (IPCC). **Emerging and priority issues in climate adaptation are highlighted at the national and sub-regional levels and across different thematic areas.**

The report contains examples of good practices and case studies in the use of technologies and tools to deal with CCA and also provide general recommendations and possible future actions that are relevant to all Asia-Pacific countries.

As CCA will be an essential pillar within the future climate regime and United Nations sustainable development agenda, the lessons drawn from the report offer valuable insight. Many opportunities lie ahead for APAN members to strengthen their institutions and play a part in implementing actions in the region.

The Air our cars suck in Delhi dirtier than what they emit: JLR.

The article is available at : <http://www.deccanherald.com/content/527525/air-our-cars-suck-delhi.html> .

The article highlights that the air sucked in by its latest technology vehicles on Delhi roads is "far dirtier" than what they emit.

"The latest EU VI regulation schemes have got technical features, which (can) clean the air in Delhi. These kind of vehicles drive like a Hoover... The air they suck in is far dirtier than the air which comes out of it," CEO of the UK-based JLR Ralph Speth told PTI.

JLR is among the automobile companies hit hard by the apex court order in December last year banning registration of diesel SUVs and cars above 2000 cc in the entire National Capital Region till March 31.

He said if the aim is to reduce pollution and improve air quality then a comprehensive measure has to be taken, including banning of old cars and controlling other sources of pollution and "not just come up with a single solution, exactly with wrong advice and wrong technology".

To overcome the ban, JLR is looking at bringing in more petrol variants of its different models. The company is already selling petrol variants of the Jaguar XJ, Range Rover Sport. It has also launched two petrol variants of the new Jaguar XE.

This is a serious allegation coming from a car company, and can be seen as a slur on the city's governance and on the judiciary in our country.

Will our authorities learn from such statements before our people suffer more health impacts?

One wonders why so many high profile and powerful people living in Delhi can keep quiet on

such a serious health issue impacting all? What have been the concerned authorities (State pollution control board in Delhi and the CPCB) doing before the issues have come to this level?

If this is the fate of the national capital, what is the scenario in other metros and places such as Singrauli, Kanpur, Mumbai, Dhanbad, Chandrapur and other places with dirty coal power plants?

We print money to bail out banks. Why can't we do it to solve climate change?. We need an estimated \$1tn per year to stay below a global temperature rise of 2C. Creating new money might be the only way to meet this financial challenge.

The article can be downloaded from the following link: <http://www.theguardian.com/global-development-professionals-network/2016/jan/30/print-money-climate-change-green-bond-quantitative-easing> .

The international community has agreed on an ambitious agenda to curb climate change. Some 195 countries have decided to try and cut greenhouse gas emissions to a level that will limit the rise in average global temperatures to well below 2C. The question we now face is: how are we going to finance the changes needed to reach this goal? Quantitative easing – creating new money – might just be the answer.

To reach zero emissions by 2050 (and for a likely chance to stay below a rise of 1.5C), we need to scale up and accelerate the move towards 100% renewable energy, and replicate globally what is already being created in many communities, cities and regions: a fossil-free society based on a customer-centric and inclusive energy infrastructure.

The International Energy Agency has established that \$1tn per year of renewable energy investment would be needed to stay under the 2C limit. To achieve the ambitious 1.5C limit agreed in Paris, substantially higher investment will be required. Our rough – and unofficial – estimate puts the figure between \$1.5tn and \$2tn per year.

The UN Green Climate Fund (GCF) – tasked with obtaining the “significant portion [of] new and additional” funds from developed countries, to \$100bn per year until 2020 – currently stands at just \$10.2bn. Previous experiences with getting financial commitments from taxes or semi-public funds – such as from emissions trading – also tell us that the sums provided regularly fall short of what’s promised.

Assuming that the GCF does manage to obtain a sum close to the promised \$100bn a year, it is crucial that it receives the funding in the form of non-repayable grants. Only then will the GCF have the ability to make renewable energy and other projects attractive to private co-investors. If the only problem facing climate financing was a lack of credit, it would have been solved a long time ago.

A percentage of that spent to bail out private banks could pay for investments needed to stabilise the world’s climate : Since the beginning of the financial crisis, central banks have created trillions to stabilise the global financial system. First they bailed out private sector banks, and then they bailed out governments by buying up private and public bonds worth billions. The European Central Bank is currently buying assets with newly created money of €60bn a month to stimulate the economy in the eurozone and prevent deflation, for example. All this is possible because central banks can never become insolvent in their own currency as they alone issue the legal tender.

But an important side effect of these bailouts has been the realisation that central banks could play a more active role with their monetary policies; newly created money can be used to finance urgent global tasks that would otherwise not be undertaken. Just a percentage of that spent to bail out private banks could pay for investments needed to stabilise the world's climate

To provide the necessary financial resources (a big part of the \$100bn promised to the GCF), central banks would carry on with what many of them are doing already: buying bonds with newly created money. But instead of buying existing private and public bonds, central banks would buy our proposed green climate bonds, which would be issued by the GCF, to finance climate change mitigation and adaptation projects.

Under our proposals, these bonds would be for the long term (100 years or more) and would only bear small, if any, interest rates. They would become permanent assets of central banks and form the foundation of regular money creation, ensuring that the GCF is at the receiving end of new and non-repayable money.

For developing countries, the advantages would be immediate access to the foreign exchange required for the construction of new sustainable infrastructure. If the central banks of developed countries purchased green climate bonds, they would benefit from an increase in demand for their goods and services. The purchase of such bonds would also finance new exports, which would revive domestic economies and lead to job creation.

Climate protection investments and the transition to 100% renewable energy are not only a moral obligation to future generations, but are also socially and economically beneficial today, as has already been shown in hundreds of communities around the world.

If the GCF is given the financial power to expand demand for the renewable energy infrastructure required to reach the 1.5C goal, capitalism will have shown that it can meet the climate challenge.

All You Need to Know About the Safety of Plastic Bottles.

We have been using plastic bottles all our lives. But let's face it - we all tend to be a bit sceptical about the actual consequences they have on our health. We are right in knowing they contain harmful chemicals, but the degree of this harm varies according to the type of plastic used. You may never have been informed of the ways plastic bottles harm us and which types of plastic cause most harm - but the answers all lie at the bottom of your bottle.

If you flip your plastic bottle over, you are likely to see letters marked on or close to its base. Some common ones include PET, PVC, HDP and PP. If these don't sound familiar to you, you're not alone - we are going to help you decipher their meaning. This will hopefully help you make wiser choices when buying water bottles.

Here's what each label means:

1. PET or PETE:

This one probably sounds familiar. It is the most commonly used plastic material in packaging and consumer products, used especially for water and soft drink bottles. This kind of plastic is only intended for single use and is difficult to decontaminate, meaning that repeated use can be harmful. The more you use it, the higher the risk of leach and bacteria. Also, the metals and chemicals released by this material may tamper with our body's hormonal balance.

2. HDP or HDPE:

HDPE is a harder type of plastic often used for milk jugs, detergent bottles, oil bottles, toys and some plastic bags. Experts claim that this is the safest kind of plastic that you can choose when buying bottled water, because it barely releases any chemicals. This means your water will be cleaner, hence causing minimal harmful effects on your health.

3. PVC or 3V:

This symbol indicates the use of PVC, a highly toxic plastic that is soft and flexible, and is generally used for food wrapping, oil bottles, teething rings, toys, and blister packaging. The chemicals it releases are said to have serious consequences on our body, since they pose effects on our hormones. Experts suggest to avoid packaging made from the PVC and try to find an alternative to it.

4. LDPE:

Although this type of plastic does not release chemicals into the water, you are unlikely to see this label on your water bottle, because the LDPE material is not used in its production. Rather, you would find it in food packaging, in the case of which you should still try to avoid it. LDPE may still release highly dangerous chemicals in the foods you eat.

5. PP:

Yogurt cups and syrup packing are made of this white-colored or semi-transparent type of plastic, referred to as PP (polypropylene plastic). This kind of material is tough, lightweight and heat-resistant. This material won't melt easily if heated. Overall, it is a rather safe type of plastic, and it can also block out moisture, grease and chemicals.

6. PS:

PS stands for Polystyrene - a type of inexpensive and lightweight plastic that is used for a range of products. We have often used this type of plastic- disposable Styrofoam drinking cups, egg cartons, plastic picnic cutlery, and take-out "clamshell" food containers. PS should be restricted to short-term usage only, since dangerous carcinogenic substances could be released from it when heated.

7. PC or non-labeled plastic:

This is potentially the most dangerous plastic found out there. If you ever find the "PC" label on plastic bottles (or no label at all), make sure you steer clear of it as much as possible. It refers to a catch-all category for polycarbonate materials and "other" plastics, which contain chemicals that are likely to leach into the food or drink products it makes contact with. Examples of the use of this material include sports water bottles and food containers. It is highly discouraged to reuse or recycle this type of plastic.

Note: These kinds of plastics are not only used for food and drink products. We also find them in everyday items in which they may not directly affect our health, such as water pipes, signs, clothing, furniture, shower curtains, textiles, stationery, insulation, diapers, medical equipment, etc. Nonetheless, we should always be knowledgeable about the materials and chemicals included in the products we buy, taking extra care on the ones that contain food and drinks.

By separating nature from economics, we have walked blindly into tragedy : Economic policy must be combined with climate and technology if we are to stand any chance of saving ourselves, argues the prominent American economist: Jeffrey Sachs.

The article is available at: <http://www.theguardian.com/global-development-professionals-network/2015/mar/10/jeffrey-sachs-economic-policy-climate-change> .

The hubris is our ongoing neglect of human-induced climate change, leading to climate disruptions around the world.

Welcome to 'the age of sustainable development'. We are learning a hard truth: the world economy has crossed the "planetary boundaries" of environmental safety. We now face a momentous choice. Will we continue to follow our blind economic model at growing threat to humanity, or will we choose a new direction that finally combines economic progress with social justice and environmental safety?

The Earth Institute of Columbia University recently detailed how Syria's disastrous war was triggered in part by a devastating drought that itself was a signal of long-term drying in the eastern Mediterranean.

Others have used sophisticated climate models and a deep reading of past climate history to show that California's extreme drought is a foreshadowing of mega-droughts ahead in the 21st century in the US southwest and mid-plains states, as a result of human-induced climate change.

We have been walking blindly into tragedies and more will come unless we learn to open our minds and our ethical reasoning to the current crisis. **The book: The Age of Sustainable Development by Jeffrey Sachs** is an attempt to help the public understand both the growing crisis and the ways to overcome it.

We need a new way of thinking, one that tightly links the human-made world of economics and politics with the natural world of climate and biodiversity and with the designed world of 21st century technology. Consider my own home field of study, economics.

The complete separation of economics and nature was the predominant way of economics thinking and teaching until very recently. **Libertarian free-marketers in the US and UK hold to this day that climate change must be a hoax because if it were true it would overturn the laissez-faire economic philosophy.**

Economics also needs to team up again with the engineering world, to realise that the economy is a designed system, and one in which smart thinking is required to get the right design. Urban historians know that great cities emerge from a combination of planning and self-organisation; and in the same way, safe and prosperous economies in the 21st century will need a **combination of targeted technologies (e.g. zero-carbon energy, smart urban grids, and climate-resilient agriculture); forward-looking infrastructure plans at the local, national, and regional levels; and the usual surprises, breakthroughs and evolution of market-based change.**

Sustainable development offers not only a new analytical frame, but also a new way of choosing our common future. It suggests an ethical framework that is consistent with the great moral traditions of both East and West. At the core of sustainable development is the normative idea that we must combine economic prosperity with social justice and protection of the physical world. At this advanced stage of environmental threats to the planet, and in an era of unprecedented inequality of income and power, it's no longer good enough to chase GDP. **We need to keep our eye on three goals – prosperity, inclusion, and sustainability – not just on the money.**

Fortunately, if we can just draw our attention to these broader goals, we will learn that they are easier to achieve than we might think. We are the inheritors and beneficiaries of one of the great technological revolutions of human history – the digital age – which rivals steam and electricity in its fundamental power to advance the global economy, and to do so in harmony with environmental needs. **A zero-carbon global energy system, for example, is within reach thanks to breakthroughs in renewable energy and efficient energy transmission and use.**

We have entered a new age of sustainable development whether we like it or not, even whether we recognise it widely or not. **The sustainable development goals provide new guideposts and measuring posts for prosperity, justice, and environmental safety in our fast-moving, rapidly changing, and dangerously unstable world.**

Unprecedented collaboration to solve poverty and climate change : The SDGs have been set and a climate target agreed. The only question that remains is how the international community will meet them. For the first time the world has agreed both a vision and a pathway for clean sustainable development.

The article is available at : <http://www.theguardian.com/global-development-professionals-network/2016/jan/20/new-global-challenges-need-unprecedented-collaboration> .

Through the contributions of 188 countries, as well as thousands of additional commitments from states and cities, companies, foundations and international organisations, the Paris Agreement on Climate Change has given the world an ambitious goal for climate action.

The UN climate talks in Paris created important political momentum to get something meaningful done on climate change – momentum that is vital to spur aggressive emissions reduction and to cement a “clean” development dimension to the new sustainable development goals (SDGs) agreed in September.

The agenda for delivering this development now rightly intertwines inclusive economic growth, ambitious improvements in our social infrastructure for education, gender parity and improved health, as well as lower emissions.

The challenge is enormous. The Paris Agreement recognises that the sum of countries’ Intended Nationally Determined Commitments (INDCs) for climate action, as it stands, will not be enough to keep within the agreed goal of staying below a 2°C rise.

The extra climate commitments made at Paris by countries and “non-state actors” – businesses, investors, cities, provinces and various action alliances – can provide a strong additional contribution to the INDCs, but these actors face daunting challenges because many of these commitments are interdependent. Industry often benefits from and needs policy reform to help transform to zero-emissions systems, governments usually need private and public finance these days, and financiers need well-structured projects, championed by the public and the private sector, to invest in.

In many cases success will be possible only through bold collaborations with diverse actors – public and private, incumbent and innovator, domestic and international. Think about the scale of new policies, projects and finance that will be required to move the world’s major cities towards becoming clean, sustainable urban systems by 2030. That’s the scale of the challenge the sustainable development goals and Paris Agreement have set us.

This ambitious new landscape requires innovative and to some extent unprecedented collaboration. Even those within the United Nations and other global organisations such as the World Bank recognise it will take more than the efforts of, for example, UNEP, the UNDP, and the UNFCCC to meet the new combined environment, development and climate goals.

Likewise, the CEOs of even the largest companies committed to climate action acknowledge the important role of governments (at city, state, national and international levels) to help them accelerate action. The Carbon Pricing Leadership Coalition is a good example of this new environment. Through interaction between international organisations, governments and companies, about 40 countries and 23 regions, states and cities now have mechanisms to put a price on carbon, representing about 12% of global greenhouse gas emissions. This alliance would have been unthinkable even five years ago.

Talk about the potential of such public-private partnerships and alliances abounds. To mobilise the resources, innovation and actors required to start delivering a clean, sustainable development agenda as soon as possible it is generally accepted that we require a new kind of operating system for development. **Indeed, goal 17 promotes a new global partnership agenda for action to meet all the other goals.**

We will need a community of action to create new public-private networks and platforms in order to identify and deliver specific, large-scale partnerships across a number of key global economic sectors and geographies, particularly in emerging economies. A decade-long delivery imperative for the public and private sectors to carry out together to meet both climate and development goals is the need of the hour.

The platforms for public-private cooperation provided by the World Economic Forum Global Challenge Initiatives have achieved many things over the past year, such as the Sustainable Development Investment Partnership (SDIP), the Tropical Forest Alliance, and Grow Africa and Grow Asia addressing food security.

GETTING BACK ON TRACK : A small cake factory provides skills training and an economic lifeline for displaced Yazidi women : Story by United Nations Development Programme.

The story is available at : <https://undp.exposure.co/getting-back-on-track?slow=1> .

The Dost Bakery, a small cake factory, was established in Iraqi Kurdistan in the autumn of 2015. Dost means “friend” in Kurdish, and the bakery is indeed run by ten friends, all women and most of them displaced members of the Yazidi minority, now living in and around the Sharia Camp near the city of Dohuk.

After some initial start-up help and training from UNDP, the women now run the factory, serving the local community of displaced persons and learning practical skills that allow them to grow into roles carrying more weight and responsibility. More than 126 families benefit directly from the project along different steps of the process.

In 2014 fighters from the Islamic State of Iraq and the Levant (ISIL), also known as Daesh, attacked the city of Sinjar. Most of the local Yazidi community were forced to flee the area. Large numbers of displaced suddenly arrived in Dohuk, moving into camps, informal settlements or unfinished buildings.

In Iraqi Kurdistan, the Yazidis are one of the groups most-affected by the Daesh terror. Men of the community face a choice between joining the fight or being killed. Even children are trained to fight, and women are often trafficked for sexual exploitation. Most of the Yazidis were also forced to adopt the fundamentalist religious beliefs of the group.

Beyan, one of the bakers, comments: "Of course we would love to go back to Sinjar. That is where our life is. All we do here is temporary, we can't build anything. We will not go back before the situation stabilizes though. It would cost our lives."

Many of the bakers bear the physical and mental scars of facing life-threatening violence. For them, getting back on track means rebuilding their lives through work, and a feeling of purpose.

Since the start of the project, 10 Yazidi women in the bakery have gone on to become managing partners in the factory business. As the women's economic independence grows, so does their position in society and the respect they command. Many have obtained formal certification for their new skills.

EL NINO AND HEALTH : Global Overview : January, 2016 : WHO.

The report is available at : http://www.who.int/hac/crises/el-nino/who_el_nino_and_health_global_report_21jan2016.pdf?ua=1 .

The El Niño phenomenon affects rainfall patterns and temperatures in many parts of the globe, most intensely in the tropics with significant impacts on human health. El Niño 2015-2016 is currently affecting the health of millions of vulnerable people in the Horn of Africa, southern and eastern Africa, South Pacific, Central America and South Asia.

Adverse climate conditions are expected to peak in January 2016 but the health consequences will likely worsen as the full effects of El Niño are felt throughout 2016:

- Extreme drought and acute water shortages affecting millions of people in the south western Pacific (4.7 million), Central America (4.2 million) and southern Africa (30 million) will extend in the first half of 2016 leading to increased malnutrition, diarrhoeal diseases and an additional burden on already constrained health services.
- In the Horn of Africa, the devastating drought which has affected 22 million people has been followed by unusual heavy rains causing a high risk of vector-borne disease and communicable disease outbreaks, especially among displaced populations and those with high levels of malnutrition.
- El Niño is causing heavy rains and flooding in eastern Africa with a risk that the ongoing cholera epidemic in Tanzania will spread, and other countries may experience cholera outbreaks. There is also a risk of resurgence of Rift Valley Fever.
- Following the severe flooding in Paraguay in December which led to evacuations of more than 100 000 people, wetter conditions are expected to cause more flooding in South America, particularly in Peru, Ecuador and Bolivia, with increased risk of vector-borne diseases, respiratory infections and damage to health facilities.

El Niño 2015-2016 is one of the most severe in recent decades. It is comparable to El Niño 1997- 1998 which led to widespread drought-related famines and malnutrition in the Horn of Africa and Asia-Pacific, a significant increase in vector-borne diseases including malaria epidemics in Ethiopia and dengue fever outbreaks in Indonesia and the Pacific Islands. Intense flooding occurred in Central and South America and East Africa that led to an increase in vector- and waterborne diseases. Nearly 90 000 people were infected with Rift Valley Fever

in Kenya, Somalia and Tanzania. There were cholera outbreaks in Tanzania, Kenya, Chad, Somalia, Nicaragua, Honduras and Peru. Major damage and loss of health infrastructure in Peru and Ecuador had long-term impacts on the availability of health services.

Ministries of Health, WHO and health sector partners will continue to monitor the health risks associated with El Niño climate conditions throughout 2016 based on information provided by the World Meteorological Organization, IRI and national meteorological and hydrological services.

El Niño conditions increase the probability of extreme weather in certain regions in certain seasons that exacerbate and trigger a range of health risks. It also increases the predictability of these events. The magnitude of health impacts associated with El Niño will vary depending on how intensely El Niño influences the local climate of an area as well as local health vulnerabilities, levels of preparedness and response capacities.

Health consequences associated with extreme weather conditions include:

- **Both droughts and flooding may trigger food insecurity, increase malnutrition and thus enhance vulnerability to infectious diseases;**
- **Droughts, flooding and intense rainfall (including cyclones) may cause loss of life, significant population displacement, water and vector-borne disease outbreaks and may damage or close health facilities, thus reducing regular health service delivery and restricting access to healthcare during the emergency and well beyond the event;**
- **El Niño-related warmer temperatures may result in vector-borne disease epidemics in highland areas, which are too cold for vector survival and disease transmission at other times;**
- **Damaged or flooded sanitation infrastructure may lead to water-borne diseases;**
- **Extremely hot and dry conditions may lead to heat waves, wildfires, increased smoke and deteriorated air quality, causing or exacerbating respiratory diseases and heat stress;**
- **Populations already affected by a humanitarian situation (e.g. in internally displaced persons and refugee camps) face heightened risk of suffering health consequences of either wet or dry conditions.**

BEEHIVES FOR A BETTER LIFE : Beekeeping in the mountains of Uganda helps to create sustainable livelihoods by United Nations Development Programme.

The story is available at : <https://undp.exposure.co/beehives-for-a-better-life?more=true> .

Victoria Namalikyie is better known in her community as “Mama Beehive”. With a broad smile and obvious pride she asserts, “I am famous with the bees. They know me.” Victoria is a beekeeper and mother of 7 in Eastern Uganda; she is an inspiring example of how entrepreneurial activity can play a vital role in improving lives and conserving the environment. “For me I have benefitted from beekeeping by being able to educate my children.”

In the mountains of Eastern Uganda, beekeeping is alleviating stress on the natural environment by providing an alternative livelihood option. Profits from Victoria’s new honey sales are paying for her children’s school fees and uniforms, securing a firm investment in a better life for the next generation. Her eldest son’s pride in his mother’s industriousness is evident: “Agriculture is the backbone of Uganda. All of our solutions can be found in growing

and producing more sustainably”, says Wozisi. His point also highlights the importance of agro-ecological enterprise in helping mountain communities in Uganda adapt to climate change.

SUSTAINABLE AGRICULTURE TO ADAPT TO CLIMATE CHANGE

Uganda faces several climate change-related challenges to its livelihood and development. Increasing temperatures are affecting crop production, and more intense rainfall is contributing to landslides and flooding in mountain regions, impacting food security and economic development. Deforestation of mountain slopes and loss of vegetation along river banks are combining with intense rainfall to cause erosion and loss of topsoil. But sustainably managed agriculture, incorporating modern beekeeping, tree planting, increased forage coverage, and raising yields on existing lands, can alleviate these pressures.

Agro-forestry activities serve both ecological and economic purposes for this community. These sustainable practices render otherwise precarious lands as productive and integrated into a healthy ecosystem – the basis for Mama Beehive’s children’s future.

Beekeeping is one of these activities, utilising nature on a sustainable basis to produce honey for sale. This helps communities, whose livelihoods may be threatened by climate change, to diversify their income and spread their risk.

With support from the Mountain Ecosystem-Based Adaptation (EbA) Programme, the Masaba Integrated Beekeeping Organisation received 143 beehives, as well as practical trainings in making beehives, and in the siting of hives and harvesting of honey. The bees are not only providing honey - with the community planting flowers and trees to attract the bees and enhance their productivity, their presence is also encouraging better natural resource management through revegetating and stabilizing degraded river banks.

Since the beehives are strategically located amongst the woodlots along the river banks, their presence, and the community’s aversion to getting stung by them, is also preventing erosion of the banks and positively impacting on the cleanliness of the water. “Beekeeping is crucially important for agricultural well-being; for it represents and symbolizes the natural biological interdependence that comes from insects, pollination and production of seed in addition to helping people to strengthen livelihoods and ensuring maintenance of habitats and biodiversity.” National Programme Coordinator, Mr. Paul Nteza. By promoting innovative approaches to economic development that are socially, culturally, and environmentally appropriate, the Mountain EbA Programme has enhanced social and economic resilience for communities affected by climate change.

MOUNTAIN EBA PROGRAMME

The global EbA in Mountain Ecosystems Programme is a partnership between UNDP, UNEP and IUCN, with funding from the German Government (BMUB)’s International Climate Initiative. By using sustainable management, conservation and restoration of ecosystems, as part of an overall EBA strategy, the Programme aims to reduce the vulnerability and enhance the resilience of select fragile mountain ecosystems and their local communities to climate change impacts.

The promoted EBA measures carefully take into account anticipated climate change impact trends to help communities continuously adapt to a changing climate and increasing uncertainty. This global partnership also involves national and regional government agencies, civil society and local communities in three countries (Uganda, Nepal and Peru).

The activities supported by UNDP in Zesui are part of a broader suite of EbA measures supported by the Programme in Uganda. Championed by the Government of Uganda and

working with the Ministry of Water and Environment, these efforts are expected to contribute to maintaining natural ecosystems, and to produce ecological, economic, social, and health benefits for the community.

Mind your step : The land and water footprints of everyday products.

The report is available at : ftp://195.37.114.16/disk1/Library/Adlib_Catalogued_books/587_mind-your-step-report-76803.pdf .

Growing global demand for consumer goods is putting key resources – and our economy – under increasing pressure, yet all too often companies are not fully aware of the true extent of their natural resource demands. This report explores the environmental footprints of everyday products, using a footprinting approach to measure the amount of land and water needed across the product's supply chain. It argues that this information is crucial both to business and to policy makers in understanding and managing the full extent of our resource use in the face of growing future constraints.

Friends of the Earth commissioned environmental data analysts Trucost to estimate the total land and water footprint of seven generic everyday products: a cotton t-shirt, a smartphone, a cup of tea, a cup of coffee, a chicken curry ready meal, a pair of leather boots, and a chocolate bar.

We also asked Trucost to estimate the company and sector footprints for three of the products (t-shirts, chocolate bars and smartphones) and the toy and game sector to gain an insight into the scale of resource demand generated by these products.

The results reveal the intensive resource demands of some products – a single smart phone for example requires 18m² of land and nearly 13,000 litres (13 tonnes) of water. With a billion smartphones sold worldwide, the smartphone industry uses a significant amount of water. But the findings also reveal the importance of looking at the different stages of the supply chain.

A pair of leather boots requires 50m² of land and 25,000 litres of water, yet if the waste from the leather tanning process is treated in a waste treatment plant, water demand is reduced to 14,500 litres. How goods are made, how resources are treated, and how they are packaged all make a difference to the overall footprint.

Products that are made from crops, or from animals that are fed on crops (e.g. cotton clothing, leather goods, confectionary etc.) tend to depend on access to large quantities of blue and green water (freshwater and rainwater), yet supplies of blue and green water face growing constraints in some parts of the world as a result of climate change. Products that use even tiny quantities of heavy metals and minerals (e.g. smartphones, electronic devices, LED lights) generate large quantities of pollution, which if not treated efficiently, pollutes water courses.

The 'grey water' required to safely dilute pollution presents another significant demand on water supplies which may already be stressed. If sufficient grey water is not available, or the pollution load is too high, communities may lose access to clean water, with the pollution posing a risk to agriculture, human health and biodiversity.

Analysis of company and sector level resource use revealed the scale of land and water use

needed to drive the global economy. These estimates are based on publicly available financial data for the individual companies and the sectors they operate in. The actual land and water footprints per unit turnover of these companies will vary according to the different mix of products that they make (e.g. Samsung Electronic makes fridges but Apple doesn't) and the different resource efficiency policies they employ. Nevertheless these estimates give an indication to company shareholders and directors as to the companies demand for resources, which of course also means its exposure or vulnerability to shortages in and competition for those resources.

The estimates are also a valuable signpost to policy-makers as to the implications of the growth in the various sectors of the economy, the vulnerability of society as a whole through its dependence on these sectors, and the sorts of policies (such as more and better reuse and recycling) that should be supported to address these concerns.

An estimate for the land-use for ten of the top clothing retail companies showed that their combined land requirements covered an area almost four times the size of Greater London. **In the confectionary sector, market leader Kraft's estimated land-use extended to an area the size of Belgium, with water-use equivalent to 7 million Olympic-sized swimming pools.**

Across the confectionary sector as a whole, 95% of the water demand was for green water. In a world undergoing climate change the reliability of previously predictable rainfall may no longer be taken for granted.

Sector-level analysis also revealed the significance of resource demand for packaging. In the clothing retail sector, 20% of the land and water footprints were attributed to packaging materials, while in the toy sector, packaging accounted for 84% of land-use. Replacing plastic packaging with plant-based materials, such as cardboard and bioplastics, increases the land and water footprints for these products.

This report focuses on the land and water footprints of the products analysed, not the full resource impacts.

To obtain a fuller picture, it would be necessary both to use company specific rather than generic data and to also consider the material resource use and the greenhouse gas footprint. More and more companies are now measuring their greenhouse gas emissions, and some are also measuring water use. But far greater progress is needed in accounting for all four footprints, as well as far greater transparency in revealing the levels of resources companies use.

Friends of the Earth believes there is a limit to what can be achieved through voluntary action and we have been calling for stronger legislation to require large companies to report on the social and environmental impacts of the products they sell, including through the supply chain.

Footprints are a valuable tool in delivering this and could provide companies, policy makers and governments with a much better understanding of their resource dependency.

Friends of the Earth and its allies are also calling for the UK Treasury to conduct an assessment of national resource consumption and dependency: The 2006 Stern report on the economic impacts of climate change concluded that the UK's long-term economic health was far better served by weighting effort towards avoiding, rather than adapting to, climate change.

Investors, manufacturers and other business leaders consistently sound the alarm that rising resource costs and insecurity of supply are real risks to their companies and the UK and global economy. Meanwhile the environmental destruction and related social upheaval caused by unfettered extraction of resources continues unabated.

Skill up or scale down ambitions : How fast India builds its renewable energy capacity will depend in a very big way not just on political will and policy announcements but on how quickly it can find and train thousands of skilled workers .

The article is available at : http://www.business-standard.com/article/opinion/arunabha-ghosh-anjali-jaiswal-skill-up-or-scale-down-ambitions-116021501107_1.html .

The current rate of installing new electricity capacity in the United States is about 10 gigawatts (GW) per year. When China was growing at 10 per cent, it was installing about 100 GW annually.

India is somewhere in between, installing 28.6 GW in 2015, 21.7 GW in 2014 and 22.9 GW in 2013. Building energy infrastructure quickly is a daunting proposition. It needs money, material, and men (and women).

In just a few short years, India has become a world leader in clean energy. In 2010, when India launched the National Solar Mission with a target of 20,000 megawatts (MW) of solar power by 2022, it had less than 20 MW installed. Today, India has crossed 5,000 MW. The government has dramatically increased the solar target to 100,000 MW by 2022.

Yet, little discussion occurs on the issue of the skilled labour needed to design, construct and operate projects. This is odd, since India needs to create at least 10 million new jobs every year. Understanding the job potential in solar power and matching it to specific skills would be a fillip to the solar mission as well as Skill India.

India's 100,000 MW solar-target could generate more than one million jobs by 2022, primarily in two key phases of a solar project's lifecycle: construction and commissioning (806,800, accounting for 72 per cent of new solar jobs), and ongoing operations and maintenance, or O&M (263,400; 23 per cent of new solar jobs). These projections do not include jobs created in the manufacturing sector, another significant jobs opportunity.

But these jobs will not get created automatically. They would have to be matched with requisite skills. **Our analysis finds that for both rooftop and utility-scale solar projects, India needs 210,800 skilled plant design and site engineers, 624,600 semi-skilled technicians for construction of solar projects, and 182,400 workers in various low-skilled jobs in operations and maintenance. Another 81,000 skilled personnel are also needed for O&M and about 17,600 for business development.**

In order to meet the rising demand for a skilled or semi-skilled workforce, three key areas need urgent attention.

First, ramp up training programmes through Skill India. Solar sector employers find the poor quality of current programmes as the biggest hurdle. They do not meet industry needs and are often not located near solar hubs where they are most needed. High-quality and accessible certification programmes, which reduce the need for and costs of on-site

training, are a big opportunity. MNRE's newly formed Skill Council for Green Jobs should consider these gaps when formulating future training programmes. Under Skill India, renewable energy training clusters could be located near ongoing solar energy projects. At least one prominent solar training institute could be established in each region projected to be a hub for major solar activity (e.g., Gujarat, Rajasthan, Karnataka). In the interim, mobile training courses, where trainers move from one location to another, would add value.

Secondly, focus on semi-skilled jobs in construction, commissioning and operations. Our survey respondents emphasised that some of the skills most challenging to find were not the most technical skills; rather they are basic construction and commissioning skills, including electricians and PV installation technicians. Also, there are greater opportunities in long-term employment via semi-skilled jobs in O&M. Training programmes focused on fundamental construction, commissioning and operations skills should be expanded across the country.

Thirdly, use the new ISA framework to accelerate capacity building. Last month, Prime Minister Narendra Modi and President François Hollande laid the foundation stone of the headquarters of the International Solar Alliance (ISA), an initiative that India spearheaded at the Paris climate negotiations in late 2015. **The ISA can serve as an excellent platform for skill development.**

The National Institute of Solar Energy, where the ISA Secretariat will be located initially, has been training professionals, from India and elsewhere, for several years. The ISA could establish certified training programmes, help to build common curricula in close consultation with the private sector, and make the workforce qualified for deployment within India and outside.

Solar energy holds the promise to tackle, in part, several daunting challenges at once by increasing clean energy access, reducing lethal air pollution, and addressing climate change. Creating countrywide employment opportunities, if based on appropriately designed skill building initiatives, would add to the sector's growing attractiveness.

Carbon footprint of milk production under smallholder dairying in Anand district of Western India : A cradle-to-farm gate life cycle assessment.

The article is available at :

https://www.researchgate.net/publication/293799729_Carbon_footprint_of_milk_production_under_smallholder_dairying_in_Anand_district_of_Western_India_a_cradle-to-farm_gate_life_cycle_assessment .

Climate change is transforming the planet's ecosystem and threatening the well-being of current and future generations. Livestock are believed to be a significant contributor of climate change, representing 14.5% of global anthropogenic greenhouse gas (GHG) emissions. Worldwide, dairy and beef production account for 20% and 41%, respectively, of the emissions of this sector followed by buffalo milk and meat, with 8% of the emissions. Rapid population growth and shifting trends in dietary patterns towards more dairy and meat products will further result in increased emissions unless production efficiencies and management are significantly improved.

Mixed crop–livestock systems produce the bulk of livestock products in the developing world, i.e. 75% of the milk and 60% of the meat, and also employ many millions of people in farms, formal and informal markets, processing plants and other parts of supply chains. These

systems convert waste material and other resources of limited alternative use into human-edible products and other goods and services. Livestock farms in developing countries are predominately managed by smallholders, with 80% of landholdings being smaller than 10 ha (FAO2012). In small holder dairy systems that integrate crop growing with livestock raising, livestock are kept not only to produce milk or meat, but also to produce manure for fertilising croplands and to pull ploughs, and are also considered as major capital assets.

Thus, in contrast to industrialised countries, where livestock are produced in 'industrial' production systems for single products (such as milk, beef), farm animals in such smallholder settings are predominantly 'multi-functional'.

In recent years, the concept of life cycle assessment (LCA) has proven to be useful because of its potential to assess the integral environmental impacts of agricultural products.

Developing countries such as India are good candidates for LCA research because of the large contribution of smallholder dairy system to the production of agricultural products such as milk.

Therefore, the aim of the present study was to explore the carbon footprint of milk production under the multi-functional smallholder dairy system in Anand district of Gujarat state, western India.

A cradle-to-farm gate LCA was performed by covering 60 smallholder dairy farms within 12 geographically distinct villages of the district.

The average farm size was 4.0 animals per farm, and the average number of each category of animal was 2.5 lactating cows, 1.4 lactating buffaloes, 1.8 replacement cows, 1.6 replacement buffaloes, 2.0 retired cows, 1.3 retired buffaloes and 1.0 ox per farm.

The emissions of carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O) on CO₂-equivalent (CO₂-eq) basis from feed production, enteric fermentation and manure management were allocated to **Fat- and Protein-Corrected milk (FPCM)** on the basis of mass balance, price and digestibility.

Emissions of CO₂, CH₄ and N₂O from cattle contributed 11.0%, 75.4% and 13.6%, respectively, to the total greenhouse gas (GHG) emissions.

The contribution of CO₂, CH₄ and N₂O from buffalo as 8.2%, 80.5% and 11.3%, respectively, to the total GHG emissions of farms.

The average carbon footprint (CF) of cow milk was 2.3, 1.9 and 2.0 kg CO₂-eq/kg FPCM on mass, economic and digestibility basis, respectively, whereas for buffalo, milk CF was 3.0, 2.5 and 2.7 kg CO₂-eq/kg FPCM, respectively.

On the basis of digestibility allocation, emissions from retired (>10 years of age and incapable of or ceased producing milk) cows and buffaloes were 1571.3 and 2556.1 kgCO₂-eq/retirement year, respectively.

Overall, the CF of milk production under the smallholder dairy system in Anand district was 2.2 kg CO₂-eq/kg FPCM, which reduced to 1.7 kg CO₂-eq/kg FPCM when milk, manure, finance and insurance were considered as economic functions of the smallholder system.

The CF was lower by 65% and 22% for cow and buffalo milk, respectively, than

were the estimates of FAO for southern Asia, and this was mainly attributed to difference in the sources of GHG emissions, manure management systems, feed digestibility and milk production data used by FAO.

Euphoria about smart cities: Unreal in pampered India . If the civic facilities in Mysore (including the actual cleanliness in all its localities) can be considered as acceptable, what is the status of other cities in the country; especially those cities which are not in the list of 10 top cities? It must be pretty bad. It may look hard on ourselves; but from a citizen's point of view it is difficult to call any city in India as acceptably clean. Shall we not raise the bar by a considerable margin? Can we not specify much better standards? If we do not know what to specify can we not look at few examples of clean cities from around the world; if not for all civic amenities, at least for cleanliness in public places, roads, footpaths, drainage, etc.?

The article by Sunita Narain, "Unreal in pampered India" is available at : http://www.business-standard.com/article/opinion/sunita-narain-unreal-in-pampered-india-116021400697_1.html .

According to Sunita Narain, "Unreal in pampered India", it is mentioned: Many years ago, when Delhi's air pollution was as high as it is today, my colleague Anil Agarwal and I had gone to meet a high-ranking, responsible government official. This was in the mid-1990s, when air was black because we did not even have the most rudimentary fuel quality and emission controls. The official was genuinely stumped by our demand that government should take steps to control runaway pollution. He kept asking, "But is Delhi really polluted?" I was equally flummoxed; air was foul and black. How could he miss it?

Then I realised that his world was not mine to see. He travelled from his home, located in luxuriantly green Lutyens' Delhi—also known as the New Delhi Municipal Council (NDMC), where government resides—to his office, also in the same verdant surroundings. Nowhere did he see any dirt; nowhere did he smell the air. And as it was not seen, it could not exist, so nothing needed to be done.

This incident came to my mind when I read that the Government of India had decided to select New Delhi—Lutyens' Delhi—for the smart city makeover. Under this scheme, 20 cities have been selected based on "rigorous" criteria to improve urban living. The Government of India will now provide funds and expertise to make the city "smart"—defined as innovative approaches to improvement in urban services. This means that the government will spend on facilities to make its own living area even better and more removed from the squalor, poverty and pollution of the rest of India.

The announcement declaring New Delhi Municipal Council a winner of the smart city challenge came when the rest of Delhi was drowning in urban waste. Municipal workers had declared a strike alleging non-payment of their dues. The contrast between where the government lives and where the rest of the citizens live could not have been more evident and striking. The fact that the government was now investing even more to make its own world better is a damning indictment of its non-inclusive approach to urban India.

Just think. This is India's gated community of elite access. Of the total land area of Delhi, Lutyens' city—named after the British urban planner and constructed to reflect the grandeur of the colonial state—is only three per cent. The Government of India owns over 80 per cent of the land, including the buildings in the Lutyens zone. No democracy is at work here. The NDMC is a council and not a corporation, so it is headed not by an elected representative but by a bureaucrat.

It is also a parasite of a city; it has the highest water footprint as compared to any other part of India. Its daily per capita water supply is 462 litres, while in other parts of the same city people get below 30 litres. Even as per government's own norms, which specify highest water

supply as 150 litres per capita per day, this is excessive, indeed gluttonous and wasteful. This water inequity is shameful and should have, in fact, disqualified Lutyens' Delhi from any smart city challenge in my view.

It is also highly land-extravagant. While the city of Delhi has been imploding with a decadal growth rate of almost 50 per cent, the NDMC area is so privileged that it has a negative decadal growth rate of 2 per cent, according to its own sub-zonal plan. In other words, people are not welcome in this gated city. In this city of India, over 30 per cent of the land is under recreational purposes. This is so out of sync with the rest of the city and indeed the rest of India that is fighting for its inches of green spaces.

But even with all this land, the gated city of NDMC does not manage its own waste. This is sent to the rest of Delhi's landfills. Its land is too precious for its waste. It does a lot of "cute" stuff like segregation of waste and even involves rag pickers in collecting waste from households. But the bulk of its waste goes to Okhla, where the compost plant is dysfunctional, and the rest to Delhi's overflowing Ghazipur landfill. This is when it has no shortage of funds as government spends on itself without any questions.

New Delhi is not a smart city for all these reasons. It is certainly not a city that can be replicated in the rest of India. It is resource-inefficient, highly iniquitous and highly environmentally unprincipled. This is not what smart cities should stand for.

Former New York mayor and billionaire Michael Bloomberg's foundation, Bloomberg Philanthropies, is government's knowledge partner for the Smart Cities Initiative. This initiative will define what smart cities will mean for India and what we must aspire to. It is important for this reason alone that they must choose wisely. The symbols of India's urban renewal cannot be cities for the elite and by the elite. This is not smart—not by a long shot.

According to Mr Shankar Sharma the above article is really reporting the truth. When Mysore city was declared as the cleanest city in the country for the second time in succession what came to his mind (being a resident of Mysore) is the poor standards we have kept for ourselves.

If the civic facilities in Mysore (including the actual cleanliness in all its localities) can be considered as acceptable, what is the status of other cities in the country; especially those cities which are not in the list of 10 top cities? It must be pretty bad.

It may look hard on ourselves; but from a citizen's point of view it is difficult to call any city in India as acceptably clean.

Shall we not raise the bar by a considerable margin? Can we not specify much better standards? If we do not know what to specify can we not look at few examples of clean cities from around the world; if not for all civic amenities, at least for cleanliness in public places, roads, footpaths, drainage, etc.?

Four billion people face severe water scarcity, new research finds: Water shortages affecting two-thirds of the world population for a month every year and the crisis is far worse than previously thought.

A new study, [published in the journal Science Advances](#), is the first to examine global water scarcity on a monthly basis and at a resolution of 31 miles or less. It analysed data from 1996-2005 and found severe water scarcity – **defined as water use being more than**

twice the amount being replenished – affected 4 billion people for at least one month a year.

The water scarcity crises is unfolding fast. Along with Climate Change this can pose a grave threat to the global peace and stability.

The article and the above map is available at:

<http://www.theguardian.com/environment/2016/feb/12/four-billion-people-face-severe-water-scarcity-new-research-finds#img-2>

Many thanks to all who contributed to this issue of Update!

If you have items to feature in the Updates, please send it to Solution Exchange for the Climate Change Community at : se-clmt@solutionexchange-un.net.in

Disclaimer: In posting messages or incorporating these messages into synthesized responses, the UN accepts no responsibility for their veracity or authenticity. Members intending to use or transmit the information contained in these messages should be aware that they are relying on their own judgment.



Copyrighted under Creative Commons License "[Attribution-NonCommercial-ShareAlike 3.0](https://creativecommons.org/licenses/by-nc-sa/3.0/)". Re-users of this material must cite as their source Solution Exchange as well as the item's recommender, if relevant, and must share any derivative work with the Solution Exchange Community.