



## Climate Change Community



### **Community Update No. 70: 2<sup>nd</sup> November, 2015 In this Issue**

#### **FROM THE RESOURCE PERSON**

Dear Members,

We are presenting the 70<sup>th</sup> Edition of the Monthly Community Update of the Climate Change Community of Practice (CoP), today. The 70<sup>th</sup> Edition for the month of October also incidentally coincides with the 70<sup>th</sup> Year of the UN, celebrated last month. The Secretary-General's message on the 70<sup>th</sup> UN Day is given below:

National flags are a mark of pride and patriotism in every country around the world. But there is only one flag that belongs to all of us. That blue flag of the United Nations was a banner of hope for me growing up in wartime Korea.

Seven decades after its founding, the United Nations remains a beacon for all humanity.

Every day, the United Nations feeds the hungry and shelters those driven from their homes.

The United Nations vaccinates children who would otherwise die from preventable diseases.

The United Nations defends human rights for all, regardless of race, religion, nationality, gender or sexual orientation.

Our peacekeepers are on the frontlines of conflict; our mediators bring warriors to the peace table; our relief workers brave treacherous environments to deliver life-saving assistance. The United Nations works for the entire human family of seven billion people, and cares for the earth, our one and only home.

And it is the diverse and talented staff of the United Nations who help bring the Charter to life.

The 70th anniversary is a moment to recognize their dedication – and to honour the many who made the ultimate sacrifice in the line of duty.

The world faces many crises, and the limits of collective international action are painfully clear. Yet no single country or organization can address today's challenges alone.

The timeless values of the UN Charter must remain our guide. Our shared duty is to "unite our strength" to serve "we the peoples".

To mark this anniversary, monuments and buildings across the world including India were illuminated in UN blue. As we shine a light on this milestone anniversary, let us reaffirm our commitment to a better and brighter future for all.

**Members are requested to provide their inputs to this new query given below which is being cross-posted with the Disaster Management Community regarding the importance of CCA/DRR in higher education. The reply date is 6 November 2015:**

*I work in the field of Climate Change Adaptation (CCA) and Disaster Risk Reduction (DRR) issues for the past 15 years, trying to mainstream CCA and DRR with communities, governments and academic institutions. The scenario has changed drastically, in the last few decades, our very existence is now threatened, primarily due to the adverse impacts of Climate Change resulting in increase in the frequency and intensity of Natural and Human Induced Disasters occurring the world over.*

*The adoption of Sendai Framework for DRR and Sustainable Development Goals -2015; Initiatives of Government of India such as Smart Cities, Digital India and Skilling Development Mission etc. requires re-looking at our higher education policy. In this regard, Government of India is in the process of preparing New Higher Education Policy, which hopes to address the needs of growing India and achieving the global sustainable development goals.*

*The MHRD is conducting a series of consultations across the country through online and through public inter-face. The MHRD has identified 20 Themes and Sub-Themes, related to Higher Education on which it is seeking inputs. The themes and sub-themes, however have not made references to Education for Sustainable Development that holds key to economic and sustainable development of the country.*

*As the MHRD is now seeking inputs on higher education for incorporation into the new NEP, members of Disaster Management and Climate Change Community of Practice are requested to share their thoughts, examples and references to enhance the vision and objectives of NEP, which needs to explicitly address Climate Change and Disaster Risk Reduction:*

- In the changing climate scenario and increasing disasters, what do you think is the importance of Climate Change Adaptation/Disaster Risk Reduction for inclusion in the New Education Policy on Higher Education?***
- Please share examples of Education Policies of other countries that have incorporated Climate Change Adaptation/Disaster Risk Reduction into their NEP.***

*The responses will be compiled and shared with the Ministry of HRD for their reference and will follow-up with the ministry for further action. It will also be forwarded to Ministry of Environment and Forests and NDMA for their follow-up to include Education for Sustainable Development in the new NEP.*

*The Supreme Court of India made environmental education compulsory in 1991 and issued a new directive in 2003 highlighting the need for environment education to be mainstreamed. Similarly, the National Disaster Management Policy-2009 envisages that Disaster Management be incorporated in Technical and Higher Education Institutions of the country.*

*Regards,*

*G. Prasad Babu,  
Geo Climate Risk Solutions,  
Rajahmundry, Andhra Pradesh.*

We thank you for your continued cooperation and support to this unique knowledge sharing platform facilitated by UNDP which is now in its 7<sup>th</sup> 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



### Historical Monuments Blued Across India on 24 October 2015 to celebrate 70 years of the United Nations

To commemorate the 70th anniversary of the United Nations, India lighted iconic landmarks across the country – blue – the official colour of the United Nations on Saturday, 24 October 2015.

The Day marks the anniversary of the entry into force of the UN Charter. With the ratification of this founding document by the majority of its signatories, the Organization officially came into being.

India joined over 60 nations globally in lighting over 200 iconic monuments, buildings, museums, bridges and other landmarks on UN Day.

The following World Heritage sites in India were lighted blue:

#### **In Delhi:**

- Red Fort
- Humayun Tomb
- Qutab Minar and its Monuments

**In Mumbai:**

- Chhatrapati Shivaji Terminus building

**In Darjeeling:**

- Darjeeling Railway Station (part of the Mountain Railways of India)

**In Shimla:**

- Kalka- Shimla Railway Station, Shimla (part of the Mountain Railways of India)

**In Ooty:**

- Udthagamandalam Railway station, Ooty (part of the Mountain Railways of India)

**QUICK FACTS:**

- India was among the original members of the United Nations that signed the UN Declaration at Washington on 1 January 1942. India participated in the historic UN Conference of International Organization at San Francisco and signed the Charter on June 26, 1945.
- Ms. Vijaylakshmi Pandit was the first woman to be appointed President of the UN General Assembly in 1953.
- Mahatma Gandhi's ideals of non-violence, peace and communal harmony have had a lasting influence on the UN. On 15 June 2007, the UN marked 2 October, the birth date of Gandhi, as the International Day of Non-Violence.
- India represented by Dr. Hansa Jivraj Mehta is credited for replacing the phrase "All men are born free and equal" to "All human beings are born free and equal" in the Universal Declaration of Human Rights.
- India is among the largest contributors to UN peacekeeping operations. India has contributed nearly 180,000 troops and has participated in more than 44 of the 71 UN peacekeeping mission operations; and 156 Indian peacekeepers have made the supreme sacrifice while serving in UN missions.
- India was one of the first countries to raise the issue of apartheid in South Africa at the UN in 1946; and helped form the UN Sub-Committee against Apartheid.
- India was one of the earliest signatories to the Convention on Elimination of all forms of Racial Discrimination adopted in 1965. India co-sponsored the landmark 1960 Declaration on Granting of Independence to Colonial Countries and Peoples.
- India has pushed for total nuclear disarmament and non-proliferation at the UN. It is the only nuclear weapons state to demand total elimination of nuclear weapons. In 1996, India along with 20 other countries submitted an action plan for phased elimination of nuclear weapons (1996 - 2020).
- As the largest democracy in the world, India played a leading role in the establishment of the United Nations Democracy Fund (UNDEF) along with the United States of America. India remains one of the largest funders of the UNDEF, which was founded in 2005 to strengthen democratic institutions and promote human rights around the world.

- **The UN declared 21 June as the International Day of Yoga, recognizing the holistic benefits of the timeless practice and its inherent compatibility with the principles and values of the UN.**

### **Ghost savings: Understanding the fiscal impacts of India's LPG subsidy**

The article is available at : <http://www.iisd.org/commentary/ghost-savings-india-lpg-subsidy>

Since April 1st 2015, India's cooking gas subsidies have been distributed solely by electronic transfer through the Direct Benefit Transfer for Liquefied Petroleum Gas scheme (otherwise known as DBTL or PAHAL). It's the largest unconditional cash transfer program in history. Under the DBTL, which has replaced the direct sale of cooking gas cylinders at subsidized prices, households place an order for LPG with their gas distributor, receive an amount equivalent to the current subsidy amount via electronic transfer to their bank account, then pay the full unsubsidized price for the cylinder in cash on collection or delivery. As such, DBTL does not remove the LPG subsidy, but simply changes the mechanism by which it is delivered.

Despite this, the government has maintained that the introduction of DBTL will improve the operational efficiency of the LPG subsidy system, and result in significant savings in overall subsidy expenditure. Throughout the process of introducing DBTL there has, however, been a worrying lack of official clarity regarding the scheme's actual fiscal effects.

On July 2nd 2015, the government's Chief Economic Advisor stated that "[b]ased on sales and subsidy levels for 2014-15, savings of Rs 12,700 crore [US \$1.98bn] are estimated from [DBTL]". This was the latest in a series of statements and media briefings by government and oil company representatives in the previous nine months on the size of fiscal savings attributable to DBTL. In October 2014, a prominent business daily reported that "[t]he National Democratic Alliance government is expecting to save Rs 10,000 crore [US \$1.56bn] through cash transfer of the cooking gas subsidy". By April 2015, the Press Trust of India was reporting that "[t]he government has so far saved Rs. 8,000 crore [US \$1.25bn] due to subsidy transfer through DBT". In early June 2015, Petroleum Minister Dharmendra Pradhan was quoted as claiming that "[t]he scheme [DBTL] has helped us identify and eliminate 40 million ghost connections," with a senior executive at Indian Oil Corporation suggesting that "[t]he government's savings could easily be about Rs 10,000 crore linked to these 40 million connections", leading the same business daily to conclude that "the Narendra Modi-led central government is set to save a little over Rs 10,000 crore in petroleum subsidy...in the current financial year [2015-16] thanks to the successful nationwide rollout of [DBTL]".

The government has not so far provided calculations regarding either its claimed savings from DBTL in FY 2014-15 or projected savings for FY 2015-16. The much-publicized fiscal savings figure of Rs 12,700 crore, in particular, deserves scrutiny: based on an analysis of publically available data, this figure seems to be a large overestimate, for the following reasons.

The current government's implementation plan for DBTL saw the program initially reintroduced (having previously been partially implemented and subsequently suspended by the earlier UPA administration) in 54 districts in mid-November 2014, with nationwide rollout to all districts from January 2015.

Households possessing LPG connections were given three months from the initial introduction of the scheme in their district to register their bank account details for direct payment, during which time they were still able to purchase subsidized cylinders within their quota. Following this period, households would then be able to purchase only non-subsidized domestic

cylinders; however for a further period of three months the equivalent per cylinder subsidy would be recorded and released to the consumer upon DBTL registration. For a period of seven and a half months from April 1st 2014 until November 15th 2014, the scheme therefore had no direct effect on total subsidy expenditure. DBTL only began to formally restrict access to subsidized LPG for non DBTL-registered households in mid-February 2015, and then only in the 54 districts selected in Phase 1 (representing 8 per cent of total districts). In the remaining Phase 2 districts (constituting 92 per cent of total districts), non-registered households retained formal access to directly subsidized LPG until March 31st 2015.

Assuming program implementation on the basis formally announced, the theoretical maximum reduction in subsidy expenditure directly attributable to DBTL in FY 2014-15 can therefore be roughly calculated by applying the initial reduction in subsidized consumption (reported as 25 per cent) to the total potential consumption available to existing connections (reported as 23.3 million), then applying the relevant data on monthly under-recoveries and fiscal subsidy to calculate the estimated 'avoided' expenditure figure. Note that this figure will likely represent an overestimate of the total reduction in direct subsidy expenditure achieved, as it assumes that: a) all connections unregistered as of mid-February were operational; b) that all of these connections would have used their maximum allowable allocation of 12 subsidized cylinders (rather than the national average of 6-7 cylinders) on a monthly pro-rata basis; and, c) that none of these connections would subsequently register with DBTL and receive subsidy compensation for the period from mid-February to end March. Importantly, this figure represents total 'avoided' subsidy expenditure, and does not take account of the profile of those connections losing subsidized access (including the percentage of total 'avoided' expenditure related to previously valid household consumption). Calculated on this basis, the maximum potential saving on direct subsidy expenditure from introducing DBTL was approximately Rs. 46.9 crore (US\$ 7.3m) in February 2015 and Rs. 96.4 crore (US\$ 15.1m) in March 2015, leading to a maximum potential saving from restricting access of Rs 143.4 crore (US \$22.4m) for the financial year—approximately Rs. 12,557 crore (US \$1.96bn) less than the government's most recent stated estimate.

In short, regardless of the potential impact of introducing DBTL on total subsidised LPG consumption, it would be very difficult for the scheme to have delivered significant savings in total subsidy expenditure in FY 2014-15, as the vast majority of connected households retained formal access to subsidised LPG under the previous subsidy distribution mechanism.

In addition, any calculation of savings resulting from DBTL implementation in FY 2014-15 should also include the initial and recurring costs of introducing the program to the government (including central and district-level administrations, oil marketing companies and public sector banks), program beneficiaries, and the wider economy. While some of these costs are widely distributed and challenging to record precisely, information on key areas of operational expenditure—including commission on subsidy payments and advance payments to beneficiaries—is readily available.

For example, the cost of commission on all subsidy payments made through direct transfer (initially set at 1 per cent of total transaction size and proposed to be raised to 2 per cent—a rate that is nevertheless estimated to remain un-remunerative) was in itself largely sufficient to offset any direct saving on subsidy expenditure in FY 2014-15. In the case of the 'permanent advance' payments provided to all newly-registered DBTL customers upon initial cylinder booking—the costs of which are currently borne by the public sector oil marketing companies—households that had previously registered under the initial direct transfer scheme in FY 2013-14 received an advance of Rs. 435 per connection, constituting a total payment of Rs. 1,469 crore (US \$229.5m) in FY 2013/14. Under the revised scheme introduced by the NDA administration, this permanent advance was increased to Rs. 568 for the period to end

March 2015, with payments provided as permanent advance in FY 2014-15 alone amounting to Rs. 5,234 crore (US \$817.8m), according to reliable sources.

These savings and expenditure estimates, based on publically available data, suggest that the government's figures for net fiscal savings resulting from DBTL are likely to be incorrect—even without accounting for the various administrative costs of program implementation – and may even have been negative. In order to have an informed discussion regarding the impact of DBTL, both as a program itself and as a proposed model for the reform of kerosene and food subsidies, it is crucial that the government provides detailed and accurate data on the way that subsidy savings are calculated.

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### Scenario-guided policy planning helps cocoa farmers adapt to climate change

The article is available at: [https://www.weadapt.org/knowledge-base/adaptation-decision-making/cocoa-farmers-plan-for-climate-change?utm\\_source=weADAPT&utm\\_campaign=11cd48af0a-Monthly%20Newsletter&utm\\_medium=email&utm\\_term=0\\_be94db1743-11cd48af0a-97775189](https://www.weadapt.org/knowledge-base/adaptation-decision-making/cocoa-farmers-plan-for-climate-change?utm_source=weADAPT&utm_campaign=11cd48af0a-Monthly%20Newsletter&utm_medium=email&utm_term=0_be94db1743-11cd48af0a-97775189)

In a bid to get cocoa farmers in Central America better prepared for climate change, a research team decided to organise a workshop to introduce scenario-guided policy planning to get local adaptation up and running. Through the activities, the participating farmers' association leaders and policy planners came away with emerging local adaptation plans and a sense of what is needed to build resilience against climate change to secure cocoa for future generations.

The Future Scenarios methodology has been developed by the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS), and the Oxford University. It is being implemented in Central America in collaboration with the University for International Cooperation (UCI).

During the workshop, which was held mid-July this year in climate vulnerable Honduras, participants worked to visualise what the country could potentially look like in 20 to 30 years time given a myriad of various socio-economic, environmental and climate-related factors. The groups came up with some very optimistic but also quite pessimistic scenarios for their country.

Farmer representatives from Honduras, Nicaragua, Panama and Dominican Republic were trained on future climate change thinking to help support local farming communities.

The idea is to work backwards from these scenarios, especially the scenarios that the country or region would like to attain. Negative scenarios give insight on the obstacles that might be encountered while driving a country towards more climate resilient food systems. Once you think about the future, you can start to make plans to get ready for any of these scenarios.

The meeting built on previous work done by the CCAFS Scenarios team. Last year, the team worked closely with the Honduran Ministry of Agriculture and Livestock (SAG in Spanish) to get the country's agriculture sector ready for climate change using scenario guided policy planning for their national "Strategy for risk management and climate change adaptation for the sector of agriculture and livestock".

"For this workshop, the focus was on socializing a less technical and more practical, 'popular version' of the national climate risk strategy to farmers, using the scenarios methodology as a potential tool to plug in local knowledge and create local adaptation plans," said Marieke Veeger, who is based at the University for International Cooperation (UCI) and implements



the scenarios work in the region."

The majority of the attending participants were farmers' association leaders from either Honduras or other Central American countries, unionised in the Indigenous and Peasant Coordinating Association for Central American Community Agroforestry (ACICAFOC).

Several of the participants expressed true interest in both the scenario process and what climate change will mean for the region and farming.

"When the producers asked me why my harvest was so bad, I didn't know what to say because I didn't understand what was climate change until this workshop. Now I know what it is, what produces it, and what should be done to tackle it. With what I've learned, from this workshop I can now answer the producer and I now have knowledge of how to mitigate these changes," said Rhina Campos, Quality Supervisor of Conacado Industrial, a cocoa company in Dominican Republic after the workshop.



**Climate talks: INDCs and the role of land use : Though some countries have emphasised on land-use change and forestry in their contributions, their commitments don't seem to be ambitious enough as deforestation has been a major source of emission**

It is a well-known fact that vegetation and soils can remove carbon dioxide from the atmosphere and store it in different forms of carbon as carbon sinks. And human activities, including land use, land-use change and forestry (LULUCF), impact these sinks that can store carbon dioxide. Historically, deforestation has been a major source of emission for many countries, with large forest reserves. Therefore, the emissions for these countries have been high too.

#### **Scare of forest fires**

LULUCF emissions are usually hard to measure as they require estimates of the land area affected as well as the depth of peat soil that has burnt. Forest fires usually occur naturally, but many are initiated deliberately and illegally to clear the land for crops, such as palm oil. Similarly, in dry years, forest fires can run out of control and can cause major spikes in greenhouse gas emissions, making it difficult for countries to maintain their commitments.



Although remote sensing has become increasingly powerful in estimation of loss and damage, calculating the emissions based on degradation of forests, density of forest and type of vegetation, cannot be understood without on-the-ground sampling. Land use and land change for agriculture, to an extent, can be considered as a necessity for countries to improve their developmental status. But when used for commercial purposes like, it is looked upon as a luxury.

In this context, emissions proposed to be reduced from LULUCF play a major role in the Intended Nationally Determined Contributions (INDC) being submitted by countries. Countries like Brazil, Indonesia and some African countries are highly vulnerable to climate change and have been high emitters because of land use patterns as it has been one of their major economic drivers.

### **Brazil has a plan**

A closer look at the Brazilian INDC says that it takes into account the role of conservation units and indigenous lands as forest-managed areas. The footnote explains "conservation units" as federal and state-level protected areas and "indigenous lands" as areas at the minimum in the "delimited" stage in the demarcation processes. In simple terms, indigenous lands, inhabited and exclusively possessed by indigenous people and mostly the forest lands not managed by the government, are also being taken into account. Without the role of these managed areas, Brazil's contribution in the INDC would represent "a reduction of 31 per cent in 2025 and 37 per cent in 2030 in relation to 2005 levels". Brazil, however, has stated that it would reduce greenhouse gas emissions by 37 per cent below 2005 levels in 2025 or an indicative 43 per cent below 2005 levels in 2030. Brazil's INDC also mentions how it did not consider removals (by planting trees or managing forests) from conservation units and indigenous lands prior to guidelines in its first national communication and explains how it would neither be compatible with current guidelines, nor comparable to other Parties' contributions. Disregarding these "removals" compromised the comparability of the Brazilian initial inventory with other Parties' inventories. Brazil's second communication revised this approach.

Brazil INDC also states that it is anyway willing to further enhance its contribution towards achieving the objective of the convention, in the context of sustainable development. But according to a report in Thomson Reuters Foundation, SEEG, an independent emissions measuring system has calculated that Brazil's greenhouse gases had already fallen 33 per cent from 2005 to 2013 due to successful policies to repress illegal deforestation. So, we also need to question if 37 per cent reduction is ambitious enough and if Brazil can do a lot more and not just rely on its reserves to show emission reduction.

Indonesia's developing policies.

Indonesia, on the other hand, in its INDC has stressed on how the emissions of the country have been high because of the land use change, peat and forest fires. The INDC mentions that around 63 per cent of its emissions are from LULUCF. But as Indonesia has pledged to reduce its emissions by 26 per cent unconditionally and up to 41 per cent conditionally below 2009 levels, it has been working on developing policies and mechanisms to reduce its emissions from LULUCF. And so the country aims to reduce up to 29 per cent unconditionally of business as usual by 2030 and has shown leadership with Nationally Appropriate Mitigation Action (NAMA) proposals and voluntary commitments.

### **Russia's not-so-ambitious pledge**

It is not surprising that even in Russia's INDC, a lot of stress is laid on LULUCF as Russia has around 25 per cent of the world's forest resources. The INDC mentions how forest management is one of the most important elements of the Russian policy to reduce greenhouse emissions up to 25 to 30 per cent with LULUCF. The INDC clearly states that it

will include maximum possible account of absorbing capacity of forests. Such accounting of LULUCF emissions would allow Russia's emissions to increase by 30 to 38 per cent above 2012 levels, according to a report by Climate Action Tracker. So with the fall in Soviet economy from 1990 and addition of LULUCF data, the pledge seems hardly ambitious.

Apart from these issues of how LULUCF is being reported in INDCs, other problems include inconsistency in its historically recorded data, transparency, fluctuations and methods of calculating it. Annex-1 countries (countries classified as industrialised countries and economies in transition) are mandated by the United Nations Framework Convention on Climate Change (UNFCCC) to report any change in their LULUCF data, so a number of non Annex-1 countries tend to have inconsistent inventory. The accounting of LULUCF is a very complex issue that needs to be discussed and agreed upon in detail for the climate deal in Paris to be meaningful without unfair advantage to some countries over others.

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### **India's INDC is fair, and its renewable energy and forestry targets are ambitious, says CSE**

India has come out with its much awaited climate action plan, the Intended Nationally Determined Contribution (INDC) ; All countries are required to submit their voluntary climate action plans as their contribution towards fighting climate change. These contributions will form part of the outcome of the Paris climate summit ; India's INDC reflects its development challenges, aspirations and the realities of climate change ; India's renewable energy target is more ambitious than that of the US ; India's emission intensity target is exactly similar to that of China's ; About 85 per cent of countries have submitted their INDCs. Their collective pledges are not in line with keeping the world within the safe 2 deg. C. temperature rise target.

The article is available at : <http://www.cseindia.org/content/india%E2%80%99s-indc-fair-and-its-renewable-energy-and-forestry-targets-are-ambitious-says-cse> .

Ahead of the UN Conference of Parties on Climate Change scheduled in December 2015 in Paris, India has submitted today, its Intended Nationally Determined Contribution (INDC) to the secretariat of the United Nations Framework Convention on Climate Change (UNFCCC). Centre for Science and Environment (CSE) has called the Indian INDC "fair", and its renewable and forestry targets "ambitious".

In its INDC, India has pledged to improve the emissions intensity of its GDP by 33-35 per cent by 2030 below 2005 levels. It has also pledged to increase the share of non-fossil fuels-based electricity to 40 per cent by 2030. It has agreed to enhance its forest cover which will absorb 2.5 to 3 billion tonnes of carbon dioxide (CO<sub>2</sub>, the main gas responsible for global warming) by 2030.

India has accepted the huge impact that climate change is exerting and will exert on different sectors of its economy and has agreed to enhance investments to adapt in vulnerable sectors like agriculture, water resources, coastal regions, health and disaster management.

India has also reiterated its need for international finance and technology support to meet its climate goals. In this regard, it has said it would require at least USD2.5 trillion (at 2014-15 prices) to meet its climate change actions between now and 2030.

"India's INDC is fair and is quite ambitious, specifically on renewable energy and forestry," says Sunita Narain, director general, CSE.

"India's INDC reflects its development challenges, aspirations of large numbers of poor people and the realities of climate change," adds Chandra Bhushan, deputy director general, CSE.

### **Dissecting India's INDC**

- India's emissions intensity targets are similar to that of China's. India has pledged to reduce the emissions intensity of its GDP by 33-35 per cent by 2030, below 2005 levels. China has pledged to reduce the emissions intensity of its GDP by 60-65 per cent during the same period. In 2030, both the countries will have almost same emissions intensity levels – 0.12 million tonnes of CO<sub>2</sub> per billion USD (in 2005 USD). This means that both these countries will emit about 1,20,000 tonnes of CO<sub>2</sub> for every 1 billion USD of GDP.
- India's pledge to install 40 per cent of its total electricity capacity from non-fossil fuel-based energy sources is more ambitious than even that of the United States. In 2030, even under the most ambitious Clean Power Plan of President Obama, the US will only have about 30 per cent of its electricity capacity on non-fossils.
- CSE's projections show that in 2030, India will have about 250-300 GW of solar and wind energy capacity. Under the Clean Power Plan, the US will reach 275 GW solar and wind capacity by 2030. China has pledged 300 GW solar and wind power by 2030.
- India's forestry target is also very ambitious. It intends to create an additional carbon sink of 2.5 to 3 billion tonnes of CO<sub>2</sub> through additional forests by 2030. In comparison, China will increase the forest stock volume by around 4.5 billion cubic meters by 2030. This translates into an additional carbon sink of about 5 billion tonnes of CO<sub>2</sub>. Considering that China has three times more land area than India, India's goal seems very ambitious.
- CSE's projections shows that in 2030 India's total emissions could reach about 4.5-5.0 billion tonnes. Its per capita emissions would be about 3.5 tonnes. In comparison, the per capita emissions of the US and China are projected to be around 12 tonnes.

"From all angles, India's INDC is as good as China's and better than the US's considering that both these countries have higher emissions than India and are economically more capable of reducing their emissions and mitigating climate change," says Chandra Bhushan.

India's INDC also highlights some tough challenges for the world. The INDCs submitted by all major emitters indicate the cumulative emissions of the world between 2012 and 2030 would be in the range of 700 to 800 Gt of CO<sub>2</sub>. According to the latest report of the Intergovernmental Panel on Climate Change (IPCC), to meet the 2°C temperature increase target, the world has an emission budget of only 1,000 billion tonnes of CO<sub>2</sub> till 2100. The world will consume most of this budget by 2030, leaving a small space for developing countries in Asia and Africa to grow in the future.

"INDCs submitted by all major countries indicate that the world is not on a path to the 2°C target. This would be disastrous for poor people across the world. It is important this reality is discussed and resolved in the Paris climate conference," adds Sunita Narain

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### **The 8 goals India has proposed in its Intended Nationally Determined Contributions (INDC) are :**

1. To put forward and further propagate a healthy and sustainable way of living based on

traditions and values of conservation and modernisation.

2. To adopt a climate-friendly and cleaner path than the one followed by others at corresponding levels of development.

3. To reduce the emissions intensity of its GDP by 33-35% by 2030 from the 2005 level

4. To achieve about 40% cumulative electric power installed capacity from non-fossil fuel-based energy resources by 2030 with the help of transfer of technology and low-cost international finance, including from Green Climate Fund.

5. To create an additional carbon sink of 2.5 to 3 billion tonnes of CO<sub>2</sub>, equivalent through additional forest and green cover by 2030.

6. To adapt to climate change by enhancing investments in development programmes in sectors vulnerable to climate change such as agriculture, water resources, Himalayan regions, coastal regions, health and disaster management.

7. To mobilise domestic and new additional funds from developed countries to implement adaptation actions and bridge the resource gap

8. To build capacities, create domestic framework and international architecture for quick diffusion of cutting-edge climate technology in India and for joint, collaborative R&D for such future technologies

For more details, click on the link [http://economictimes.indiatimes.com/8-goals\\_to\\_reduce\\_emissions\\_by\\_2030](http://economictimes.indiatimes.com/8-goals_to_reduce_emissions_by_2030).

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### **India : What is needed is the reduction in total coal consumption?**

In the present global scenario where Climate Change has come to be seen as associated with existential threats, the INDC of any country should not be seen as whether it is 'fair' alone. Keeping in view the serious issues threatening us we should be concerned whether more could be done in a much shorter span of time. The term 'fair' may be relevant in international negotiation fora, but when we look at the true overall welfare of our own people, it certainly begs to ask the question whether it is 'enough', and why can't we achieve more.

A decent understanding of the efficiency and effectiveness of the policies and practices in various sectors of our economy should indicate that there is a lot India can do to minimise the impacts of Climate Change on our population.

A high level understanding of the efficiency and harnessing & distribution of our natural resources within the country should indicate that India can and must do much more to reduce GHG emissions not only as its obligations to the global community but also to ensure sustainable welfare measures for all sections of its own society. On the same account it should also be mentioned here that every country, except perhaps very poor African countries, can and must do much more to reduce the GHG emissions.

At the global level the total commitments by 140 odd countries so far, including India, is estimated to be far below the needed levels of GHG reduction commitments as projected by IPCC, which should be a matter of great concern to all of us.

A quick read of the official INDC document provides a set of contrasting statements and facts. Whereas there is a talk of high moral grounds, great tradition of our ancestors, simple life style, poverty of our people, inequitable distribution of wealth within the country etc., the INDC seem to make a claim that the country has the right to pollute even more for many more years, as has been done by the developed countries during the last 150-200 years. But the gigantic impacts of extracting and burning more fossil fuels on environment, social and health aspects of our communities has not been fully acknowledged.

It is not enough if the emission intensity is reduced or percentage of renewable energy is increased. What we need is the reduction in absolute levels of GHG emissions as early as possible. But this is unlikely to occur with the intentions mentioned in INDC.

It is almost impossible to see any economic rationalisation in continuing with coal power plants anywhere in the world, including India; especially since the last 15 years when the health and environmental impacts of coal power have become clear, and when solar power cost has plunged. It is much more so in the case of India keeping in view that we already are suffering hugely from the air and water pollution impacts. Taking a rational look at the overall efficiency of coal power cycle, it was difficult to see any rationality with coal power even before year 2000.

Hence, even if India becomes successful in realising 40% of its power through non-fossil fuels by 2030, we may end up seeing a massive amounts of total GHG emissions because of the vast increase in the total installed power production capacity by then in a business as usual scenario. A lot of coal power capacity would have been added (a total of 800,000 MW power capacity is projected by 2032 in the Integrated Energy Policy of the Planning Commission). Even assuming that all the future coal power plants in the country are located on the sites of old coal power plants, and are much more efficient with super critical or ultra-critical boiler parameters, we will have much more total GHG emissions from the coal power sector than it is now in a business as usual scenario.

**What is needed is the reduction in total coal consumption, which is possible only if we considerably reduce the number of coal power plants and their capacity; reduce the petrol and diesel consumption; and assist our poor people with efficient energy systems such as efficient stoves and renewable energy systems.** Additionally, we must stop diverting our remaining patches of forest lands and do all that is possible to increase our green cover. All these are entirely feasible, and most importantly essential for the true welfare of our people.

When we consider all the associated issues of Climate Change from a true welfare perspective, it should become amply clear to even a common man that high levels of total GHG emissions, which is invariably linked to unsustainable exploitation of our natural resources, can never be in the true interest of our people.

Since this is not acceptable, even from global warming perspective alone, India's INDC target of 40% electricity from non-fossil fuels will not be good enough. There should have been a clear statement about peak emissions and/or peak coal consumption.

Given the necessary political will and effective participation from various sections of our society, it should be entirely feasible, techno-economically, to keep our total GHG emissions to a level even below that of 2005 by a suitable combination of measures such as energy efficiency, Demand Side Management, energy conservation, and wide spread usage of renewables in next 15 years. Hence India's INDC can be termed as a disappointment. It

should have been much more ambitious and practical at the same time.

Let us hope things will only improve from the present level for the benefit of not only our own people, but for the sake of entire humanity.

Now it is left to the civil society groups to strive hard to persuade the authorities to do much more, exceed the targets in INDC by huge margins, and lead the global efforts to save the humanity from existential threats.

The media can and should play a critical role in this regard.

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### **Climate change mitigation is not bereft of solutions.**

India's announcement that it will cut emissions by 35 per cent by 2030 at 2005 levels is certainly a welcome announcement. We all pray, it is achieved. But the key is to sensitise the international community and get it to help us with technology-transfer and low-cost finance to achieve this ambitious goal. For, we will need at least \$2.5 trillion, if not more, to implement all the planned actions.

Let us also be pre-warned. A "business as usual" approach will take us to an increase in global temperature by 4.5 degrees centigrade by 2100 - this is unsustainable. Our common goal is to reach a maximum increase of 2 degrees centigrade by then, by limiting our carbon-dioxide emissions.

We collectively need to have a strategy and action plan in place to meet this objective. The question is whether the collective submission of Intended Nationally Determined Contributions (INDCs) by 196 members of the United Nations Framework Convention on Climate Change, ahead of the Convention on Climate Change due in Paris from November 30 to December 11, is enough.

Can these submissions achieve the goals of appropriately limiting their collective carbon-dioxide emissions? Will climate justice be done by all members? We will get the answer in December this year - in Paris. Our future is in the hands of the leadership of these 196 members.

It is no coincidence that India chose to submit its own INDcs late on October 1. The submission actually coincided with Mahatma Gandhi's birth anniversary a day later, back home.

Much before the climate change debate began, Gandhi said everyone should act as a trustee of the environment and use natural resources wisely.

He said it was the moral responsibility of every human to bequeath to the future generations a healthy planet. "A man should be his own scavenger," the Mahatma said, wanting us to be sensible and take up the responsibility for resolving the climate change issue.

As we race against time to ensure that there will be a far-reaching global agreement on climate change by the time the Paris meet concludes on December 11, we do have known technologies to be able to reduce our dependence on fossil fuels.

The question is our collective determination to find the alternatives and availability of low-cost money to implement them.

The fossil-fuel alternative has to become more expensive for the user. For example, there is clear link between energy and water. Take the case of national capital. Delhi is not an agriculture state, but pumping of water here takes up 50 percent of all the energy used.

We need to have compulsory water harvesting and ban the production and sale of GLS lamps in India.

These are very energy inefficient. Energy efficient systems need a strong promotion through taxation and pricing policy -- an example is of water heating in Delhi. Why is Solar not popular?

Why has drip irrigation not taken off in agriculture? Why can we not price water adequately to conserve it and not give it away free to agriculture - and now, even to urban dwellers?

Our 780 million cows can solve the energy storage issue for India: Cow dung can be used to generate "Gobar Gas" that can further be used for producing electricity using Fuel Cells. The by-product, "natural fertilizer" can be used to promote value added organic produce - fruits and vegetables, for domestic consumption and exports. India can become the organic food basket for the world. This is in line with Prime Minister Narendra Modi's "Make in India" program..

This gobar gas produced can be directly used in villages for cooking and thereby reduce the health or wellness issues due to pollution.

Our 300 million people, who have no access to electricity today and are not grid-connected, can have electricity generated by solar panels and wind energy during the day.

Electricity generated by fuel cells using gobar gas can serve at night - and even towards education of children and mobile telephone towers, besides general lighting.

Telephone towers for these 300 million people could be powered by electricity and open up a new market for the telephone companies

Cow dung from 100 cows can produce 30 KVA of electricity. From 780 million cows, we should be able to generate 234 GW at relatively low cost. The key is collection of the Cow Dung.

We already have indigenous technology to grow fresh grass using hydroponics for the cows on the basis of daily demand. This apart, we should have DC distribution system in these villages and develop LED lamps that run on DC current and also Fans. This, if feasible and implemented, will be a game changer for India's economy and well-being.

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## ***Announcements***

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### **A first-ever comprehensive scientific analysis of the US climate action plan**

You can download the CSE report from: <http://cseindia.org/userfiles/Capitan-America-Report.pdf>

The threat of climate change is real and we can already see the impacts of extreme weather events in the sub-continent and beyond. There is no question that all countries must take on



decisive steps to reduce their greenhouse gas emissions, in the interests of all.

Many countries, including India, have now submitted their Intended Nationally Determined Contribution (INDC) to the climate secretariat. The US plan of action on climate was welcomed by all, given that it signals change in its stance on climate change. What the world needs is real change, not words.

The question is, how robust is the US climate action plan? Will it bring real reduction in emissions and if so, how much? Is it ambitious? Equitable? Sufficient? These are critical questions as real and measurable change in the US will provide confidence to the rest to act.

It is for this reason, we at the Centre for Science and Environment (CSE) decided to do a detailed and factual assessment of the US climate action plan.

In its INDC, the US has committed to an emission reduction of 26-28% from 2005 levels. By using the 2005 peak instead of the 1990, the US has avoided cutting 500 million tonnes of GHG emissions. The emissions are further masked by US' dependence on Land Use Land Use Change and Forestry (LULUCF). This practice has helped US avoid another 250 million tonnes of GHG emissions

The CSE report shows US will heavily rely on fossil fuels for its primary energy supply. The switch from coal to natural gas is largely economically motivated as the US is the world's largest producer of natural gas.

The contribution of renewables is only 11.3% (as of 2014), slated to reach 25% by 2050. US investment in renewables (0.2% of GDP) is lower than India (0.3% of GDP)

Energy efficiency gains in the US have been over-compensated by an increase in per-capita consumption. An average American consumes 34 times the electricity of an average Indian.

The report concludes that the American plan is neither equitable nor ambitious. There is no policy driven downward emission trend as the economy improves and consumption increases.

Our findings are explosive and worrying. Our challenge is that US climate change action is nothing but business as usual.

You can download the CSE report from: <http://cseindia.org/userfiles/Capitan-America-Report.pdf>

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### **Health warning regarding avoiding the use of paper cups as they have a coating of wax on the inside.**

The article is available at: <http://www.technoparktoday.com/beware-of-paper-cups-in-your-pantry/>

Varun, an IT professional working in Technopark, was finding himself with an upset stomach every night. While normal medical checks revealed nothing wrong in him, deeper probes revealed that the ordinary disposable paper cups he used for drinking his tea at his office pantry were the culprit.

Disposable paper cups have become quite popular in office pantries due to the convenience it offers. What many overlook is the fact that these paper cups are coated with a tiny layer of

wax, which is essential to prevent water from seeping into the paper.

When very hot liquids are poured over this cup, the paper cups wax may disintegrate and a little may come off, which will promptly be sent along with the drink into our stomachs!. While our body can discard minor amounts, over the long-term, it does become a problem.

So what can be done about it? You can try to bring your own glass cups. Glass is one of the least reactive materials in the world (remember acids are stored in glass vessels, blood samples are collected in glass plates – these are for a good reason). But glass does have the problem of breaking easily, so it requires good care.

Ceramic cups are probably the best bet. Of course, you can also use your ordinary stainless steel glass, but never use plastic ones – they are harmful, and its dangers are even worse than wax!

To conclude, the best and the safest way to deal with this paper cups wax problem is to avoid these harmful paper, plastic, Styrofoam cups and use stainless steel, glass or ceramic mugs instead, which would result in low carbon sustainable lifestyles as well.

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## **ELECTIONS OF THE CHAIR OF THE IPCC ETC.**

More information is available at : <http://www.iisd.ca/vol12/enb12645e.html>.

### **ELECTIONS OF THE CHAIR OF THE IPCC: Hoesung Lee, Republic of Korea was elected as IPCC Chair.**

He is a proven leader in the field of energy and climate change: Founding president of a renowned government-affiliated research institute in Korea-the Korea Energy Economics Institute; Past president of the International Association for Energy Economics; Council member of the Global Green Growth Institute; Board member of the Korean Academy of Environmental Sciences. He has real world high level experiences in public policy development for energy, environment and climate change through responsibilities in government and business. His dedication to the IPCC since the Second Assessment 1992 in various functions including Co-Chair (Working Group III) and was till recently the IPCC Vice-Chair.

#### **Hoesung Lee : Vision for the IPCC**

He wants to support what has worked, keep what is needed and change what needs improvement across IPCC's mode of operation, its activities and communication of its findings:

- To enhance participation of developing country experts and explore system-based measures. Such measures include identifying and networking local centers of excellence in areas of climate science, adaptation and mitigation as well as disciplines related to economic development and poverty reduction.
- To increase policy relevance and neutrality, measures to broaden information base incorporating inputs from the business, industry and finance where the messages from science and policy communities are interpreted and acted upon will be explored.
- To communicate IPCC focus on concerns directly related to domestic challenges, special attention will be given to climate change issues associated with job creation, health, innovation and technology development, energy access and poverty alleviation.

**ELECTIONS OF THE VICE-CHAIRS OF THE IPCC:** The US nominated Ko Barrett from the floor, highlighting Barrett's experience with scientific organizations and her service in the developing world. He stressed that a leadership role for the US would help ensure its ability to provide critical services to the Panel. **Ko Barrett was elected developed country Vice-**

## Chair.

Elections were held between candidates Youba Sokona (Mali), Thelma Krug (Brazil) and Fredolin Tangang (Malaysia) for the remaining two Vice-Chair positions. **Thelma Krug was declared Vice-Chair for developing countries. Youba Sokona was declared the third IPCC Vice-Chair.**

## ELECTIONS FOR THE CO-CHAIRS OF THE WORKING GROUPS AND THE TASK FORCE BUREAU:

- For WGI, Valérie Masson-Delmotte (France) was elected as developed country Co-Chair. Panmao Zhai (China) was elected as WGI developing country Co-Chair.
- For WGII, Hans-Otto Pörtner (Germany) was elected as developed country Co-Chair. Debra Roberts (South Africa) was elected as developing country Co-Chair for WGII.
- For WGIII, Jim Skea (UK) was elected as developed country Co-Chair. **P.R. Shukla (India) was elected as developing country co-chair.**
- For the TFB, Kiyoto Tanabe (Japan) was elected as the developed country co-chair. Eduardo Calvo Buendía (Peru) was elected as developing country co-chair

## Can we keep blaming dengue on climate change?

Poor sanitation, poor waste management systems and poor urban planning are the real causes of dengue.

The article is available at: <http://www.indiawaterportal.org/articles/can-we-keep-blaming-dengue-climate-change>

### The dengue epidemic in India

The monsoons this year have been in the news for many reasons, but flooding and the dengue epidemic in India have been the main ones. India accounts for almost a third of the world's cases of dengue and this number has been rising rapidly.

### Causes of dengue

- **Poor urban planning:** Although the broad reason for the increase in dengue has been attributed to climate change, developing countries such as India have are more vulnerable because of poor urban planning. Poor storage facilities for water, lack of proper garbage disposal mechanisms, lack of proper sanitation and open gutters and drains have led to unhygienic surroundings that provide an ideal breeding grounds for mosquitoes.
- **Garbage accumulation:** Accumulation of garbage in Indian cities has increased massively due to rapid urbanisation. More people are migrating from villages to cities but the cities, in turn, aren't being planned to accommodate this rise in population. A number of cities including Bangalore, Kolkata, Mumbai, Srinagar and Kanpur are affected by this problem and have reported a rise in the incidence of diseases such as malaria, rabies, dengue and other unidentified types of fever.
- **Poor sanitation practices:** Open defecation, when coupled with poor drainage systems, leads to flooding and mixing of sewage with accumulated water during the monsoons. This polluted stagnant and completely filthy water is a perfect breeding ground for mosquitoes.

### How can we prevent dengue?

Since dengue spreads through mosquito bites, making sure that people aren't exposed to mosquitoes is key. The following steps can be taken to minimise exposure to mosquitoes:

- Do not keep open water containers outside the house or in balconies or gardens where rainwater can collect.

- Do not accumulate trash outside the house.
- Cover all water sources such as water pots, buckets or overhead water tanks.
- Ensure that water emitted from air conditioners does not collect outside and form stagnant puddles.
- Do not keep plants indoors during the rainy season as they attract mosquitoes.
- Wear clothes that cover the calves ankles and feet since mosquitoes generally bite below the knee.
- Use mosquito-repellent creams and lotions on exposed skin.

While these steps can be taken individually, dealing with the problem on a larger scale isn't that simple. Efforts need to be directed at two levels - the level of governance and the community level.

The traditional attitude of 'out of sight, out of mind' exhibited in throwing domestic garbage on public streets to be collected, sorted, and disposed off by municipal authorities is no longer workable. Sorting garbage at the source in every house, restaurant, shop, office, etc is unavoidable if we are not to get crushed under the weight of garbage mountains in the cities and fall a prey to diseases.

Recognizing these as issues, many initiatives have been started in different cities. In Pune, waste pickers have formed cooperatives that have established systems for recycling waste. Subsidies are being provided for decentralised waste management in some cities. Bangalore has begun separating its waste at source while door to door waste collection is being done in Kolkata. Many cities have taken steps to ban certain kinds of plastics .

However, for these efforts to succeed, close cooperation between all the sectors involved is necessary. Better governance systems from the corporation or municipality board are necessary. These systems must address problems of understaffing and lack of adequately trained staff as well as the introduction of better methods and technologies for waste management at local levels. Waste management systems could also involve the local and informal waste collection networks to strengthen the existing systems.

Sanitation issues can't only focus on toilet building, but must also take into account other aspects such as availability of water and user perspectives and convenience for people who use the toilets. Besides it must also address problems related to proper maintenance of toilets. Evidence indicates that many a time, it is the lack of proper governance and management that leads to poor maintenance of public toilets in cities that forces people to defecate out in the open.

The same is true of the public health systems that deal with epidemics. It needs to develop better strategies that aim at prevention, spreading awareness, early detection and better clinical management to prevent deaths in the future

Epidemics such as dengue are not inevitable due to climate change, nor are there any magic bullets to provide quick-fix solutions to the problem. Other things are necessary to deal with the epidemic in the long run such as:

- efficient waste management systems
- mechanisms to deal with the sanitation problems in cities
- better urban planning
- better functioning and well-equipped public health systems
- focus on prevention and
- more community responsibility and involvement

**It is not so difficult to fight the epidemic. That will prevent so much of the economic burden that one has to face besides the physical suffering that one has to go through, if we have the correct information and come together and decide to do something about it! What is important is the will, determination and commitment to do so.**

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### **IEA: Energy efficiency, the key to COP**

Find out more at: [http://www.iea.org/bookshop/709-Energy\\_Efficiency\\_Market\\_Report\\_2015](http://www.iea.org/bookshop/709-Energy_Efficiency_Market_Report_2015) .

The International Energy Agency has released the 2015 [Energy Efficiency Market Report](#) that provides insights into how businesses, households and policy-makers generate the investments that drive the energy efficiency market and how this market impacts our energy system. As the negotiations heat up in Paris, energy efficiency is working to lower the temperature.

Highlights from the Market Report:

- **Energy efficiency improvements in IEA countries over the last 25 years saved households and businesses USD 550 billion in 2014; that's more than the EU spent on fuel imports last year. Since 1990 savings to consumers have totalled USD 5.7 trillion.**
- Energy efficiency improvements since 1990 have avoided a cumulative 10.2 billion tonnes of CO2 emissions in IEA countries, helping to make the two degrees goal more achievable.
- The market for energy efficiency improvements in BUILDINGS is estimated to be USD 90 billion in 2014, and the portion of construction spending going to energy efficiency is increasing in key markets.
- **Energy efficiency is helping countries to fuel their economies through a clean domestic resource; efficiency investments enabled IEA economies to reduce their fuel import bill in 2014 by USD 80 billion, boosting trade balances.**

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### **China: Built assets now worth \$11 trillion more than the US**

The article is available at: <http://www.globalconstructionreview.com/trends/chinas-built-assets-now-worth-11-trillion-more-than-the-us/#read>.

**The total value of China's built environment has overtaken that of the US for the first time, reaching \$48 trillion compared with America's \$37 trillion, according to a new study.**

It means China's stock of buildings and infrastructure now makes up 21% of the world's \$218 trillion worth of built assets.

**If the trend continues, what China has built for itself will be worth more than**

**twice America's built assets by 2025, according to the global designer and consultant, Arcadis.**

The figures are contained in the Dutch firm's Global Built Asset Wealth Index, which is published every two years.

**The [2015 index](#) calculates the value of buildings and infrastructure in 32 countries that account for 87% of the world's GDP.**

This degree of investment reflects China's transition to an urbanised industrial economy, and also the government's use of construction as a way of increasing domestic demand and counterbalancing the country's reliance on exports.

Despite signs that its domestic economy is having trouble absorbing the high rate of investment, it is likely to continue at home and abroad, said Adam Sutton, Arcadis' regional leader for Asia.

While China's assets have increased, the value of built assets in the US has remained static, and has fallen in major European countries – a process Arcadis calls "de-investment".

**Since 2000 Russia's assets have fallen in value by 19%, France's by 10%, the UK's by 9% and Italy's by 6%.**

"Although investment continues to rise rapidly on a global scale, **the current situation in which advanced economies have seen prolonged de-investment is unprecedented,**" notes the report.

"There is no shortage of funds available to invest globally, which suggests that the private sector may lack confidence in future growth, especially in advanced economies."

**The greatest growth in the built environment was in Qatar (677%) followed by China (227%), Saudi Arabia (204%) and India (142%).**

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**How the industrial food system contributes to the climate crisis : Between 44% and 57% of all GHG emissions come from the global food system**

The article is available at: <https://www.grain.org/article/entries/5102-food-sovereignty-5-steps-to-cool-the-planet-and-feed-its-people>

#### **Deforestation: 15-18%**

Before the planting starts, the bulldozers do their job. Worldwide, industrial agriculture is pushing into savannas, wetlands and forests, ploughing under huge amounts of land. **The FAO says the expansion of the agricultural frontier accounts for 70-90% of global deforestation, at least half of that for the production of a few agricultural commodities for export. Agriculture's contribution to deforestation thus accounts for 15-18% of global GHG emissions.**

#### **Farming: 11-15%**

It is generally acknowledged that farming itself contributes 11-15% of all greenhouse gasses produced globally. Most of these emissions result from the use of industrial inputs, such as chemical fertilisers and petrol to run tractors and irrigation machinery, as well as the excess manure generated by intensive livestock keeping.

**Transport: 5-6%**

The industrial food system acts like a global travel agency. Crops for animal feed may be grown in Argentina and fed to chickens in Chile that are exported to China for processing and eventually eaten in a McDonald's in the US. Much of our food, grown under industrial conditions in faraway places, travels thousands of kilometres before it reaches our plates. We can conservatively estimate that the transportation of food accounts for a quarter of global GHG emissions linked to transportation, or 5-6% of all global GHG emissions.

**Processing & packaging: 8-10%**

Processing is the next, highly profitable, step in the industrial food chain. The transformation of foods into ready-made meals, snacks and beverages requires an enormous amount of energy, mostly in the form of carbon. So does the packaging and canning of these foods. Processing and packaging enables the food industry to stack the shelves of supermarkets and convenience stores with hundreds of different formats and brands, but it also generates a huge amount of greenhouse gas emissions – some 8 to 10% of the global total.

**Freezing & Retail: 2-4%**

Refrigeration is the lynchpin of the modern supermarket and fast food chains' vast global procurement systems. Wherever the industrial food system goes, so do cold chains. Considering that cooling is responsible for 15 percent of all electricity consumption worldwide, and that leaks of chemical refrigerants are a major source of GHGs, we can safely say that the refrigeration of foods accounts for some 1-2% of all global greenhouse gas emissions. The retailing of foods accounts for another 1-2%.

**Waste: 3-4%**

The industrial food system discards up to half of all the food that it produces, thrown out on the long journey from farms to traders, to food processors, and eventually to retailers and restaurants. A lot of this waste rots on garbage heaps and landfills, producing substantial amounts of GHGs. **Between 3.5-4.5% of global GHG emissions come from waste, and over 90% of these are produced by materials originating within the food system.**

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**Urban Health Inequities and the Added Pressure of Climate Change: An Action-Oriented Research Agenda.**

The abstract of the article is available at: <http://link.springer.com/article/10.1007/s11524-011-9607-0> .

**Climate change will likely exacerbate already existing urban social inequities and health risks, thereby exacerbating existing urban health inequities.**

Cities in low- and middle-income countries are particularly vulnerable. Urbanization is both a cause of and potential solution to global climate change.

Most population growth in the foreseeable future will occur in urban areas primarily in developing countries.

How this growth is managed has enormous implications for climate change given the increasing concentration and magnitude of economic production in urban localities, as well as the higher consumption practices of urbanites, especially the middle classes, compared to rural populations.

There is still much to learn about the extent to which climate change affects urban health



equity and what can be done effectively in different socio-political and socio-economic contexts to improve the health of urban dwelling humans and the environment.

**It is now clear that equity-oriented climate change adaptation means attention to the social conditions in which urban populations live-this is not just a climate change policy issue, it requires inter-sectoral action.**

Policies and programs in urban planning and design, workplace health and safety, and urban agriculture can help mitigate further climate change and adapt to existing climate change. If done well, these will also be good for urban health equity.

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### Can material and energy consumption increase without causing injury to the health of the planet?

Find out more at: <http://www.thehindu.com/opinion/columns/consumption-injurious-to-the-planets-health/article7790244.ece?homepage=true> .

An obvious question associated with the high GDP growth rate year after year is whether the material and energy consumption can continue increasing without irreversibly injuring the planet's health?

An article in The Hindu, highlights how consumption is injurious to the planet's health. It is available at: <http://www.thehindu.com/opinion/columns/consumption-injurious-to-the-planets-health/article7790244.ece?homepage=true> .

The article clearly indicates that Consumption is the singular economic driver of climate change. The Indian INDC refers several times to the country's sustainable lifestyle and low levels of per capita consumption and gently suggests that "developed countries can certainly bring down their emission intensity by moderating their consumption."

The dictionary meaning of consumption is the use of resources, primarily ones used to produce goods and services, all of which require energy. The electricity powering homes, fuel used to drive a car or take a flight, production and transport of clothes from Bangladesh or apples from Australia, are various forms of household consumption, which are all associated with the generation of greenhouse gases. It is fair to say therefore, that carbon is embodied (some use the term embedded) within the goods and services we consume and is associated with the entire life cycle of their production from the mining of raw materials to the disposal of waste in landfills.

Economic logic indicates that rich people everywhere and rich countries would have higher levels of consumption compared to the poor, and this is indeed borne out by facts. Each person in India on average emits about 1.8 metric tonnes of carbon dioxide, but since the poor have few energy services, mostly for survival, their emissions are very low. In terms of averages, India's per capita values turn out to be low in comparison with those of rich countries (e.g., 17 tonnes per capita for the U.S. and nine for Germany).

A recent report from the Centre for Science and Environment called Capitan America shows how per capita consumption of virtually all goods and services is at least ten to thirty-fold higher for Americans than Indians.

Nevertheless, disaggregating consumption levels by income groups suggests that Indians too

have a lot to answer for. **About five per cent of Indians, constituting 60 million people consume at the same level as Europeans, but this is also growing at an alarming rate.** Moreover, they set the aspirational bar for most other Indians moving up the economic ladder, which itself demands that we be less sanguine about our “sustainable lifestyle”.

**If one were to subtract all the carbon from the goods made in China and sold to foreign markets, then the emissions attributed to China would be much lower. If one added these emissions to the countries that consumed the foreign goods, theirs would be much higher. Consumption therefore, is at the foundation of all greenhouse gas emissions.**

If more efficient devices imply lower energy prices per level of service obtained, people tend to consume more wastefully than they otherwise would. What is needed then are conscious efforts to pay attention to lifestyles and their impacts on emissions.

Thus, while fuel-efficient cars are expected to reduce emissions, in the absence of a conscious shift in attitudes, habits and behaviour, people tend to drive longer distances simply because they save money on petrol or diesel. Along with technology that can reduce emissions, therefore, we also need to alter our lifestyles, sometimes quite radically.

How can we make these changes? The Fifth Assessment Report of the Intergovernmental Panel on Climate Change points out that a sustainable development pathway for the world depends on two distinct types of decoupling. The first is that of “material resource consumption (including fossil carbon) and environmental impact (including climate change) from economic growth (‘dematerialisation’)”. **The second is the “decoupling of human well-being from economic growth and consumption”.**

In order to really make these kinds of transformative changes a reality, we need innovation and technology, but to change lifestyles seriously, we will need to wrestle with multiple vested interests, reframe the political economy landscape, and craft new institutions that promote sustainability. **As of now, neither India nor any other country appears to be considering these medium term requirements to deal with climate change or sustainability. And herein lies the crux of the challenge.**

Innumerable studies (such as reports from Club of Rome and Planetary Boundaries) have emphasised the fact such a growth cannot be sustainable.

Recent Encyclical issued by Pope Francis has most eloquently discussed the grave dangers of chasing everlasting growth paradigm.

India's INDC should have been based on this harsh reality.

Can we hope that the global leaders will realise this very soon?

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### **Acting Now and Acting Together on Air Quality Management**

The article is available at: [http://www.sustainablecitiescollective.com/iclei-usa/1113653/acting-now-and-acting-together-air-quality-management?utm\\_source=feedburner&utm\\_medium=email&utm\\_campaign=Sustainable+Cities+Collective+%28all+posts%29](http://www.sustainablecitiescollective.com/iclei-usa/1113653/acting-now-and-acting-together-air-quality-management?utm_source=feedburner&utm_medium=email&utm_campaign=Sustainable+Cities+Collective+%28all+posts%29)

ICLEI USA hosted a delegation of environmental protection and municipal government officials from China's Ministry of Environmental Protection, Jiangsu Provincial Environmental Protection

Department, and environmental protection officials from Nanjing, Wuxi, Changzhou, and Suzhou as part of its **ongoing activities under the California-China Urban Climate Collaborative (CCUCC)**.

The CCUCC fosters long-term collaboration amongst Californian and Chinese cities to join together to be more effective and powerful—in combating carbon emissions and air pollution.

Michael Schmitz, Executive Director of ICLEI USA, welcomed the delegation to California and presented on the progresses made, challenges yet to overcome, and opportunities for collaboration on climate action and air pollution reduction.

"By today's standard, we have made tremendous improvement," stated Mr. Schmitz, citing examples from California and New York. Since the late 1980s, California PM2.5 levels have dropped approximately 70% and NOx emissions from stationary sources have declined 68% due to state legislation, clear regulatory milestones that provide business certainty, and strong support for science-based and cost effective technology solutions.

At the same time California's population more than doubled and GDP has increased five-fold. We can grow our economy and protect our environment at the same time," stated Mr. Schmitz.

Improvements have been made, but challenges remain pressing. Trans-boundary air pollution requires vigorous and regional prevention and mitigation strategies. The changing climate with increasing number of hotter days traps more pollution, reduces atmospheric mixing, and causes more ozone and smog formation. While we celebrate economic improvements, the related increased resource demand and energy consumption results in more pollution. The group agreed on the importance of acting now and acting together.

Mr. Chen Zhipeng, Vice Director of Jiangsu Provincial Environmental Protection Department, welcomed the collaborative opportunity. He highlighted the key air pollution reduction challenges that his province faces, including severe winter smog due to increased coal consumption for heating, increasing complexity in managing secondary pollutants such as PM2.5 and O3 that are formed from primary pollutants, and balancing economic development and air pollution reduction.

"We are California ten or twenty years ago or even the smog-shrouded California in 1970s," compared Mr. Chen. **"We hope to borrow your advanced technology, innovative environmental protection concepts and experience in order to leapfrog past mistakes to reach where you are today."**

The group exchanged air pollution prevention and control measures including examples presented by Oakland's Sustainability Program Manager Daniel Hamilton **promoting cleaner fuel, phasing out energy-inefficient and emission-intensive vehicles and smaller boilers, building higher urban density around transit lines, and enhancing real-time monitoring and communicating air pollution with the general public.**

Adam Lenz, Environmental Manager of Richmond, CA, shared air monitoring best practices from the City's real-time air monitoring program, which allows communities to monitor real time air pollution status, provide the general public access to such data, and in case of emergency informs individuals of the specific atmospheric composition and concentration level of each air pollutant in order to make the necessary protection measures.

The group agreed that different approaches contribute to the resolution of common air quality

and environmental challenges and that continued exchange through programs such as ICLEI's CCUCC provides the convenient platform, shared understanding, and **extensive expert network to convene leading cities to join forces and together being more effective and powerful to achieve cleaner air and a healthier environment.**

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### UNEP Panel Shows Environmental Impacts of Resource Efficiency

The article is available at: <http://energy-l.iisd.org/news/unep-panel-shows-environmental-impacts-of-resource-efficiency/>

The **International Resource Panel (IRP)** has published a report on the role of international trade in increasing resource efficiency, reducing environmental impact and promoting equitable and inclusive growth.

**Revealing that the value of international trade has increased over six-fold and its volume more than doubled between 1980 and 2010**, 'International Trade in Resources: A biophysical assessment' examines upstream resource requirements - the materials, energy, land and water used in the country of origin for producing traded goods, but left behind as wastes and emissions.

**The IRP, which aims to steer the world away from overconsumption, waste and ecological harm, was launched by the UN Environment Programme (UNEP)**, and is made up of scientists and governments from developed and developing regions, civil society, and industrial and international organizations.

The IRP report on trade in resources focuses on environmental efficiency more than on economic efficiency, and explains how trade could be resource efficient by allowing commodities to be obtained from countries/locations where their production requires fewer resources and generates fewer environmental impacts than in others.

However, the publication underlines, higher trade levels, declining ore grades and decreasing energy returns upon energy investment (EROEI), higher food demand and diminishing land productivity further increase the upstream resource requirements of trade, which could negate the benefits of a potentially more resource efficient allocation of extraction and production activities via world trade.

Achim Steiner, UNEP Executive Director, explained that the benefits of international trade can include better access to resources and even more efficient production techniques from economies of scale, but the associated increase in global consumption and production results in overall environmental impact, from pollution to resource depletion.

**"That these impacts are being transferred to poorer nations is further cause for concern," Steiner said, stressing the need for policies that protect the environment from trade's detrimental effects.**

The report shows that dependency on world markets is highest for fossil fuels and metals, with around half of the volume of extracted fossil fuels and metals being reallocated through trade.

The publication concludes that:

- **The amount of global resource extraction has increased at a slower rate**

- **than trade, showing the rising dependency of countries on trade;**
- **15% of the resources extracted and used worldwide are directly traded, with the proportion rising to 40% when including resources used in the production process, but not physically included in the traded goods;**
- **There is a shift in resource-intensive processes from high-income countries to developing and emerging economies, with a corresponding shift in associated environmental burdens;**
- **High-income countries continue to be main recipients of resources via trade, while emerging economies such as China have switched to becoming major importers;**
- **The world trading system relies on fewer net exporters, making it increasingly vulnerable to disruptions in supplies.**

### **Countering Climate Extremes Key to Asia's Food Future : ADB is set to commit \$2 billion from 2015-2017 to address major constraints to food security.**

The article is available at : <http://www.adb.org/news/features/countering-climate-extremes-key-asias-food-future>

The Asian Development Bank is helping the fight against the extremes of climate change and food security for Asia's future. Climate change is a major food security challenge in Asia. ADB can influence and encourage governments to adopt new technologies and techniques.

Asia and the Pacific faces a food 'storm' in the coming decades unless it takes decisive steps to respond to a host of pressures on its food supplies – including from climate change.

This will require a combination of conserving and managing existing resources more effectively, tapping science to grow food from less land, and drawing in investment to meet growing food demand.

Climate change is a major food security challenge in Asia with more than 60% of the population, or 2.2 billion people, relying on agriculture and food production for income.

"Developing Asia's farms are expected to be hit hard by climate change, with production losses estimated at 2-18% for irrigated rice and 2-45% for irrigated wheat by 2050," said Michiko Katagami, ADB natural resources and agriculture specialist. **"Climate change adaptation and mitigation must be central to the food and nutrition security agenda for the region."**

**The numbers are stark. By 2030, 65% of Asians will live in cities. With an additional 3 billion consumers expected to join the middle class by 2030, food demand will rise by up to 70%.**

Available water supplies are shrinking in the face of increasing demand from consumers and competition from the agriculture and energy sectors. Around 70% of Asia's surface water is used for agriculture, but much of it is used inefficiently. Many water-stressed countries lose large volumes of treated water through leakage in water supply systems. Asia is running out of water for the future.

Now rising temperatures, increasing droughts and floods and other weather extremes are more worrying threats to food security.

By 2050, expected crop yield reduction for irrigated paddy is 14–20%; for irrigated wheat, 32–

44%; irrigated maize, 2–5%; and irrigated soybean, 9–18%.

**Rice prices are projected to be 29–37% higher in 2050 compared to a no-climate change case; wheat prices will be 81–102% higher, maize prices will rise 58–97%, and soybean prices are set to increase 14–49%.**

In India and Bangladesh, more than 5 million hectares of rice fields are flooded during most of the planting seasons. With the International Rice Research Institute (IRRI), rice varieties withstanding floods were developed. Work was done on the development and dissemination of rice varieties for water-short areas in India, Nepal, Bangladesh, Laos, Cambodia, and the Philippines. Rice varieties with resistance to salt water intrusion, pests and diseases are also being developed.

As a result, governments have requested ADB support for large-scale seed multiplication and evaluation of climate-adapted water-saving rice varieties. Also, ADB assisted the Association of Southeast Asian Nations (ASEAN) to establish an emergency rice reserve as part of the ASEAN food security framework.

While there is no universal single-best adaptation measure, there are a range of potential adaptation responses to address the projected impacts of climate change.

Studies by ADB and the International Food Policy Research Institute (IFPRI) indicate that agricultural adaptation funding is required for all countries in the region. **Required public agricultural research, irrigation, and rural road expenditures are estimated to be \$3.0–\$3.8 billion annually during 2010–2050, above and beyond projected baseline investments.**

Recently, the People's Republic of China (PRC) has increased public investment in climate change research and allocated special funding to adaptation issues. An experiment with insurance policies and increased public investment in research are two examples of climate adaptation measures.

For 2015-2017, ADB committed \$2 billion annually in agriculture and food security-related activities to address three major constraints to food security:

- stagnating food productivity and production;
- lack of access to finance, infrastructure, and market;
- threats to climate change and price volatility.

ADB is increasing its support to the private sector for agribusinesses and looking for new investments to boost yields. ADB can play a role influencing and encouraging governments to adopt new technologies and conservation and management techniques to help farmers produce in an environmentally sustainable way, while facing climate change and disaster-related challenges.

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### **Chinese Solar Capacity to Jump Fourfold by 2020, Official Tells Xinhua.**

The article is available at : <http://www.renewableenergyworld.com/articles/2015/10/chinese-solar-to-jump-fourfold-by-2020-official-tells-xinhua.html?cmpid=renewablesolar10172015&eid=291072745&bid=1206131> .

Solar power capacity in China, already the world's largest market, will jump more than fourfold by 2020, according to a senior official cited by the government's official news agency.

**Solar capacity in China will reach 150 GW in five years, up from 35.8 GW at the end of June**, Dong Xiufen, director of new energy for the National Energy Administration, told the Xinhua news agency.

The government's goal is to **boost photovoltaic-power capacity by 20 GW annually from 2016 to 2020**, according to Xinhua's report.

The increase would come amid signs of an economic slowdown in China and would require growth above what analysts have predicted.

Bloomberg New Energy Finance in August forecast 17.5 GW of solar power would be installed this year, up 35 percent from 13 GW in 2014.

China will also continue to push mergers and acquisitions among domestic solar companies as well as technological advances, Huai Jinpeng, deputy head of the Ministry of Industry and Information Technology, said in the Xinhua report.

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### **Coal Bed Methane Recovery: Helping India Meet its Energy Needs.**

UNDP demonstrated the economic feasibility of undertaking methane recovery during and after the extraction of coal. Prevented carbon emissions equivalent to discharge from 180,000 cars. Recoverable Coal Bed Methane reserves are estimated at 800 billion cubic metres with gas production potential of 105 million cubic metres a day over a period of 20 years.

Find out more at:

[http://www.in.undp.org/content/india/en/home/ourwork/environmentandenergy/successstories/coal\\_bed\\_methanerecoveryhelpingindiameetitsenergyneeds.html](http://www.in.undp.org/content/india/en/home/ourwork/environmentandenergy/successstories/coal_bed_methanerecoveryhelpingindiameetitsenergyneeds.html) .

A first-ever pilot by UNDP demonstrated the commercial feasibility of using methane gas from coal mining to electrify homes. Now widely accepted as an area with commercial potential that is being scaled up nationally, it reveals a powerful strategy to combat climate change, ensure safety of mining communities and provide a critical source of electricity in an energy starved country.

Each day workers toil many hundreds of kilometers beneath the earth's surface in Dhanbad, better known as India's coal capital. Located in Central India, they extract coal from these world famous mines which is used to fuel India's rapidly expanding economy. And until recently, they would return home to the same darkness that engulfed them through the day. Not anymore. For about 400 of these miners and their families, uninterrupted electricity is now reaching them for the first time.

A project supported by the United Nations Development Programme (UNDP) and funded by the Global Environment Facility (GEF) between 1999 and 2008, demonstrated for the first-time in India, the economic and social feasibility of undertaking methane recovery during and after the extraction of coal. For a country which is among the ten largest emitters of methane and one of the five largest coal producers in the world, this innovation has far-reaching consequences. The project that was initiated in just two mines in Dhanbad prevented carbon emissions equivalent to discharge from 180,000 cars.

The potential of commercializing this technology gained widespread recognition. **A study by the Coal Mine Planning and Design Institute estimates that coal bed methane resources in India are 3.4 trillion cubic metres.**



Experts concur that the pilot has been a turning point for improving efficacy in extraction from methane and helping tackle the dual challenges of reducing carbon dioxide methane and improving quality of life – through better health outcomes and adding many more on-grid. Several of the largest players in the Indian coal/ power sector are now exploring methane extraction on a large scale – both to enhance profitability and improve environmental outcomes.

Roughly 400 million people in India live without electricity and by demonstrating the commercial viability of extracting methane from the coal mining process, the UNDP pilot represents an important strategy to address the rapidly rising energy needs of India in a sustainable way.

It is expected that the national endeavour will result in measurable reduction in greenhouse gas emissions from mining activities and recovery of methane. In the long-run, methane will also substitute coal burned in power generation and diesel used in mine transport – mainly trucks.

This will also ensure efficient use of energy resources and sustainability of energy supply – the two key objectives of India's energy planning.

Most importantly, the innovation will light up many more homes of people who are sweating it out to fuel the growth of the country.

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**Four challenges that India faces in achieving sustainable development goals : It is up to central and state governments to ensure that S in SDGs also stands for successful.**

It is available at: [http://www.business-standard.com/article/punditry/four-challenges-that-india-faces-in-achieving-sustainable-development-goals-115102600232\\_1.html](http://www.business-standard.com/article/punditry/four-challenges-that-india-faces-in-achieving-sustainable-development-goals-115102600232_1.html) .

Last month, 193 countries gathered together at the UN Summit on the Sustainable Development Goals (SDGs), to adopt an ambitious new global development agenda.

Comprising 17 goals and 169 targets the SDGs expand on the millennium development goals (MDGs) adopted in 2000 which will expire this year.

**The SDGs which integrate environment, social and economic dimensions are one the most comprehensive list of global goals the world has ever committed to. While the number of indicators will be finalized by March 2016, it is expected that there will be 100s if not 1000s of indicators accompanying the goals.**

The SDGs are the consequence of a 3-year long consultation programme. From establishing an Open Working Group, to consultative conversations across both themes and countries, the UN even launched an online My World Survey portal asking people to vote to ascertain issues/goals that matter most.

**But do global commitments such as SDGs even matter to India?**

The sheer size and scale of the country means that, the success of the global goals, to a large extent, depends on progress made by India.

Further, the SDGs can play an important role in generating greater public debate and forcing

Ministries and departments (at least in theory) to think about development not just in silos but as a collective exercise.

But, global and national commitments aside, the big question that remains is how the SDGs will be taken forward. **There are broadly 4 main areas of concern:**

- **Defining Indicators:** Past record indicates that we have been not very successful in setting relevant indicators to measure outcomes. Quality education has not successfully been defined. India's myopic definition of "safe" drinking water (with hand pumps and tube wells considered as safe as piped water supply) means that official data suggests 86% of Indians have access to safe drinking water and, as a result, we are "on track" for the MDG goal on drinking water. However, the number of waterborne diseases and deaths due to diarrhoea clearly indicate, this is not the case.
- **Financing SDGs:** A new study estimates that implementing SDGs in India by 2030 will cost around US\$14.4 billion. Given the recent cut in social sector schemes by the Union government, unless states devote a significant portion of their resources on the social sector, there is likely to be a significant funding gap. High growth and redistribution itself are also not enough. According to the United Nations MDG 2014 report, despite high economic growth, in 2010, one-third of the world's 1.2 billion extreme poor lived in India alone. Given these constraints, it is likely that domestic revenues aside, private finance could be a crucial source for financing the SDGs.
- **Monitoring and Ownership:** Relatedly, a third significant challenge is going to be with respect to ownership. Reports suggest that NITI Aayog will play a significant role in tracking progress. However, members at the Aayog have expressed reservations on being able to take on this mammoth task. Moreover, if states are expected to play a pivotal role (giving the devolution post 14th Finance Commission), it will require ownership not just nationally, but also at the state and local level.
- **Measuring Progress:** Lastly but most importantly is the question of measuring progress or achievement. By the government's own admission, non-availability of data (particularly in respect to sub-national levels), periodicity issues and incomplete coverage of administrative data, made accurate measuring progress of even MDGs virtually impossible.

These 4 challenges aside, it is important to remember, that while SDGs provide broad goals and targets, it will be up to the national, and state governments to identify priorities, decide appropriate locally relevant policies, harness innovation and ensure that an implementation and monitoring plan is in place. Only then we will have any chance in ensuring that the 'S' in SDGs, also stand for successful.

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### The Energy Impact of Air Conditioner Use in India.

The article is available at: <http://www.nrdc.org/international/india/files/india-energy-grid-alternative-refrigerants-IB.pdf>.

India faces tremendous energy demands, with room AC use already playing a major role. Room AC use is a significant driver of energy consumption.

According to the World Bank, in 2006, there were roughly 2 million room ACs in India. Estimates show growth up to 4.7 million ACs in 2011 for residential use alone. Market penetration for room ACs is projected to increase to 47% by 2030.

Room ACs dominate the Indian AC market, making up nearly 99% of annual sales. They typically run for about 8 hours a day for half the year. Studies show that room AC use already

accounts for up to 40% and 60% of peak summertime energy use in the cities of Mumbai and New Delhi, respectively. More than 75% of the electricity load in these two cities comes from residential and commercial AC uses. India's Air Conditioning Energy Consumption.

Currently, 300 million people in India lack access to electricity. As the Indian economy grows, energy consumption is also projected to increase. This growth, coupled with India's high ambient temperatures, which frequently exceed 40°C (104°F) during hot months, means people are increasingly turning to AC systems to stay comfortable during summers. Room AC market penetration in urban households is about 10% at present. Compared to wealthier countries in similar climates with 100% saturation, the Indian market is poised for explosive growth in room AC energy demands, especially as the economy grows.

As an example, AC market penetration in major cities in China went from nearly zero to about 100% in a 15-year period, between 1992 and 2007. **In India, room AC sales have been growing at 20% on average over the last 10 years.** With higher incomes and rising temperatures due to climate change, that growth is likely to accelerate.

China, Japan, Indonesia, Thailand and the European Union are seeing rapid adoption of alternative refrigerants that are more efficient and cause less global warming.

### **REDUCING STRESS ON INDIA'S ENERGY GRID**

Energy requirements for cooling buildings will grow faster than any other energy demand in the Indian building sector, according to CEEW and other experts. The number of installed room ACs will grow from 116 million, with an electricity consumption of 239 TWh by 2030, according to research from the U.S.

Lawrence Berkeley National Lab (LBNL). Without improvements in energy efficiency, this growth will put a huge additional burden on India's energy grid and "require unprecedented construction of new power plants."

Estimates from the World Bank predicted a ten-fold increase in the AC stock between 2011 and 2031, projecting increases from 4.7 million to 48 million ACs.

**Burden on India's Energy Grid** The challenge for India is to increase economic growth and human development with renewable and low-carbon energy used in increasingly energy efficient products such that the overall energy intensity of the economy is sustainable. Room AC use is highly correlated with peak electricity demand. This means that AC use occurs at the times of day when the electricity grid is highly stressed, thus increasing the risk of power outages.

**It is estimated that ACs will account for 46 gigawatts (GW) of peak energy demand by 2020 and 143 GW by 2030.**

Power cuts currently are a daily occurrence during peak summer seasons in many Indian regions. In 2014, Power Minister, Piyush Goyal announced a goal of uninterrupted access to energy for all homes, commercial buildings, and industry within the next five years. To meet this goal, India must take advantage of every energy saving opportunity.

Energy efficiency is a tremendous energy-saving opportunity for India's growing economy. The Ministry of Power's BEE has determined that "efficient use of energy and its conservation is the least-cost option to meet the increasing energy demand." **Up to 40% of energy consumed by room ACs could cost-effectively be saved by enhancing efficiency.**

A leading estimate by McKinsey projects that 80% of the infrastructure – the roads, buildings and appliances that will exist by 2030 have yet to be built, representing a huge opportunity to build efficiency into the design from the start. This equals energy savings in the amount of 60 GW at peak demand by 2030, potentially avoiding the construction of more than 100 mid-sized coal-fired power plants.

Additional benefits of improving energy efficiency in the Indian economy include “higher energy security, reduction in local air pollutants (health and agricultural benefits), reduction in capital investment and fossil fuel import requirements for electricity and reduction in marginal abatement cost,” according to researchers at the Indian Institute of Management, Ahmedabad.

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## **E-WASTE: FROM TOXIC TO GREEN : INDIA**

The work of Chintan with wastepickers and e-waste has been awarded by the UN Secretariat for fighting climate change. Sixteen game-changing initiatives from around the world were announced as winners of a prestigious United Nations climate change award.

Further details of the Chintan work is available at:  
[http://unfccc.int/secretariat/momentum\\_for\\_change/items/9267.php](http://unfccc.int/secretariat/momentum_for_change/items/9267.php) .

More than 2,000 waste pickers have been trained to collect e-waste for safe disposal and recycling. The initiative negotiates for the best rates from recycling companies so that waste pickers can earn more money, increasing their incomes by 10-30%. More than 17 tonnes of e-waste is collected each year, preventing the release of carbon dioxide and other greenhouse gases. E-waste that is not recycled contributes to about 4.25% of the greenhouse emissions.

**From Toxic to Green initiative can serve as a model to help other countries recycle e-waste and fight poverty. As Chintan's model of handling e-waste is highly replicable due to its low cost, it can be adopted by other cities and countries where e-waste involves significant risk to workers, communities and the environment.**

This initiative trains waste pickers in India to collect electronic waste, such as computers and mobile phones, for safe disposal and recycling. By recycling raw materials from discarded electronics, natural resources are conserved and air and water pollution caused by hazardous disposal is avoided. Recycling e-waste from landfills reduces methane emissions, which are 25 times more potent than carbon dioxide at trapping heat in the atmosphere. The initiative makes the waste pickers more resilient to poverty by providing green jobs that increase their incomes and protect them from the risks of exposure to toxins and heavy metals.

### **The problem**

Informal waste pickers help clean up India's cities by recycling approximately 20% of the waste generated. However, these waste pickers still do not have formal recognition, equal rights, secure and safe livelihoods and dignity. And as consumption patterns change with a growing economy, their work exposes them to ever higher levels of pollution and dangerous toxins.

**According to a UN report, India is the world's fifth largest producer of e-waste, discarding almost 1.7 million tonnes of e-waste in 2014.** Almost 95% of the e-waste it produces is either burned or dumped in landfills. With rapid urbanization, this will only multiply—as will the number of people handling it at considerable risk to their health. Managing waste, ensuring sustainable consumption and a healthy environment, and ensuring

just and safe working conditions for waste pickers are urgent challenges.

### **The solution**

Chintan, an Indian NGO, in cooperation with Delhi's Pollution Control Committee and the city's Department of Environment, created a partnership with Safai Sena, a registered association of waste pickers to improve collection, segregation and storage of e-waste. They then joined forces with companies in India that safely recover metals and plastics from e-waste. The initiative trains waste pickers to collect e-waste using safe e-waste handling practices to reduce their exposure to dangerous toxins. After it is collected, the e-waste is safely stored at Chintan's authorized collection center and sent to recyclers for safe disposal/recycling.

### **Helping the planet**

By recycling raw materials from discarded electronics, natural resources are conserved and air and water pollution caused by hazardous disposal is avoided. Recycling e-waste from landfills reduces methane emissions, which are 25 times more potent than carbon dioxide at trapping heat in the atmosphere. Recycling instead of producing new materials will also reduce overall energy consumption, avoiding direct greenhouse gas emissions, and reducing the environmental impact of natural resources extraction. By diverting about 17 tonnes of e-waste to recycling centers each year, this project is reducing greenhouse gas emissions. In addition, the waste pickers collect e-waste in non-motorized vehicles. This means collection and transportation of e-waste is emission-free.

### **Helping people**

In Delhi alone, more than 25,000 people earn a living from e-waste handling, collection, dismantling and metal extraction. Chintan works in partnership with waste pickers, itinerant buyers and small scrap dealers. More than 2,000 waste pickers have been trained on how to deal with e-waste in a safe manner. Electronic waste that is typically burned or dumped in a landfill is now instead collected directly from households, schools and businesses and recycled safely. The initiative also negotiates for the best rates from recycling companies for e-waste, so that waste pickers can earn more money. This has increased their incomes by 10-30%.

### **Spillover effect**

Many countries, such as Nepal, Bangladesh, Thailand and Ghana, also produce a considerable amount of e-waste and are also served by waste pickers for waste handling. Therefore, there is a huge potential not only to give these waste pickers sustainable livelihood but also work towards generating more awareness on better e-waste practices.

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**Consumer behavior has not led to reduced energy consumption: A new study shows that in OECD countries, including the US, reduction in energy consumption has been due to energy efficiency improvements.**

The article is available at: <http://www.downtoearth.org.in/blog/consumer-behaviour-has-not-led-to-reduced-energy-consumption-51636> .

An International Energy Agency (IEA) report on trends in energy efficiency in OECD (Organization for Economic Co-operation and Development) countries offers insights into the nature of energy-intensity reduction in these nations. The report shows that though the total consumption of energy has reduced in OECD member countries (including the US), there is no corresponding change in consumption behavior—a finding also highlighted in Delhi-based non-profit Centre for Science and Environment's (CSE) recent [critique](#) of the US INDC (Intended Nationally Determined Contributions).

### More about the report

The study shows changes in the total final consumption (TFC) of energy in 11 OECD member countries (Australia, Denmark, Finland, France, Germany, Italy, Japan, Holland, Sweden, UK and US) under three categories that determine the overall energy demand in a particular country.

TFC is defined as the sum of consumption by various end-use sectors. It excludes energy transformation losses from power plants, oil refineries and other energy transformation processes. In the report, the sectors include freight/passenger transport, industry (manufacturing and mining), services and residential buildings and others (agriculture and non-energy uses).

The three categories are defined as follows:

**Activity effect:** this is related to changes in energy consumption due to human/economic activities such as changes in passenger/goods per km in the transport sector or changes in value-added production for industrial/services sectors.

**Structure effect:** this relates to changes in energy consumption due to a change in the mix of activities within a sector, such as the modal share of vehicles in passenger and freight transport

**Efficiency effect:** this relates to changes in energy consumption as a result of changes due to energy efficiency improvements.

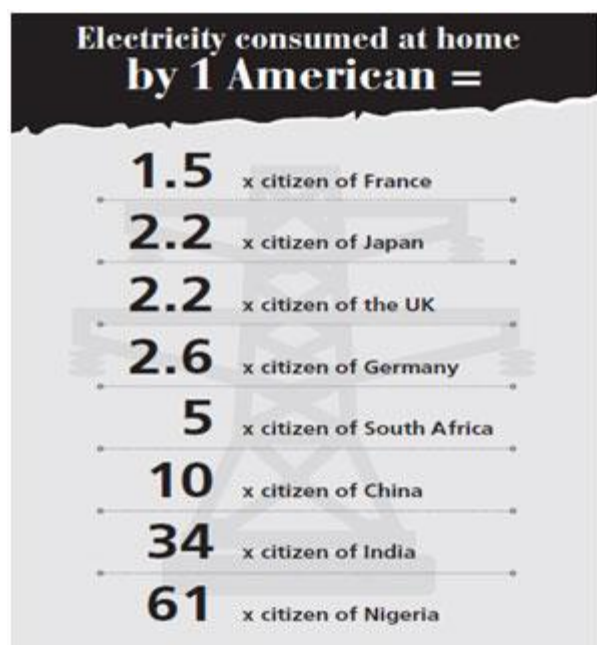
The report shows that activity effect (from 2006-07) and structure effect (8 per cent reduction from 2004) has remained constant and the reduction in energy consumption (from 2004) is largely a function of energy efficiency improvements.

Residential, industry and services sectors, which account for almost three quarters of the US energy consumption (US Energy Information Administration, 2011), show trends of increasing consumption.

US is responsible for 42 per cent of the total OECD greenhouse gas emissions. THE OECD Statistics on GHG emissions are available at: [https://stats.oecd.org/Index.aspx?DataSetCode=AIR\\_GHG](https://stats.oecd.org/Index.aspx?DataSetCode=AIR_GHG) and attributes the recent reductions in energy consumption reported by the US to the following factors:

- Shifting of production activities to developing countries (mainly China)
- Global shift towards cost-effective energy efficient appliances/vehicles/machinery
- Economically-motivated shift from coal to natural gas in power generation

Comparison of residential electricity consumption between the US and other countries is given below:



### **International Workshop on Concentrating Solar Technologies for medium & high temperature applications being held at Mumbai on 19<sup>th</sup> November as part of Intersolar India 2015**

The Ministry of New and Renewable Energy in association with the organizers of Intersolar India 2015, is organizing an International workshop on Concentrated Solar Technologies on 19th November as part of Intersolar India 2015 under the banner of its UNDP-GEF project on Concentrated Solar Heat.

Intersolar India is the country's largest exhibition and conference for the solar industry. It is built over the success of the well-known brand Intersolar, world's largest exhibition-series for the solar industry. It takes place annually at the Bombay Exhibition Centre (BEC) in Mumbai. The event's exhibition and conference both focus on the areas of photovoltaics, PV production technologies, energy storage systems and solar thermal technologies.

Since being founded, Intersolar has become the most important industry platform for manufacturers, suppliers, distributors, service providers and partners in the global solar industry. Intersolar is successfully been organized in Munich – Germany, San Francisco – USA, Beijing – China, Sao Paulo – South America and Mumbai – India. To increase our reach we also organize summit in Istanbul – Turkey, Brooklyn – USA East, Riyad – Saudi and Bangalore – India.

India has very good solar energy potential. A significant part of India's low-medium temperature process heat need can be met by concentrated solar technologies –alongside process integrating and suitable heat storage. This would reduce global CO<sub>2</sub> emissions, air pollution, and India's growing dependence on expensive and insecure imported oil. The abundant solar radiation, clean character of solar energy, high cost of fossil fuels and negative emission consequences along with large requirements for process heat below 250°C are the key drivers of the strong focus on the development of concentrating solar thermal technologies in India.



The use of solar concentrator to meet the process heat, community cooking requirement of industrial, institutional and commercial establishments is an emerging and exciting market opportunity in India. A number of CSTs are now available and are in promotions in the country and abroad for such applications. A vast potential of these technologies exist in various sectors of the country which includes industries like textile, dairy, auto, pharmaceutical, hospitals & hotels, religious bodies, and institutions e.g. hostels, para military units, prisons etc

The workshop will comprise of three main sessions:

**2.30– 3.15 PM Inaugural Session**

**3.15 – 4.30 PM Technology, Case Studies & Standard/ Policies Session**

**4.30 – 4.50 PM Tea/ Coffee break**

**4.50 - 6.00 PM Plenary Session to discuss key issues for large scale promotion of CSTs**

In the workshop, you will be able to hear an expert panel from various International and Indian Institutes as well as Industry. Speakers are being invited from National Renewable Energy Laboratory (NREL)-USA, International Energy Agency (IEA)-France, German Aerospace Center (DLR) – Germany, Institute of Thermodynamics and Thermal Engineering (ITW) – Germany and some reputed CST industries abroad and the country.

The workshop is first of its kind in the country and is beneficial to the owners and policy making officials of above organizations in making their establishing green by reducing the fossil fuels and thereby the carbon foot print.

Interested delegates would have to register themselves from the below link. Cost for each delegate ticket is 1,500 INR plus Taxes. Registered delegates will be able to have lunch also before the workshop. For more details contact Mr. Brijesh Nair (Mob +91 8080844022, email id [brijesh.nair@mmi-india.in](mailto:brijesh.nair@mmi-india.in) )

In order to register for the conference, please use the following link : <https://www.messe-ticket.de/INTERSOLAR/INDIA2015> .

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**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](mailto:se-clmt@solutionexchange-un.net.in)*

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