Climate Change Community

Community Update
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FROM THE RESOURCE PERSON

Dear Members,

We are presenting the 73rd Edition of the Monthly Community Update of the Climate Change Community of Practice (CoP).

The Government of India lays great emphasis to climate change as is evident from the extract below from the PM of India's speech delivered at the Economic Times Business Global Summit on 29th January, 2016:

CONTRIBUTING POSITIVELY BEYOND THE ECONOMIC REALM!

But a country's contribution goes beyond economics. Protecting our planet from climate change is one of the most important tasks for this generation. If one country reduces its environmental footprint, it creates benefits for all others. It is for this reason that in the COP 21 Summit, India made far reaching commitments towards the larger welfare of the planet. In history, every country that has grown has increased its per capita emissions footprint. We are committed to re-writing that history. We are committed to reducing the emission intensity of our GDP by 33% by 2030 even while growing at a fast pace. For a country which is already at a very low base of per capita emission, this is a very ambitious target. We have committed that by 2030, 40% of our electric power capacity will be from non-fossil fuel. We have also committed to building an additional carbon sink of over 2.5 billion tonnes of carbon dioxide equivalent. This will be done by creating additional forest cover by 2030. This commitment is from a country with a very low per capita land availability. We have taken the lead in launching an international solar alliance, involving 121 countries falling between the Tropic of Cancer and the Tropic of Capricorn. This initiative will help many developing countries, from Africa to South America, to take advantage of developments in renewable energy around the world.

Shri Narendra Modi's speech
at the ET Global Business Summit

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

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

DEVELOPMENT IN THE SECTOR

Road maps for 139 Countries to Transition to 100% Clean, Renewable Wind, Water, and Solar (WWS) Power by 2050 and 80% by 2030

The related report can be accessed at: http://web.stanford.edu/group/efmh/jacobson/Articles/I/15-11-19-HouseEEC-MZJTestimony.pdf

There are many studies from around the world indicating the techno-economic feasibility of migrating to 100 % renewable energy sources by 2050, including many from within India.

The written testimony to the United States House of Representatives Committee on Energy and Commerce Democratic Forum on Climate Change (November 19, 2015, Washington D.C.) by Mark Z. Jacobson, a Professor of Stanford University under the title "Road maps for 139 Countries and the 50 United States to Transition to 100% Clean, Renewable Wind, Water, and Solar (WWS) Power for all Purposes by 2050 and 80% by 2030 ", provides a highly relevant study for India.

This paper indicates that the researchers at Stanford University and the University of California have developed road maps to transition the energy infrastructures of 139 countries (including India) and the 50 United States to 100% clean, renewable infrastructures running on existing-technology wind, water, and solar (WWS) power for all purposes by 2050, with 80% conversion by 2030. In this study all-purpose energy includes electricity, transportation, heating/cooling, industry, and agriculture/forestry/fishing.

It say that converting the 50 states, 139 countries, and remaining countries of the world will have the following impacts:

- eliminate 4-7 million annual worldwide premature air pollution mortalities and their costs,
- eliminate global warming and its costs,
- create over 20 million more 35-year global jobs than lost,
- stabilize energy prices because fuel costs are near zero,
- reduce international conflict by creating energy-independent regions,
- reduce terrorism risk by decentralizing power
- reduce the social cost (business + health + climate costs) of energy by 60%.

The main barriers to such a conversion are neither technical nor economic; rather, they are social and political.

Subsequent to the COP21 treaty at Paris, there can be no doubt that India will come under increasing pressure to minimise total GHG emissions from its energy sector. While the government may be seen as correctly lobbying for suitable finances and technology transfer for such a transition, we should not forget that our plans and processes leading to low GHG emissions will be in the true interest of our communities both in the short term and long terms, and can achieved mostly through the technologies already available to us.

Such a transition will bring huge and sustainable benefits to the nation as a whole, and will include:

- elimination of chronic power cuts, unsatisfactory voltage condition and financial losses;
- lead to much higher reliability, vastly reduced T&D losses, and much needed energy justice to rural India.

Transitioning to RE sources early will also lead to minimised pollution of land, water and air,

while arresting the degradation of our natural resources. Vastly reduced mortality due to improved environment, and the associated economic benefits to our society will lead to much higher net growth rate. Hence it can be said that transitioning to 100% RE at the earliest at whatever financial cost will be worthy of all the needed efforts.

What is the 2030 Agenda for Sustainable Development?

The article is available at : http://www.in.undp.org/content/india/en/home/post-2015/sdg-overview.html .

At the Sustainable Development Summit on 25 September 2015, UN Member States adopted the 2030 Agenda for Sustainable Development, which includes a set of 17 Sustainable Development Goals (SDGs) to end poverty, fight inequality and injustice, and tackle climate change by 2030.

The SDGs build on the Millennium Development Goals (MDGs), eight anti-poverty targets that the world committed to achieving by 2015. The MDGs, adopted in 2000, aimed at an array of issues that included slashing poverty, hunger, disease, gender inequality, and access to water and sanitation. Enormous progress has been made on the MDGs, showing the value of a unifying agenda underpinned by goals and targets. Despite this success, the indignity of poverty has not been ended for all.

The new SDGs, and the broader sustainability agenda, go much further than the MDGs, addressing the root causes of poverty and the universal need for development that works for all people.

UNDP Administrator Helen Clark noted: "This agreement marks an important milestone in putting our world on an inclusive and sustainable course. If we all work together, we have a chance of meeting citizens' aspirations for peace, prosperity, and wellbeing, and to preserve our planet."

The SDGs will now finish the job of the MDGs, and ensure that no one is left behind.

What are the SDGs?
All 17 SDGs are connected to UNDP's Strategic Plan focus areas: sustainable development, democratic governance and peacebuilding, and climate and disaster resilience. Goals Number 1 on poverty, Number 10 on inequality and Number 16 on governance are particularly central to UNDP's current work and long-term plans. Having an integrated approach to supporting progress across the multiple goals is crucial to achieving the SDGs, and UNDP is uniquely placed to support that process.

What is UNDP's Role in the SDGs?
UNDP can support, and is already supporting, countries in three different ways, through the MAPS approach: mainstreaming, acceleration and policy support.

This sees UNDP:
- Providing support to governments to reflect the new global agenda in national development plans and policies. This work is already underway in many countries at national request;
- Supporting countries to accelerate progress on SDG targets. In this, UNDP will make use of our extensive experience over the past five years with the MDG Acceleration Framework; and
- Making the UN's policy expertise on sustainable development and governance available to

governments at all stages of implementation.

Collectively, all partners can support communication of the new agenda, strengthening partnerships for implementation, and filling in the gaps in available data for monitoring and review. **As Co-Chair of the UNDG Sustainable Development Working Group, UNDP will lead the preparation of Guidelines for National SDG Reports which are relevant and appropriate for the countries in which UNDP works.**

UNDP is deeply involved in all processes around the SDG roll out. UNDP is bringing its extensive programming experience to bear in supporting countries to develop their national SDG efforts.

The Government of India launches an ambitious rooftop solar subsidy scheme.

The fund unavailability issues with previous subsidy schemes are likely to get resolved; Significant changes to allocation process mean that the funds will be better directed to needier customers and potential for abuse will be much lesser than before; It is expected that significant growth in the rooftop market particularly in the government and institutional segments but the entire rooftop market will benefit from growth through overall industry learning and skills enhancement.

India's Cabinet Committee on Economic Affairs (CCEA) sanctioned INR 50 billion (USD 750 million) funding for 30% capital subsidy for rooftop solar installations (refer). The subsidy will be restricted to residential, government, social and institutional segments only and the government expects this subsidy to support total rooftop capacity of 4,200 MW until this budget is exhausted.

Based on past experience in India with rooftop capital subsidy, the two key issues here are: i) how will the new subsidy scheme work; and ii) and will the subsidy be effective in kick starting the growth in rooftop solar in India?

An approval by CCEA is a strong assurance of availability of funds. However, we will need to see an appropriate increase in the budget for Ministry of New and Renewable Energy (MNRE) for FY 2016-17 (to be presented in March 2016). Earlier experience in this relation is mixed as in March 2015, when INR 6 billion was sanctioned for a similar subsidy scheme (refer), funding availability proved to be a problem. The difference this time is that the government is targeting a huge jump in rooftop solar capacity addition from 200 MW in FY 2015-16 to 4,800 MW in FY 2016-17 (refer). And there is a palpably stronger commitment from the government to support the sector.

Moreover, the capital subsidy is being allocated to specific parts of the economy where funding availability is a big impediment to growth of rooftop solar. Subsidy is not being made available for commercial and industrial customers because these consumers pay higher tariff and can also avail the accelerated depreciation benefit.

The biggest change in the subsidy scheme is that funds will no longer be disbursed through MNRE 'channel partners'. There will now be three key modes of subsidy disbursement – Solar Energy Corporation of India (SECI), schemes run by state governments and subsidy disbursements through financial institutions. SECI is already believed to be in the process of allocating subsidy for 750 MW of rooftop capacity to systems aggregators and EPC contractors. The states are also likely to follow a similar aggregated capacity allocation route.

Another important mode for subsidy disbursement is going to be through financial institutions. MNRE is likely to provide an in-principle approval to the State Bank of India to disburse subsidies. These disbursements will be clubbed with the rooftop solar loan schemes of the bank.

As the new scheme is not applicable on the industrial and commercial segments, these segments are expected to continue to grow at a decent pace. We expect a significant growth in the government and institutional segments as soon as the subsidy disbursement mechanisms gets going. In its first leg, SECI may lead the charge on this. This growth is expected to start playing out over the next 6-12 months. As the subsidy disbursement mechanisms for the residential market would primarily be taken up by states and financial institutions, it may take up to a year for the mechanisms to become operational.

Overall, there are many improvements to the subsidy allocation process and together with the bigger allocation of funds, this is a very positive development for the sector. BRIDGE TO INDIA believes that this subsidy scheme will result in substantial growth of the rooftop sector in the short-term. In the long-term, this market needs a very strong concerted effort from the government on policy and regulatory front to achieve its growth potential in a sustainable manner.

Enervee Score Provides Daily Energy Efficiency Reporting For Home Appliances.

It rates energy efficiency of home appliances based on daily updates. Similar efforts are required in India.

The article is available at : http://www.sustainablecitiescollective.com/grmeyers/1135439/enervee-score-provides-daily-energy-efficiency-reporting-home-appliances .

Many consumers today purchase home appliances based on one primary factor – purchase price. While features and energy efficiency are important, they certainly don't take top billing when it comes to paying at the cash register.

The Enervee Marketplace, a web site that utilities can use to allow consumers to research appliance purchases, attempts to educate consumers so they know the cost of the appliance over its life span, including energy.

Enervee and Opower, a software company that works with utilities, have developed the Marketplace as the go-to web site for researching major home appliance purchases.

Marketplace aggregates information including purchase price, rebates and other incentives, as well as the Enervee Score – Enervee's daily-fresh energy efficiency product ranking. Utilities can use Enervee's Marketplace web site to offer their consumers up-to-the-day efficiency information on major appliances.

Matthias Kurwig, Founder and CEO, Enervee, says, "This is a great opportunity for Enervee to rapidly roll-out a compelling buying experience for millions of energy customers across the US and potentially beyond through Opower's industry-leading software platform.

By enabling consumers to take action on Opower's insights and recommendations it not only drives consumer interest and loyalty for utilities, but also ensures considerable energy savings are baked in and recorded at the moment of purchase."

Research shows that buying energy efficient products is not only one of the most effective ways to reduce energy costs, but it is also one of the most achievable outcomes even with consumers who ordinarily choose to opt out of energy saving programs.

There are many reasons for consumers to purchase energy efficient appliances: It is the one-time behaviour that delivers savings year after year. Energy savings are captured every year if you buy an energy efficient product or appliance, for the simple fact that it remains more efficient than the average product in its category for years. So with no changes in consumer usage behaviour, there are savings that keep on stacking up.

Even non-energy conscious consumers see the value in buying energy efficient. Short of refitting your entire home, buying energy efficient products is not only the most effective way to save energy but it is also one of the most effective ways to engage consumers who ordinarily opt out of energy initiatives. It's an effective route to those hard to engage consumers.

Doing the right thing means buying the right thing. Consumers are becoming far more interested in making commitments to the 'right' purchase decisions – 65% of consumers consider the importance of doing the right thing when buying products.

Finally, an energy efficiency rating that is always up to date. Energy efficiency certification can be up to a couple of years old for certain products – meaning consumers are making decisions on stale data. The Enervee Score (1-100) is updated daily.

Enervee research shows consumers respond far more to messages about how much money they will lose by making a bad choice, than to how much money they may save with a good choice. That's 'loss aversion' applied to appliances, and it shows talking about losses gets the right result for the consumer and for the environment.

Comprehensive law for rejuvenation of river Ganga under consideration : Government is considering the need to draft a comprehensive legislation for rejuvenation of river Ganga

The article is available at: http://www.india.com/news/india/comprehensive-law-for-rejuvenation-of-river-ganga-under-consideration-765935/ .

Government is considering the need to draft a "comprehensive" legislation for rejuvenation of river Ganga, Rajya Sabha was informed.

Union Water Resources, River Development and Ganga Rejuvenation Minister Uma Bharti shared the information responding to questions including ones on status of the Namami Gange programme and whether the Government proposes to enact a law to make the scheme successful.

"The need for a comprehensive legislation for rejuvenation of river Ganga is under consideration of the Ministry Water Resources, River Development and Ganga Rejuvenation," Bharti said in a written reply in the Upper House.

The Minister said that an inter-Ministerial Committee (IMC) was earlier constituted for framing draft legislation on the National River Ganga to strengthen efforts to make the revered river

pollution-free and ensure its continuous flow was established when the programme was under Union Ministry of Environment and Forest. ”Consequent upon transfer of the work to Water Resources Ministry, the IMC has been reconstituted and dialogue with the states has also been initiated,” she added.

The Minister also said the government has until now sanctioned funds worth Rs 6,191.54 crore, while Rs 1,501.32 crore have been released to five states namely Uttarakhand, Uttar Pradesh, Bihar, Jharkhand and West Bengal from where Ganga passes through. The states have spent Rs 1348.10 crore till now, the Minister said.

The Minister also informed the House that New Delhi is "constantly" in touch with Federal Government of Germany and its agencies for factoring the experience of Rhine river rejuvenation in cleaning of Ganga, "wherever practical".

Answering a question, she informed that the Government has already deployed a battalion of Ganga Task Force at Allahabad as part of its efforts to keep Ganga clean. "Government has plans to raise battalions, Ganga Task Force in other locations for keeping the river clean.

"Currently, the process for providing hands on training to jawans in plantation/afforestation and to identify the suitable land parcels for preparatory and plantation activity is underway," she added.

The Minister stated sewage from cities along the river account for 75 per cent of pollution in the river.

"In order to improve health of Ganga, it is required not to let wastewater flow into the river. It should be recycled and used for cultivation of plants like sugarcane or industries. We can cultivate sugarcane using 'B' class or 'C' class (treated water) or supply it to industries.

"Ganga is a source of 'A' class water, which is drinkable and pure. Such water should be used strictly for potable purposes and cultivation of vegetables which require less water. This will ensure lesser water is withdrawn from the river and its flow improves," Singh said.

Allowing cultivation of sugarcane, requiring excess water, in areas located below the level of Ganga is recommended. Whereas vegetables, which consume less water, can be planted on areas located above the level of the river. And such plantation should be organic farming. This will give enough revenue to our farmers with quality produce.

Lesser water withdrawal will also mean more water remains in the river and it flows to cleanse itself. Thus, its environmental and ecological flow will be better, improving its health. When flow is proper, it will also reduce encroachment along its banks.

The Centre has started a national mission to clean the 'holy' Ganga, which traverses five states -- Uttarakhand, Uttar Pradesh, Bihar, Jharkhand and West Bengal -- during its course of 2,525 km before flowing into the Bay of Bengal.

Dispelling concerns over alleged slow progress in implementation of the National Mission for Clean Ganga -- 'Namami Gange', Union Water Resources Minister Uma Bharti said the NDA government is committed towards making the Ganga "one of the cleanest" rivers in the world by October 2018.

Joint knowledge production (JKP) for climate change adaptation: what is in it for science?

The paper is available at: http://cakex.org/sites/default/files/documents/ES-2015-7929.pd

Both in literature and in practice, it is claimed that joint knowledge production (JKP) by researchers, policy makers, and other societal actors is necessary to make science relevant for addressing climate adaptation.

In various Western countries, large multi-actor programs have been or are being carried out in which joint knowledge production (JKP) for climate adaptation takes place between scientists, policy makers, and other societal actors.

JKP implies that actors cooperate directly in the exchange, production, and application of knowledge.

An inventory identified 14 such temporary programs in various Organisation for Economic Co-operation and Development countries, each of them emphasizing the importance of systemic innovation, involvement of societal actors in knowledge production, and the realization of both scientific and nonscientific output.

Large climate research programs such as the Dutch programs Climate Changes Spatial Planning, Knowledge for Climate and Living with Water, or the German Klimzug Program are cases in point.

JKP is also one of the spearheads of Future Earth, a recently started 10-year international initiative on global sustainability research and is advocated in several position papers.

JKP can be positioned in broader debates on how to arrive at socially more relevant knowledge. Recent empirical analyses of JKP have started to zoom in on the quality of the knowledge production processes in projects in which scientists, public policy makers, and sometimes other societal actors collaborate in "climate proofing" specific regions.

Other recent studies have dealt with project structures and project management in transdisciplinary research teams, knowledge management in the context of ecosystem-based management, interactive knowledge development in coastal projects, JKP in sustainability partnerships and knowledge gaps regarding the desirable link between science policy interfaces and problem types.

There is some empirical evidence that JKP may contribute to the societal relevance of research. Knowledge on the scientific merit of JKP has, however, a much weaker empirical basis. Literature suggests that close cooperation between scientists and policy makers can be beneficial for the scientific enterprise but also warns against a too one-sided focus on science for rather than science of adaptation. However, more detailed and systematic empirical insights into the scientific merit of JKP projects are still lacking.

This is a problem, first, because so far it remains unclear what the observed trend toward an emphasis on participatory forms of knowledge production means for the credibility, salience, and legitimacy of the science related to climate adaptation. Second, we lack knowledge of the extent to which scientists' interests are being satisfied in JKP projects, which forms an important condition for their sustained engagement in such projects.

The authors aim to address the observed knowledge gap by providing an empirical

exploration of what the scientific merit of JKP projects may be. We do so by, first, developing a set of hypotheses regarding this scientific merit in terms of the process, output, and impact of JKP projects.

The set of hypotheses has been based on a review of literature from the fields of science studies, the sociology of knowledge, and environmental governance, as well as discussions with six environmental science research leaders.

Although recent assessments of JKP projects have provided some arguments in favor of their societal merit, much less is known about their scientific merit.

In this paper, the authors explored the latter by developing a conceptual framework addressing characteristics of doing JKP as well as hypotheses on potential merits and pitfalls in terms of its process, output, and impact for science.

Semi-structured interviews with six environmental science research leaders as well as discussions with five researchers involved in past JKP projects were used to start operationalizing the framework into criteria and compiling a survey.

This survey was filled out by 144 researchers involved in Knowledge for Climate, a large Dutch multi-actor research program.

The findings suggest that, at least in the context of recently carried out Dutch climate adaptation projects, JKP contributes to a broader empirical knowledge base; more reflexivity on the part of researchers; and more publications for policy makers.

This paper concludes that by formulating next research steps, including evaluating what would be a proper balance between more versus less participatory forms of scientific knowledge production.

Biomass Energy for Rural India: Final Report: COST BENEFIT ANALYSIS: Of BIOMASS GASIFIER BASED ELECTRIFICATION.

The final report can be downloaded from : http://www.in.undp.org/content/dam/india/docs/beri-CostBenefitan.pdf.

Some of the information in the report related to Solar Energy is outdated as the report was written in 2012. However, the portion on Biomass Power is very much relevant even today.

The BERI operations proved technical feasibility of biomass gasification through their operations at Kabbigere in Tumkur district.

Very good level of PLF [exceeding 78 %] were achieved when 100 kW producer gasifier system [100% producer gas] operations at Kabbigere were supervised by Indian Institute of Science. At this level of operations, the cost of power produced was Rs 5.31 per kWh with biomass cost at Rs 4.00 per kg. However, cost for per Kwh energy exported, the cost works out to Rs 7.15 per kwh. Further, when the cost of capital is included, the cost per Kwh of exported power works out to Rs 8.23 per unit. It required 1.36 kg of woody to produce one kWh of electricity. The auxiliary power consumption / losses were 30 %. The agreement with BESCOM was generating a revenue of Rs 2.85 per kWh. As long was project support was there, the gap was filled in by the project funds, but the operations stopped thereafter.

Even now, the average tariff support for biomass power in the state of Karnataka is Rs. 5.54 (http://reconnectenergy.com/blog/2014/07/karnataka-approved-tariff-for-biomass-projects/) per kWh which is not sufficient to fill the gap.

The same level of operations could not be sustained in absence of supervisory support by the Indian Institute of Science and the operations were managed by the Project Management Unit set up under the project. The remunerations were governed by wage norms and were not sufficient to retain the skilled people to continue their work. Many operations and breakdown required quick skilled attention and immediate repair which could not come by if the operations were not supervised by IISc.

There are 3 issues to be addressed:

1. What are the other experiences of cost of production and other parameters from a 100 kW biomass gasifier systems working on 100% producer gas?
2. What is to be done to bridge the gap in production cost and revenue?
3. What are the best options to operationalise the plants at Kabbigere, Borigunte and Seebanayanapalya?

Statement on the Paris Outcome by T. Jayaraman and Tejal Kanitkar,Centre for Climate Change and Sustainability Studies,Tata Institute of Social Sciences, Mumbai

The statement is available at : http://www.thehindu.com/news/international/paris-agreement-falls-short-say-tiss-researchers/article7983311.ece .

A Reality Check for the Paris Agreement : The Paris Agreement and the accompanying decision will undoubtedly be welcomed by most countries present at the summit for different reasons. A large number of countries have undoubtedly had their specific political concerns addressed in various parts of the agreement. **But the outcomes conspicuously fall well short of what the world requires in terms of taking account of science, operationalising equity among countries in specific terms and in terms of global adequacy**. Most regrettably it has set goals that are at odds with the limits on the feasibility of such goals that climate science has indicated in the Fifth Assessment Report (AR5) of the IPCC.

Among the successes for the developing countries are the explicit language on equity and CBDR that are to be found in several places in the text. In the context of the widespread fear of the deletion of both these elements prior to Paris this is undoubtedly welcome.

The other success is the elements of differentiation that are present in various aspects such as mitigation, adaptation, financial transfer and technology transfer and support for capacity building in the developing countries. The last three elements that apply to developed countries in particular are also subject to the periodic reviews and the "global stocktake" that are part of the agreement.

The agreement has however deliberately turned away from the notion of the global carbon budget that the IPCC had indicated as the next appropriate global indicator to take account of, after a temperature target. While indicating the goal of 2 deg C or 1.5 deg C, the agreement allows developed countries to commit to only such emissions reductions as they wish to, in the form Intended Nationally Determined Contributions (INDC).

It has not ensured that the sum total of their actual greenhouse gas emissions will be compatible with their fair share of the global limit on cumulative emissions (the global carbon budget) that is necessary to ensure that the temperature target is met. Notwithstanding the promised review in 2018 of the mitigation efforts of countries, all INDCs will in effect be converted into the Nationally Determined Contributions (NDCs) that are required by the Paris Agreement.

In the process, historical responsibility has been quietly given up, and constitutes the biggest political gain for the developed countries. The use of the notion of the global carbon budget, defined in terms of permissible cumulative emissions from 1850 to 2100, would have provided one means for operationalising historical responsibility. But with the ignoring of the carbon budget, this window is not available.

Worse, the agreement ignores the scientific reality that given the global emissions expected until 2025 and 2030, even the 2 deg goal will be difficult to meet to any substantial degree of certainty. Achieving that goal may, according to some estimates cited by the IPCC in AR5, require currently unavailable or untested technologies for carbon capture, especially if by 2020 substantial emissions reduction has not taken place. Such reductions by 2020 will not be the case, as any review of the current commitments in the form of NDCs will not take place until 2018, and even then no substantial changes may result.

The achievment of the 1.5 deg C is virtually impossible with the mitigation efforts currently inscribed through the INDCs, since the global cumulative emissions that are expected until 2025 and 2030, are well above the limit that is necessary to keep to 1.5 deg C. Such a temperature limit is vastly more difficult and more expensive to achieve compared to the 2 deg C goal and the current financial support and technology transfer pledges will do very little to help achieve it.

This is a dangerous path for the world to take. On the one hand, to the most vulnerable nations, especially the Small Island States, the agreement makes a promise that cannot be kept. On the other hand, for other nations too, it sets a false goal in adaptation. Adaptation, expecting a 1.5 deg C increase, will lull countries into false complacency, leaving them under prepared if indeed the temperature rise will be greater, as it is well more than likely to be. The developed countries will bear no liability for loss and damage on this account, as the agreement makes clear.

Despite India's and other developing nations' satisfaction at having preserved equity and CBDR in the agreement, this will be an empty victory if the developed nations do not keep their emissions to their fair share of the global carbon space. India has been correctly insisting on such a fair share prior to Paris and during the summit talks. However, the developed countries are taking in fact an unfair share of the global carbon budget, even as their earlier over-consumption of carbon space before 2015 stands sanctified. Little would be left behind for any late comers. Equity, therefore, has not been operationalised in any specific fashion in the agreement. The acknowledgement of climate justice is also hedged, mentioned only in the preamble, even while explicitly denying it as an universal principle.

The Paris Agreement and the corresponding decision leave many details to the future. It makes merely general appeals for greater "ambition" in the future in mitigation without specific targets. If they are not met, no consequences will apply. Much of the process of review, as other details of operationalising the agreement, is left unspecified. This is likely to result in many acrimonious and bitterly disputed climate summits. But for the next eight years, until the first stocktake of 2023, little advance of substance in emissions reduction is

likely to occur, with the pressure likely to be ratcheted up at that time on countries like India.

In the meantime, the world will face increasing difficulties, including the likelihood of danger for some part of it, from inevitable global warming and its consequences, while the developmental future of many developing nations, including India, has become correspondingly more vulnerable to the unavailability of carbon space as before.

How to Reverse Climate Change Before It is Too Late

Indeed, there is surely no more compelling motivation to act than the knowledge that replacing livestock products with better alternatives may be the only pragmatic way to stop catastrophic climate change from imperilling much of life on earth.

The article is available at : http://meatonomics.com/2014/09/04/how-to-reverse-climate-change-before-its-too-late/

Climatic change is fearsome. The National Academy of Sciences published a study explaining how 1,700 American cities – including New York, Boston, and Miami – will become locked into some amount of submersion from rising sea levels unless expensive new dykes and levees can hold back the rising waters. **In fact, the International Energy Agency has warned that major action by 2017 may be the last real chance to reverse climate change before it's too late.**

Elsewhere, the last chance for major action is said to be 2020. Even with that more generous timeframe, it's too late to reverse climate change by replacing fossil fuel infrastructure with renewable energy infrastructure. That's because doing so is estimated to require at least 20 years to implement at the necessary scale. Indeed, large-scale implementation of renewable energy infrastructure was the general basis for the Kyoto Protocol when it was drafted in 1990. But the Kyoto Protocol did not yield a reduction in greenhouse gas emissions as intended; to the contrary, **global greenhouse gas emissions have risen shockingly by 61% from 1990 to 2013.**

There seems to be only one remaining pragmatic way to reverse climate change before it's too late – and that's by taking quick and **large-scale actions in food, agriculture, and forestry**.

As greenhouse gas emissions and atmospheric carbon have continued to rise, now almost 50% of today's livestock products must be replaced with better alternatives by 2017 – or by 2020 at the latest – in order to achieve the objective of the Kyoto Protocol and avert catastrophic climate change.

One reason why worldwide action is needed is that climate change is one of a relatively small number of environmental issues that are transboundary. This means that greenhouse emissions and atmospheric carbon don't respect borders – so a molecule of carbon dioxide emitted in China can affect someone anywhere in the United States just as much as it will affect someone in Beijing.

In other words, it's as important to be concerned about what happens with food and climate change elsewhere as it is to be concerned about what happens with food and climate change in the United States.

In fact, the average global concentration of atmospheric carbon continues to increase after it recently rose above 400 parts per million, far above the safe level of 350 parts per million. The only known way to draw down atmospheric carbon on a large scale in a relatively short timeframe is by growing more trees, which is uniquely possible through our recommendations. That's because replacing a substantial amount of today's livestock products with better alternatives will free up a vast amount of land to permit large-scale reforestation and greenhouse gas sequestration – at the same time as it will massively reduce greenhouse gas emissions attributable to livestock production.

The dual benefits of reducing emissions and absorbing atmospheric carbon on a large scale at the same time are the key aspect of what makes our recommendations the only pragmatic way to reverse climate change before it's too late.

To be clear about what we mean by "better alternatives" to livestock products: We mean everything from grain-based meats to soy milk, nut butters, as well as whole grains and legumes. **This is because any food that comes directly from a plant rather than from livestock will generally be responsible for a much lower level of greenhouse gas emissions than are livestock products.**

We recommend against framing what's needed as less "meat" and less "milk," in part because producers of vegan foods often use terms such as "grain-based meat" and "hemp milk." Moreover, dictionaries define "meat" and "milk" as essential food products that include vegan versions. So we suggest that it is not the soundest of strategies to cede the terms "milk" and "meat" to livestock producers, and to press people to sacrifice those items. Indeed, the livestock industry perceives that consumers see milk as such an essential beverage that some livestock producers have filed lawsuits to prevent vegan food producers from using the term "milk."

One of the reasons to focus attention on livestock and feed production is that such production is estimated to occupy 45% percent of all land on earth – that's all land, both arable and non-arable, including ice caps and mountaintops. Most of the land used for livestock and feed production was once forested, and can be forested again. In fact, there is documented potential for agricultural change to bring atmospheric carbon to pre-industrial revolution levels within five years.

To provide as much scientific information on this as possible, a website has been developed where updated versions of assessment and links to many prominent citations of the work presently being done in this area is mentioned.

For decades, activists have urged that people reduce their consumption of livestock products in order to reduce environmental impacts in general, to be more compassionate to animals, and to improve human health – yet global consumption of animal-based foods has risen dramatically, instead of falling.

In contrast, emergencies normally motivate major action – and since major action to reverse climate change is said to be needed by 2017 or no later than 2020, activists may find it most compelling and effective to cite reversing climate change as the key goal for people to act upon.

Indeed, there is surely no more compelling motivation to act than the knowledge that replacing livestock products with better alternatives may be the only pragmatic way to stop catastrophic climate change from imperilling much of life on earth.

CONTRIBUTING POSITIVELY BEYOND THE ECONOMIC REALM!

But a country's contribution goes beyond economics. Protecting our planet from climate change is one of the most important tasks for this generation. If one country reduces its environmental footprint, it creates benefits for all others. It is for this reason that in the COP 21 Summit, India made far reaching commitments towards the larger welfare of the planet. In history, every country that has grown has increased its per capita emissions footprint. We are committed to re-writing that history. We are committed to reducing the emission intensity of our GDP by 33% by 2030 even while growing at a fast pace. For a country which is already at a very low base of per capita emission, this is a very ambitious target. We have committed that by 2030, 40% of our electric power capacity will be from non-fossil fuel. We have also committed to building an additional carbon sink of over 2.5 billion tonnes of carbon dioxide equivalent. This will be done by creating additional forest cover by 2030. This commitment is from a country with a very low per capita land availability. We have taken the lead in launching an international solar alliance, involving 121 countries falling between the Tropic of Cancer and the Tropic of Capricorn. This initiative will help many developing countries, from Africa to South America, to take advantage of developments in renewable energy around the world.

Shri Narendra Modi's speech
at the ET Global Business Summit

Further details are available at: http://etsummit.narendramodi.in/

Announcements

What does the Paris agreement mean for the world's other 8 million species?

The article is available at : http://www.theguardian.com/environment/radical-conservation/2016/jan/06/-paris-agreement-biodiversity-coral-reefs-forests .

In December, the world's nations agreed on an aggressive plan to combat climate change. But what, if anything, will the landmark Paris agreement do for thousands of species already under threat from global warming?

The word "biodiversity" is employed once in the Paris agreement's 32 pages. "Forests" appears a few times, but "oceans", like biodiversity, scores just a single appearance. There is no mention of extinction. Wildlife, coral reefs, birds, frogs, orchids, polar bears and pikas never show up anywhere in the document.

This is hardly surprising as the landmark agreement in Paris was contrived by one species for the benefit of one species. It was never meant to directly address the undeniable impacts of global warming on the world's eight million or so other species – most of them still unnamed. But many experts say this doesn't mean biodiversity won't benefit from the agreement – especially if the 196 participants actually follow through on their pledges and up their ambition quickly.

Most biodiversity experts concurred that the Paris agreement was an important step forward, but none thought it would be enough to counter the vast risks posed to biodiversity by global warming. **Indeed a recent study in Science found that more than 5% of the world's species will likely go extinct even if we manage to keep temperatures from rising more than 2C, the uppermost target outlined in Paris.**

Biodiversity in the oven

Scientists have identified thousands of species that have already been hit by global warming or will likely be in the near-future. For example, Edward Perry pointed to a recent scientific review by his organisation that found a quarter of the world's most-researched birds have already been negatively impacted by climate impacts.

"According to climate projections, there will be more than twice as many losers than winners under climate change [for birds]," said Perry, who noted that, to date, scientist have pointed to 2,300 birds with traits that makes them "highly vulnerable" to global warming.

Already, climate change has disrupted some bird's food sources, messed with the timing of fledgling and migrations, and shrunk the range of cold-loving species.

Birds are a good example of how climate change is already impacting wildlife because they are the best studied group on the planet. Yet, they aren't the only ones feeling the heat. Climate change is also likely playing a role in the current amphibian crisis, which has seen around 200 amphibians vanish for good in recent decades.

Currently, habitat destruction remains the biggest threat to amphibians, making species more vulnerable to even slight climatic changes, according to Moore. "Amphibians have survived four mass extinctions associated with major climate disturbances. What is pushing them over the edge now, I believe, is a perfect storm of lethal conditions that we have created."

Just as there are some human communities living on the front lines of climate change – such as low-lying island states or drought-prone countries – there are also particular environments that scientists view as super vulnerable to climate change.

Coral reefs and cloud forests

Coral reefs are considered one of the most biodiverse ecosystems on the planet, and the most species-rich in the oceans. Their counterpart on land may well be cloud forests, which are high-altitude forests often blanketed in clouds – and also ridiculously rich in biodiversity. Similarly, coral reefs and cloud forests occupy very small slices of the planet: cloud forests make up only around 1% of the world's forests and coral reefs less than 1% of the ocean's floor. And both are feeling the heat.

This year, record high temperatures driven by climate change – and exacerbated by El Niño – has led the National Oceanic and Atmospheric Administration (NOAA) to declare only the third global coral reef bleaching event on record. The key here is global: usually bleaching events are regional or localised.

When it comes to coral reefs, Cinner called the Paris agreement "a step in the right direction," but also pointed out that even keeping temperatures below rising 1.5C – an aspirational goal in the Paris agreement – would not be enough to avoid further damage to the world's reefs.

Amphibian-expert Moore agreed that there was significant uncertainty about biodiversity even with the 1.5 degrees goal in the Paris Agreement.

Cloud forests, like coral reefs, have evolved to survive within certain temperature gradients. Already, scientists have documented cloud forests literally migrating upslope to escape warming. But, according to David Lutz, a forest ecologist with Dartmouth, cloud forest species "do not appear to be migrating as fast as they need to be to keep up" with steadily rising temperatures.

"As the world grows warmer – or as periodic heat waves become more fierce – these species literally have nowhere to go but heaven," said William Laurance, a noted rainforest scientist with James Cook University. "**I think we'll lose more biodiversity from tropical mountains than anywhere else in the world."**

The situation becomes even more complicated by the fact that many of these forests won't even be able to migrate as far as possible. Instead, as tree seedlings sprout upslope they will run into high-elevation cattle ranching, at least in the Andes.

If strategies to allow cloud forest to migrate as far as possible aren't developed many of them are likely to vanish, taking innumerable species found no-where else with them.

Paris and beyond

The Paris agreement noted "the importance of ensuring the integrity of all ecosystems, including oceans, and the protection of biodiversity," but went into few details about how individual countries should, or even could, go about safeguarding imperilled species in the face of rising temperatures.

What the agreement did do, however, was acknowledge the importance of conservation in protecting carbon sinks, often referring specifically to forests.

Moore, who called this inclusion "particularly significant," said "**we cannot talk about addressing climate change without stemming the rampant loss of the world's forests.**"

Experts said they hoped the agreement would boost initiatives like REDD+ (Reducing Emissions from Deforestation and Forest Degradation), a UN programme that proposes to use funding from rich nations to pay developing countries to keep forests standing. Under

negotiation for the better part of a decade, REDD+ projects are just beginning to launch – and the initiative made a number of important appearances at the Paris talks.

But, some experts have become concerned not just about direct impacts on biodiversity from climate change, but how a warmer future could increasingly pit humans against wildlife.

"We have anecdotal evidence that poaching increases when droughts or floods affect food production," explained Nikhil Advani, WWF's senior program officer of climate change adaptation, who also noted that when hydroelectric power plants fail during droughts people often turn to forests for fuel.

Given the rising observable impacts on species – from Arctic ice melt to worsening forest fires to record droughts in the Amazon – the risks are impossible to ignore. The existence of thousands of species may well depend on it.

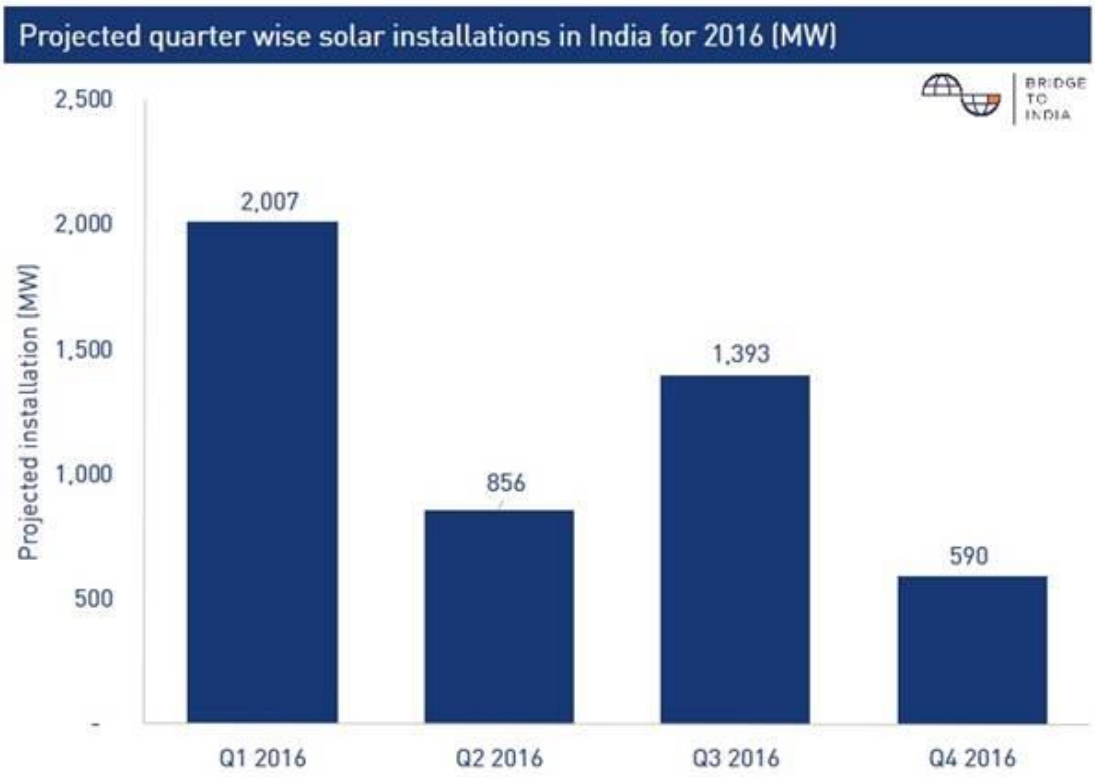
India adds 2 GW of utility scale solar capacity in 2015; to install 4.8 GW in 2016.

The market is expected to grow significantly in 2016; capacity addition in the first quarter of 2016 is expected to be equivalent to the entire capacity added in 2015; Southern states of Tamil Nadu, Andhra Pradesh, Telangana and Karnataka are expected to add 80% of all new capacity in 2016; There is little doubt that capacity additions in 2017 will surpass capacity additions in 2016, catapulting India to become one of the key global markets for at least the next two years.

BRIDGE TO INDIA research shows that utility scale solar projects totalling up to 4.8 GW of capacity will be commissioned in the calendar year 2016, a growth of 140% over capacity commissioned in 2015. Contrary to popular perception, new capacity addition in 2016 will be driven largely by state level allocations. Delays in new allocations by NTPC and SECI mean that most of the recently allocated or under allocation capacity under National Solar Mission (NSM) will get commissioned only by about H1 2017. This may still allow the government to reach closer to the official target of 7,800 MW for utility scale projects for the upcoming financial year (April 2016 to March 2017)

In 2015, India's utility scale solar capacity grew by 2 GW, double the rate of capacity addition in years between 2012 and 2014 but substantially below our estimate of 2.45 GW (India Solar Handbook 2015,) because of delays in projects in Andhra Pradesh, Telangana, Tamil Nadu, Karnataka and Punjab. Out of the 2 GW commissioned in 2015, 700 MW of capacity was completed under central government allocations, 850 MW under state allocations and the remaining 450 MW under other heads, including private initiatives. The Indian government's utility scale solar target of 1,800 MW for the current financial year (ending 31 March 2016) will be easily met.

In calendar year 2016, southern states of Tamil Nadu, Andhra Pradesh, Telangana and Karnataka would contribute to almost 80% of all new capacity addition. With a strong pipeline of state level projects to be commissioned through 2016 and a significant capacity addition expected through central government allocations in the first quarter of 2017, the utility scale solar market also seems to be on track to meet the targets for the next financial year.



The government's ambitious plan to ramp up capacity addition for utility scale projects from 1 GW per year until last year to 7.2 GW planned in the next financial year, now seems plausible. This is further expected to be ramped up to 10,000 MW in 2017-18. However, it is not going to be easy to sustain this momentum as states are expected to assume the responsibility for further growth once the central government led allocations begin to dry up. We foresee evacuation of power and grid stability becoming big bottlenecks for future growth as several gigawatts of capacity comes up in the southern states itself. The speed of implementation of the inter-state evacuation corridors will be key to the success of these initiatives and sustainable growth of the market

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92% Indians perceive climate change as a major threat: Survey.

The article is available at: http://economictimes.indiatimes.com/news/politics-and-nation/92-indians-perceive-climate-change-as-a-major-threat-survey/articleshow/50564773.cms

A total of 92 per cent Indians polled by independent market research company Ipsos view global warming and climate change as major threats.

India ranks seventh among the 24 countries surveyed, a statement by Ipsos said.

"India has been strongly impacted by climate change and global warming, given the sudden upheavals in weather conditions.

"There have been growing incidence of landslides, earthquakes and unseasonal heavy rainfall on the one hand and extremely high temperature and drought-like conditions on the other hand," Ipsos' Managing Director (India) Amit Adarkar said.

"I'm not surprised that a large majority of Indians perceive it as a serious threat. Our government has been taking stock and is moving ahead with short-term and long-term remedial measures," he added.

These include emission checks, encouraging use of public transportation and moving towards alternative clean renewable energy sources.

Close on the heels of the 2015 United Nations Climate Change Conference held in Paris, Ipsos polled citizens around the world to gauge their opinion on climate change issues.

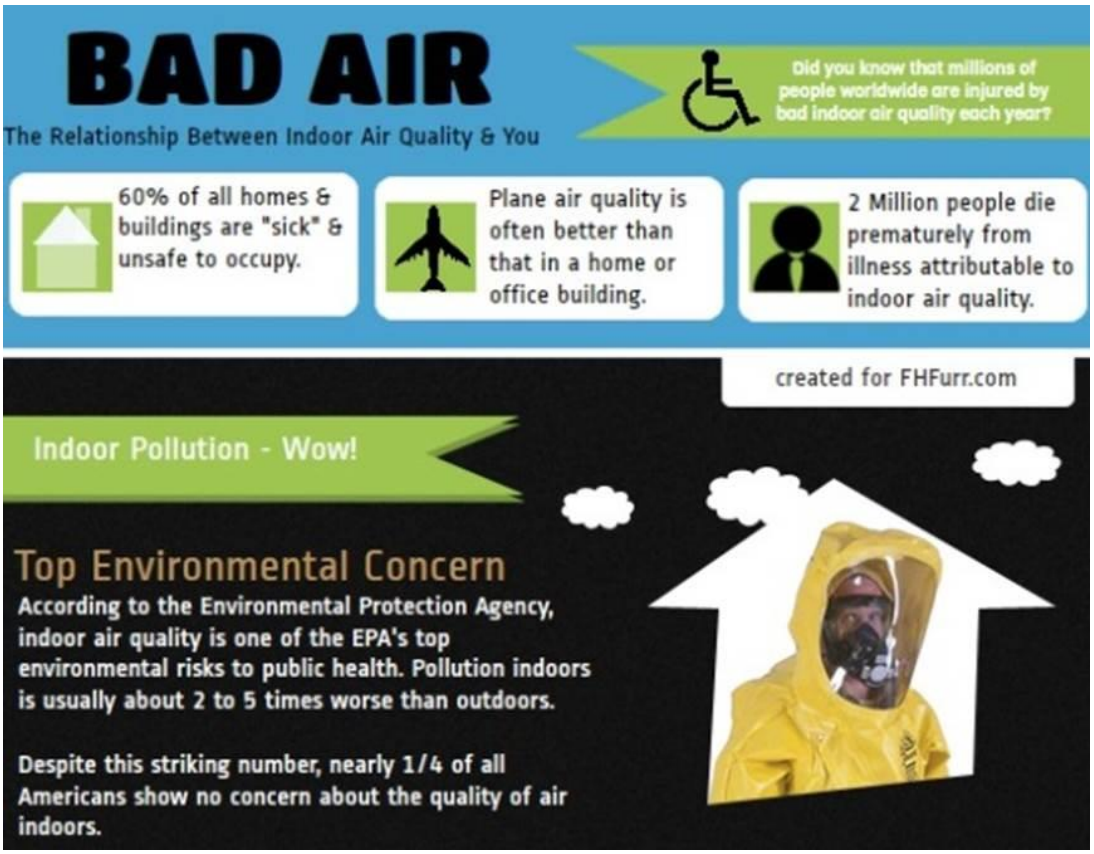
One of the highlights of the Paris climate change agreement is the commitment of all countries to reduce carbon emissions.

However, nearly 60 per cent polled globally disagree that it is practical and feasible to almost completely eliminate the use of oil and gas in the next ten years.

India and Latin America are still more optimistic than North America, Europe, Middle East Africa and rest of Asia Pacific countries in its resolve to reducing carbon emissions.

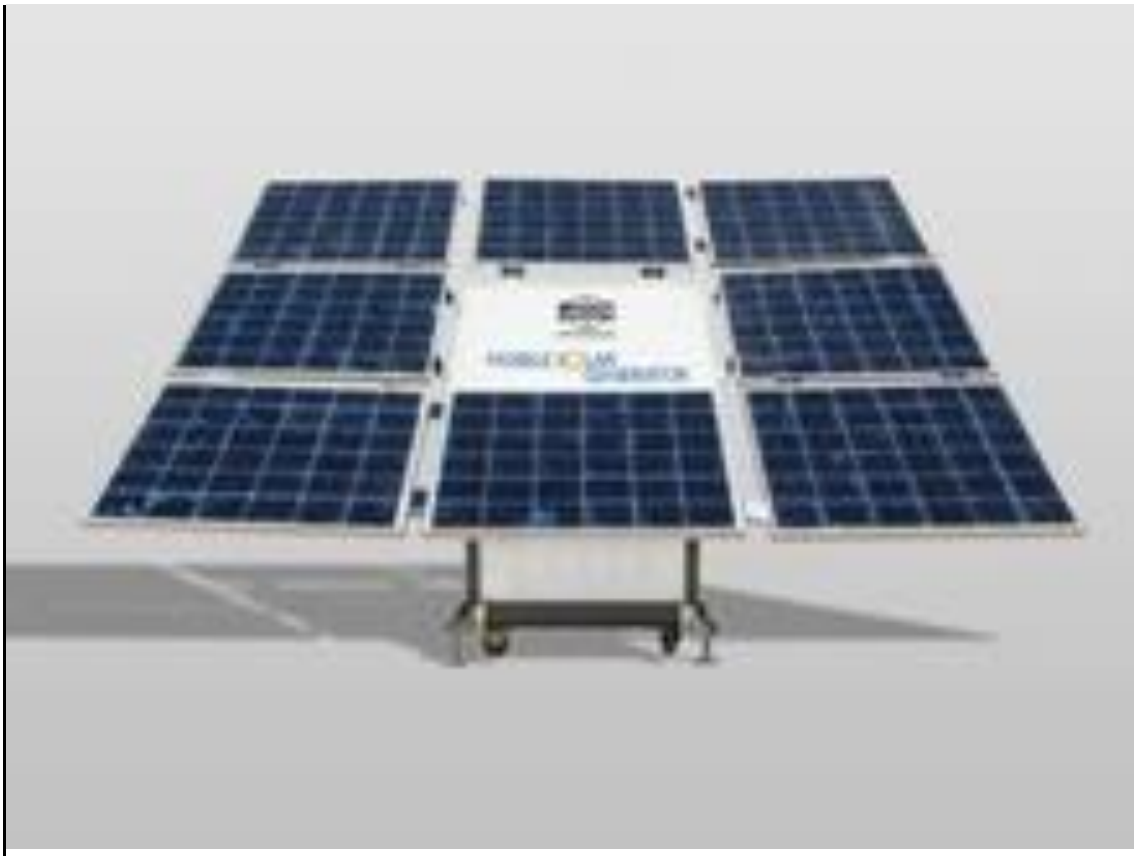
Only 43 per cent Indians disagree that it is possible for India to eliminate the use of oil and gas and to bring down emissions, with Japan disagreeing the most at 79 per cent, Ipsos said.

Compared to Latin America, India and other BRIC countries have seen much lower evidence of global warming, it said.



NDMC DRAWS UP PLAN FOR ROOFTOP POWER GENERATION.

NDMC's initiative this way (to tap the huge roof top area available in various buildings of a city to install SPV systems) needs to be emulated diligently by all civic agencies around the country.



NDMC's initiative this way (to tap the huge roof top area available in various buildings of a city to install SPV systems) needs to be emulated diligently by all civic agencies around the country.

The example is certainly hugely relevant to cities in Karnataka, because of the chronic power cuts being faced for years. These cities may not have as many buildings as in Delhi, but the potential for roof top SPV systems in these cities is undoubtedly high, provided there is necessary political will.

Union government's target to reach 100,000 MW of solar power by 2022 will be a pipe dream unless the huge potential on building roof tops are effectively harnessed.

While we all can do well to draw the attention of our authorities in each town and city, can we expect our leaders to become rational and take the necessary initiative early? City administrators can take a lead in this regard within the powers they enjoy.

In line with its project to earn the tag of 'solar city' for the New Delhi area of the national capital, NDMC has now drawn up a detailed plan for rooftop solar energy generation.

New Delhi Municipal Council (NDMC) has identified 40 buildings in the area under its jurisdiction for installation of rooftop solar panels.

The buildings belong to the civic agency and range from NDMC schools, sub-stations, inquiry offices, hospitals, etc.

It selected its own buildings for the pilot project as it did not require NOC for that from any

agency.. NDMC appointed an operator to identify, design, erect, install, test, and commission rooftop solar units as defined by the Union Ministry of New and Renewable Energy.

After the installation of the solar rooftops, New Delhi would become the second solar city in the country after Chandigarh.

According to a MoU signed between NDMC and Solar Energy Corporation of India, the civic body should meet at least five per cent of its total energy consumption needs through solar energy.

The plan says that NDMC will procure all the solar power generated by the operator and inject into the NDMC grid on the basis of rates determined by Delhi Electricity Regulatory Commission (DERC).

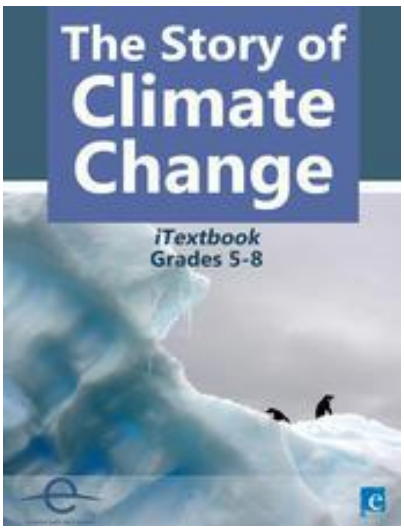
NDMC expects to generate almost 8 MW rooftop solar energy within a year.

With the residents of the national capital grappling with an acute power crisis, NDMC officials believe the plan will go some way towards solving the energy crisis in the city.

In an effort to ease the power situation, the civic body is also contributing 16MW of electricity to 8,000 households in the city by generating power using solid waste as fuel at a 'Waste To Energy' plant on NDMC land in Okhla.

The Story of Climate Change: Students can watch glaciers melt, dive into the coral reefs of the world and explore bike-share programs all from their tablet.

The interactive digital textbook is available at: http://www.apple.com/itunes/download/?id=982104376 .



The Story of Climate Change is the first interactive digital textbook on climate change for middle school students.

It is a new, active way of learning through multimedia to connect students beyond pages and vocabulary words into the practical applications of climate science.

Each of the iTextbook's six chapters includes interactive resources, informative videos, and critical thinking activities, as well as review and discussion questions to reinforce the learned concepts.

The Story of Climate Change comes with a free downloadable Teacher's Guide.

The interactive digital textbook is available at: http://www.apple.com/itunes/download/?id=982104376

Reviews

A story children need to read and understand: **Dr. James E. Hansen Former NASA scientist, current Director of Program on Climate Science, Awareness, and Solutions at Columbia University**

This digital textbook brings the climate science basics to life using a multimedia approach to

engage students from videos to images and graphs…For teachers looking to expand beyond the content, the discussion and review guides at the end of the chapters are great launch points: **Erin Twamley Education Specialist, Department of Energy and Author**

The Story of Climate Change digital textbook is a valuable new resource for middle school students and teachers wanting to dive into the topic of climate change in a fun, interactive way. The book's overall light, fun tone is perfectly suited for middle schoolers and interactive graphics and quizzes let students play around with the resource in their own way: **Rebecca Anderson Director of Education, Alliance for Climate Education**

A book for all ages to learn and act on climate change. The Story of Climate Change is a perfect blend of video, interactive pictures, figures, and widgets to engage the 21st century learner…If you are not inspired to act upon completion of this digital textbook, then you just might be a robot. The Story of Climate Change breaks down the complexity of climate change in bite size chunks, replete with interactive resources, from Bill Nye to Mahatma Ghandi…This digital textbook is engaging for both adult and adolescent…No matter what grade you teach from K-12 there is something in this book for you: **Joshua Sneideman Former Albert Einstein Distinguished Educator Fellow, Department of Energy and Author**

Also, I would like to introduce **Ranjana Saikia** who has just joined the Earth Day Network as Director, Education. She will be looking into ways to adapt the book more for India and would appreciate suggestions from members on which portions to add/delete.

Ideas and Innovative Solutions for Sustainable Living

The article is available at: http://www.sustainablecitiescollective.com/ivan-bruce/1136224/ideas-and-innovative-solutions-sustainable-living?utm_source=feedburner&utm_medium=email&utm_campaign=Sustainable+Cities+Collective+%28all+posts%29 .

The Climate Group reminded participants that the private sector has an important role to play and several companies are now taking practical steps such as committing to the RE100, in order to become net neutral emitters.

The theme "Smart Cities: Short term gain or Long term planning?", focused on the pressing need to create sustainable places for people to work, live and play. It is predicted that 70% of the global population will reside in an urban environment by 2050 while at the same time 70% of global energy-related carbon dioxide emissions come directly from cities, so **there is a growing realization that cities must adopt low carbon development planning as soon as possible**. The panelists discussed the role of creating 'smart' cities that are able to collect and display real time data to more easily inform residents and administrators, while remembering that there is still the inherent need to service residents and provide basic infrastructure systems. The conclusion drawn was that while cities are significant contributors to climate change they also have the ability and agility to overcome the problems successfully as long as finance is available. **This highlighted programs such as the World Bank Group's creditworthiness program which is focused on enabling cities to become creditworthy both domestically and internationally so as to attract investment.**

There was also a reminder of the growing numbers of young people in cities and the need for them to embrace sustainability and create tangible business solutions to address climate change impacts. Events such as The Jakarta Urban Challenge are examples of young people's enthusiasm to be involved and to help tackle Jakarta's congestion whilst simultaneously

lowering GHG emissions.

Another young entrepreneur, Arthur Kay founder of Bio Bean, opened up the Entrepreneurs day describing how his vision to utilize coffee bean waste to produce fuel has now become a full scale business. **His story emphasized how embedding sustainability into business can be not only rewarding but profitable.**

Subsequently, the theme with "Climate for Entrepreneurs" focussed on how London could easily become known as the 'Silicon Valley' for sustainable businesses and entrepreneurs. The session also tried to establish what the current appetite is for investing in sustainable focused companies and the current and future trends in the liquid markets. It was clear that the room was packed with the right audience with one participant asking about how to raise finances to support a project in Sierra Leone that educates women to become solar engineers. The panel was able to respond with several potential access points including the Youth Forward initiative, a program for young entrepreneurs launched at COP21.

"Pervasive Communications" evaluated how best to reach a mass audience with examples from social media, visual imaging and mass participation events. In the afternoon, the Film4Climate initiative to establish a set of universal green guidelines for filmmaking was received favourably. Later, the panel focused on how best to catch people's attention – through provocative images such as those presented by Fishlove, leading through example like Good Works, celebrity encouragement or bringing the reality home through personal reminders - such as the facts used in the World Bank's report **"Turn Down the Heat" that if our body temperature rises 3 degrees C we have a high fever, 4 degrees C we're in a coma and a rise of 5 degrees C means we die.**

There is no silver bullet to tackling the issue of climate change, an emerging theme was the need for an "all of the above" approach where both top down and bottom up solutions can meet and have a constructive dialogue.

On concluding suggestion from James Cameron, Chairman of the Overseas Development Institute, was to create a network of climate change communicators to encourage behaviour change using both the power of storytelling and simple recipes for action – an exciting concept to take the debate forward and one which is at the very core of Connect4Climate guiding principles.

New paradigm for the Indian power sector.

If we are to achieve "sub ke saath; sub ka vikas", all concerned civil society groups and individuals should be effectively involved in developing a people friendly and environmentally sustainable power policy for the country.

Initiatives for fast expansion of renewable energy base in the country with investment from many agencies is a good news in reducing our GHG emissions, and hence also in the reducing pollution issues arising out of fossil fuels. But the fact that much of the proposed additional solar power capacity are planned to be in the form of solar power parks (such as 750 MW solar power plant in MP and many other ultra-mega solar power projects) will lead to huge problems in setting up the dedicated transmission schemes to evacuate power generated from such large size power plants.

Such a scenario can also contribute to grid instability in the form of losing a huge chunk of power whenever a cloud cover passes over such power plants. Additionally, the dedicated

transmission schemes will be used for less than 25% of a day for most parts of the year. Such a low usage of such costly infrastructure means unacceptable levels of wastage of our scarce national resources, while rendering large chunks of agricultural land (which needs to be acquired for such purposes) fallow lands.

Such scenarios of wastage need to be minimised by installing a large number of solar power plants of smaller size, and which are spread over a wider geographical area and close to the existing transmission/distribution lines. In this context roof top SPV systems on large size buildings are eminently preferable. The loss of the so called 'economy of size' associated with large size RE power plants will be more than compensated by the absence of the need for additional T&D lines, land acquisition and T&D loss itself.

Considering various issues specific to our country such as the size, diversities, natural resource constraints, vast population, pollution issues, poverty, existential threats from Climate Change etc. a power system with large number of smart-micro-grids equipped with full control options for the local stakeholders and connected to each other by sophisticated IT and control systems without much dependence on conventional technology power sources seem to be most suited to ensure the principles of equity, efficiency, sustainability and low impact on our environment. One or more diligent studies in this context have become a dire necessity.

It appears that such societal level issues have not been considered by the concerned authorities while planning for such schemes. It also appears that the ambitious target of 175,000 MW of RE by 2022 has not been supported by diligent analysis of how these RE sources can be integrated to the national grid, and the socio-economic considerations of how best to do the same. In this context it is a matter of concern that the SECI is reported to be working on around 2 dozen ultra-mega solar power projects which will have installed capacity of up to 4 GW each.

Unless such large size RE power parks are established at different climatic zones in different parts of the country and strongly supported by highly reliable climate studies on ideal locations to locate such plants to be able to back up one another (in scenarios such as sudden loss of wind in one area or sudden cloud cover, or both), they cannot be of much help to the power sector of the future. In fact, there is a likelihood of those plants becoming a sort of burden to the economy.

Further, vast sums of money are being planned to be invested in setting up complex transmission schemes at huge costs to the society should also be rationally reviewed in this context. If our society is to go for large number of distributed RE sources spread all over the country, and if our dependence on large size conventional power sources is to come down drastically (as is the necessity due to Climate Change considerations), do we need such huge power transmission corridors? If such systems are set up now, will they not likely to be vastly under-utilised or even stranded in future? Can we not manage to meet the legitimate demand for electricity of our communities without them?

It is essential that all such critical issues need to be addressed by engaging all stake holders, including civil society groups, in effective consultations before committing our country's scarce resources in such projects for decades. Hence I fervently appeal that extremely careful economic decision making processes be adopted before vast sums of money and other resources are committed to such projects.

Keeping all these issues in proper perspective, we have a golden opportunity to objectively review our past policies and practices from the perspective of overall welfare of our

communities, and chalk out a sustainable developmental pathway for the future. Future generations will not excuse us if we allow this opportunity to go waste.

If we are to achieve "**sub ke saath; sub ka vikas**", all concerned civil society groups and individuals should be effectively involved in developing a people friendly and environmentally sustainable power policy for the country.

Environmental assessment for Jammu and Kashmir dam breaks all rules

A group of eminent people from across India have written of their concerns regarding the deeply flawed environmental impact assessment report for a new hydropower project in Jammu and Kashmir.

The article is available at : http://www.thethirdpole.net/2016/01/16/environmental-assessment-for-jammu-and-kashmir-dam-breaks-all-rules/?utm_source=third+pole+newsletter&utm_campaign=ee304c5dab-Tibetan+plateau+faces+%E2%80%9Cecosystem+shift%E2%80%9D&utm_medium=email&utm_term=0_43686cf8d5-ee304c5dab-46416721 .

Incensed by a 'shoddy' Environmental Impact Assessment (EIA) report, a group of environmentalists, academics and activists have asked the Jammu & Kashmir State Pollution Control Board (JKSPCB) to cancel the public hearings on the 1,856 MW Swalkote hydropower project. The hearings are part of the environmental clearance process for the project, which is located on the transboundary Chenab River in the Indian state of Jammu & Kashmir (J&K). In their open letter to JKSPCB, the group has pointed out a number of lacunae in the EIA.

The last public meeting, notified by JKSPCB on its website, is slated to be held on January 28 in Ramban district of J&K, one of the areas where the project is going to be constructed. Meetings in three other villages have already taken place in October and November 2015, so these are the final set of hearings over the EIA.

According to the environmentalists the SPCB website contains only the executive summary of the EIA-EMP of the project in English, Hindi and Urdu. It does not contain the full EIA-EMP as is the norm. The report does not contain the certificates from the EIA consultants, there is no index page, and the cover page is at the end. The one certification present expired after August 2013 – more than two years ago. More problematically, "the table and maps are not translated, most key words are not translated, including common words like dam, monsoon and reservoir and even the translation done is flawed and there are so many mistakes in just first two pages, it is clear there has been no proof reading of the text."

The MOEF&CC scoping study had anticipated that 900 hectares — of which 600 hectares are forest land — would be submerged due to the project. But according to the letter, "The EIA executive summary now on JKSPCB website says (para 1.4.1.7) that the project submergence area is 1158.75 hectares (ha) (add the figures of three districts given in the table) including 684.15 ha of forest land." The letter says, "This huge 28.75% increase in submergence area makes the scoping clearance for the project already invalid and project will need to apply afresh for the scoping clearance as per point 10 of the clearance letter."

There are many other changes. "Total land requirement has gone up from 1,099 hectares given in scoping clearance to 1401.35 hectares, and the number of project affected families has more than doubled from 629 given in scoping clearance to 1477 now mentioned in EIA summary."

This, the environmentalists have observed, makes the current scoping clearance invalid

according to the clearance letter. Hence holding public hearing for a project that does not have valid scoping clearance is clearly legally invalid.

One of the major concerns expressed by the environmentalists is regarding the run-of-the-river status of the Swalkote project. "The EIA executive summary claims that Swalkote is a run of the river scheme, but this claim is totally wrong and misleading considering that in involves 192.5 m high dam, 1159 ha reservoir with 530 million cubic metres of storage capacity and a massive power house close to the toe of the dam," the letter says. "How can such a project be called run of the river project? This is clearly wrong and misleading claim." A run of the river hydroelectric project is not supposed to have a reservoir.

Another concern is regarding lack of cumulative assessment of the Chenab River, which may see multiple hydropower projects as it runs through Jammu and Kashmir. The letter says no cumulative impact assessment of these projects. "This is not only imprudent, but it is also in violation of the MoEF orders of May 28, 2012, where MoEF had cleared required such study before more projects can be considered in any basin."
The environmentalists also expressed surprise that there was no mention in the report as to how climate change will have an impact on the project and how the water flow, silt flow and disaster situations of the upstream and downstream projects will affect the river, the people living there and the area.

The letter says that the terms of reference for the report have not been fulfilled with social impact assessment, rehabilitation and resettlement, details of land-use, valuation of ecosystem and biodiversity services, GPS readings of Rare, Endangered and Threatened (RET) species not finding a mention in the report.

The 2016 Global PV Outlook: US, Asian Markets Strengthened by Policies to Reduce CO2: Solar PV continues to grow worldwide and there is no slowdown in sight for 2016.

Moving forward in 2016, the solar industry will need to focus on quality as well as the incremental improvements over time that are hallmark of technology development. Further, the solar industry should avoid mythologizing the technologies of the future (that are not here now). Solar PV is ready to realize its role on the world's stage and needs to begin to think about how it fits in with other energy technologies. The industry needs to take the practice steps necessary to compete with other renewables, nuclear and natural gas as the world moves to change its energy infrastructure.

The article is available at: http://www.renewableenergyworld.com/articles/2016/01/the-2016-global-pv-outlook-u-s-and-asian-markets-strengthened-by-policies-to-reduce-co2.html

Global solar installations will reach 64.7 GW in 2016 according to Mercom Capital Group, a clean energy communications and research firm based in Texas. "The top 3 countries will be China, U.S., and Japan and they will account for about two thirds of the global market," said Raj Prabhu, CEO and co-founder of Mercom.

Although China is expected to continue leading the global PV market, the U.S. will show the most robust growth in 2016, due to the anticipation of the federal Investment Tax Credit (ITC) expiration, which developers and EPC had already factored into their business plans for 2016, prior to the five-year extension received at the end of 2015.

In 2016, the U.S. is set to overtake Japan as the second largest solar market, exceeding the

much-anticipated 10-GW mark. Another notable shift will see India move up to the No. 4 position, pushing down the former European leaders, U.K. and Germany.

China: Remains No. 1 Market with Some Trouble Ahead

China is expected to install approximately 19.5 GW in 2016, a rise of 14.7 percent over 2015, Mercom predicts. "The country is strongly committed [to solar] because of the pollution problems. Air pollution continues to drive China's environmental policies, of which clean power generation is a big part," said Prabhu.

Officials from China's National Energy Administration (NEA) are considering raising the 2020 target from 100 GW to 150 GW, which will bring about 21 GW of annual installation between 2016 through 2020. China also has pledged to reach an 'emissions peak' around 2030 with non-fossil fuels making up 20 percent of the nation's energy generation mix. "All of these factors have made renewable forms of energy a vital component of the Chinese economy for years to come," stated Prabhu.

Overall though, the Chinese government recognizes pollution as a much bigger and broader problem. "The government has shown no signs to indicate that its support for renewable energy will waive. There are pending proposals to increase the renewable surcharge and cut coal tariff payments to help improve the renewable subsidy payment situation," he added.

Robust Growth Brings U.S. to No. 2 Global Market

"PV deployment in the US is currently trending on an accelerated track and the extension of the ITC for five years indicates that this will continue through 2020," said Paula Mints, founder and chief analyst of SPV Market Research.

While the ITC has been a major market driver at the national level, Renewable Portfolio Standards (RPS) continue playing a significant role at the state level. Last year, Hawaii became the first state to enact a 100 percent renewable energy policy to reduce its dependency on imported fossil fuels. California, the biggest solar market in the U.S, also increased its renewable goal to 50 percent by 2030 and the state of New York followed the suit. These will continue boosting the industry in the long-term.

At the local level, Community Choice Aggregation (CCA) is expected to deploy more widely in 2016. "There is a lot of CCA growth planned for 2016 in California, and also some growth expected in New York," said Dawn Weisz, CEO of Marine Clean Energy (MCE), a not-for-profit electricity provider, which launched California's first CCA program. "In California, San Francisco will be launching a CCA program in April, 2016. San Mateo county, and many of the cities in their region will be launching a CCA program called, "Peninsula Clean Energy" in August of 2016. "

Like China, the U.S agreed to reduce or limit emissions at COP21 in Paris. "The biggest driver (for CCAs) is climate change," explained Weisz. "Local governments want a tool that redirects an existing funding stream that exists in each community, and use it to get more renewable energy onto the grid to reduce GHG emissions," he added.

Japan Slows Down after 2015 Peak with Uncertainty Ahead

RTS Corporation, a leading Japanese PV consultancy, projected that Japanese PV market in 2016 to be 8 GW, down from 10.6 GW, the company's 2015 market projection. "We foresee the year 2015 to be the market peak. However, when upcoming changes for the nation's Feed-in tariff (FIT) program start to become clear, it may trigger an installation rush to be grandfathered in the current FIT terms. For that, there is a possibility for the 2016 market size to be the same as that of 2015," said Izumi Kaizuka, the manager of research at RTS.

Approved but uninstalled solar PV capacity by system size in Japan at of Sept 1, 2015. In sum, about 60 GW of solar capacity has been approved but has not been installed and is at risk of being canceled. Credit: Japanese Ministry of Economy, Trade and Industry (METI).

The program currently holds about 60 GW of approved, but not yet developed PV projects. "METI has intensions to cancel the pipeline projects, which have a lower probability to be materialized. The details of the new changes are unknown at this point, but we expect to know them in 2016," said Kaizuka.

In addition, Japan will face another major policy change in 2016. The government will end the Green Investment Tax Credit, which has contributed to the growth of the non-residential PV projects.

PV Rising in India but Industry Could Prove To Be Unsustainable

Mercom is forecasting that India will install approximately 3.6 GW of new solar capacity in 2016, up by about 70 percent from 2015. "We are seeing increased activity in the Indian solar sector over the last quarter (third quarter in 2015) with tenders and auctions beginning to occur more frequently along with some important policy announcement," said Prabhu.

In fact last August the Indian government raised the national solar installation target from 22 GW to 100 GW by 2022. India, despite having the fourth largest coal reserves in the world, has suffered from shortage issues, and its coal power plants have been increasingly dependent on imports. "These coal supply shortages have pushed the current government, even more aggressively toward solar and wind as a solution to overcome power shortage problems and to reduce dependence on imported coal."

In spite of the expected high growth, sustainability of the solar market is in question. "Bids are falling much faster than component prices and interest rates," said Prabhu. "Developers are competing aggressively for market share and tend to sacrifice higher profit margins for market share. It remains to be seen as to how many will survive this trend."

Chile: The Star of Latin America?

During 2015, Chile became the largest PV market in Latin America and reached the 1 GW milestone. The country's market, specifically very large (50 MW plus) solar projects, has been driven by a Renewable Energy Law (Ley 20.257), which set a target of 20 percent renewables by 2025 and by very high spot market electricity prices driven by the mining industry.

Project financing and permitting remain obstacles. Muhn explained that "the biggest issue has become the capability of the grid (primarily in the north) to interconnect and accept the output of these large PV (and wind and CSP) projects, so much so that the spot market prices have collapsed in some areas to zero or very low. Also the access to project financing has been challenging, particularly without a PPA."

Building Climate Equity: Creating a New Approach from the Ground Up; Produced by: World Resources Institute (2014)

The research report is available at : http://www.eldis.org/cf/rdr/?doc=70992 .

Research report proposing a capabilities approach to build and integrate climate equity into the 2015 climate agreement.

Crafting an international climate policy that is regarded as equitable to all parties has been a central challenge for over two decades. Yet as the pressures of climate change continue to build, the urgency with which this challenge must be resolved increases. With the 2015 UNFCCC international agreement approaching, the World Resources Institute have produced a report that proposes a new participatory approach for building climate equity.

The proposed capabilities approach recognises human well-being, and the realisation of human rights, as dependent on access to a range of basic capabilities, such as the opportunity to pursue a decent livelihood; to benefit from sufficient nutrition, transport, housing, physical safety, and security; and to engage in collective decision making.

A capabilities approach to equity can inform two key dimensions of the agreement:

- The first dimension concerns the content of countries' intended nationally determined contributions (INDCs).
- The second dimension concerns the multiple elements of the 2015 agreement. If the 2015 agreement is to catalyse action that supports building capabilities, a wide range of issues are relevant—including mitigation, adaptation, loss and damage, finance, capacity building, technology, and transparency and accountability.

The report focuses on the capabilities of the least well-off and most vulnerable, because their capabilities are most at risk and in need of strengthening. The report gives examples of climate actions that protect or enhance capabilities, such as using policy and finance signals to incentivise development of public transit.

Additionally, it gives recommendations for international institutions and policymakers, including the need to provide upfront investment for low-carbon pathways and adaptation efforts that are designed to enhance equity and build capabilities.

The report recommends incorporating equity and capabilities into INDCs, both in terms of formulation and evaluation, and in the inclusion of specific capabilities-focuses policies.

Other key recommendations are put forward by the report for the incorporation of equity and capabilities:

- ✓ Focus adaptation and loss and damage efforts on the most vulnerable populations.
- ✓ Provide adequate and targeted finance to build capabilities.
- ✓ Create a capacity-building facility to aid governments.
- ✓ Develop and deploy innovative technology that focuses on capabilities.
- ✓ Strengthen transparency and accountability with a focus on capabilities.
- ✓ Establish an equitable long-term mitigation goal.
- ✓ Establish cycles of action to strengthen capabilities, including reviews of impacts.

38,000 trees to be axed: The National Highways Authority of India has sought permission to divert nearly 210 acres of forest land for the four-laning of NH-4A, to improve connectivity between Belagavi and Panaji, gets in-principle nod.

The article is available at : http://m.thehindu.com/news/national/karnataka/38000-trees-to-be-axed-for-a-smooth-ride/article8160279.ece .

A faster ride between Belagavi and Panaji will now come at the cost of nearly 38,000 trees. A recent meeting of the Regional Empowered Committee, Southern Zone of the Ministry of Environment and Forests, has accorded Stage I in-principle permission for the widening project that is expected to improve connectivity between the northern hinterlands of the State

and the port at Panaji.

The National Highways Authority of India had sought permission to divert nearly 210 acres of forest land for the four-laning project. The estimated number of trees to be cut is 37,682.

The committee has given approval for widening in nearly 70 km, which lies outside protected areas; while, the decision on 16 acres (entailing cutting 1,127 trees) within Kali Tiger Reserve is to be taken only by a Supreme Court committee.

Mitigation measures
The mitigation measures mentioned include cutting of trees "only if essential", construction of one 50 m underpass for elephants, as well as space below culverts for movement of animals – all of which are "insufficient", say activists.

"This is a joke. There is no mitigation at all. In the name of development, we cannot sanction destruction of forests... The trees that are going to be cut are endangered species and the region is one of the biggest bird habitats," said A.N. Yellappa Reddy, environmentalist and member of the committee.

His objections, which included fear of irreversible damage and fragmentation of forests, raised during the discussions were dismissed as being "not significant and a developing nation cannot ignore the necessity of good and efficient road network".

Animal deaths
Similarly, activists point to sensitive wildlife that have become sitting ducks in front of speeding vehicles. Wildlife activist Giridhar Kulkarni says RTI data pulled out by him show that more than 50 large animals had been run over by speeding vehicles on 14 roads that pass through Kali Tiger Reserve.

No to widening in tiger reserve
"Animals cross in many points of the road and one underpass is not enough. Now that permission is given for most of the stretch, there should not be any widening in the tiger reserve. This 14-km stretch can be traversed by road improvements instead of widening," he said, adding that at the minimum, speed curtailing measures employed in Bandipur must be followed.

P.S. Somashekar, IGP, National Tiger Conservation Authority, said permission had been accorded only to strengthen existing road width in tiger reserve and speed breakers and other speed control measures must be implemented.

Nothing but disastrous to cut so many trees within the Western Ghats at a time when our forest and tree cover has already come down below 23%. This is against the national forest policy target of 33% of the land area of the country.

May the Almighty save us from all such insensitive 'developmental' projects.

Low carbon development : Meeting the challenge of providing access to sustainable energy sources

The report is available at : http://www.eldis.org/go/topics/resource-guides/climate-change/key-issues/low-carbon-development#.VqneMU3raUk .

The key question at the heart of the low carbon development agenda is: how can countries achieve development – especially rapid poverty reduction and improved human development outcomes – in ways that do not worsen climate change?

One crucial issue is therefore identifying where the synergies lie between reducing carbon emission and reducing poverty, and where there may be trade-offs. These will differ from country to country, and especially between middle income and low income countries.

Another is identifying what is politically feasible, and how the bounds of feasibility may be expanded by increasing buy-in to the low carbon development agenda.

One way of doing this is to emphasise the co-benefits of greener growth, such as better energy security, new opportunities for jobs and exports, and improvements in health

These tasks are particularly hard because carbon emissions are produced from activities across the whole economy.

The energy sector is important in all countries, and deforestation is particularly important for a number of developing countries, including many low income countries where agriculture plays a central role.

Low carbon development is an area where policy is evolving and policy makers are still learning, but where some principles for the use of climate finance are emerging.

This key issues guide highlights a range of central issues on low carbon development and presents the complex nature of this agenda.

The sections below discuss three important issues:

- Frameworks for guiding low carbon development
- Low carbon energy
- Low carbon land management, including avoiding deforestation

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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