



Investments in Renewable Energy are Investments in Freedom from carbon-shackles

The year 2014 started with a high level United Nations event on 15th of January to discuss the growing urgency of climate change and investor actions to mitigate escalating economic risks. Unlike other governmental UN meetings, more than 500 global financial leaders that included billionaire bankers led this meeting. It was called 'Investor's summit'-an event held every two years. The backdrop of the meeting was the year 2013 that just passed by. Atmospheric concentration of CO₂ in 2013 touched 400 ppm, the figure never reached at least in last one million years. 2013 also saw the extreme events of unparalleled proportion in Australia, USA and Europe. Finally, 2013 ended with discouraging outcome of the climate change negotiations under United Nations in Warsaw with no light seen at the end of the tunnel except the usual promises of the financial assistance to the developing countries and 'waiting game' for the new Protocol expected in 2015. The only bright spot amidst this global scenario was the investment in renewable energy from 2008 to 2011. In spite of the financial crisis that gulfed the world since end 2007, the investment in renewable energy kept its daunting rise since 2009, almost all over the world including in the emerging economies. The rise in employment in the renewable energy sector, for example, was sited to be unprecedented and even higher than in the fossil fuel sector. Many predicted that the revolution in the renewable energy sector has arrived. Then came a dip! Global new investment in renewable energy (excluding in the smart grids, natural gas transport, transmission



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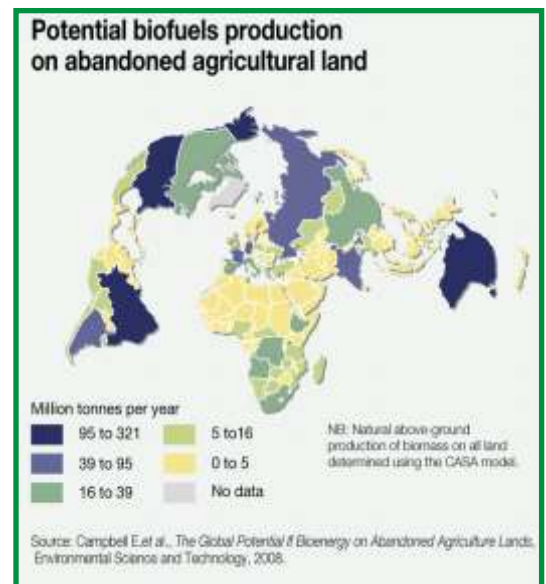
etc.) fell by 22 percent in 2012 to US\$ 244 billion. It is estimated that 2013 will probably see the second decline in renewable investments since 2011's record-high. The sad part is that any new investment in fossil fuel based power plant- diverted from investment in renewable energy- means locking our future in the jail of carbon-pollutants for decades. In 2010, governments agreed to reduce emissions enough to hold the increase in global temperatures below 2 degrees Celsius. To achieve this goal, \$36 trillion in global investment in clean energy will be required by 2050, according to a 2012 International Energy Agency report. This means the world needs to invest an average of \$1 trillion per year in clean energy for the next 36 years to avoid climate catastrophe.

Not only the world is miserably lagging behind the target investment in renewable energy of USD 1 trillion per year. The 'fracking gas' is providing a clean fuel i.e. natural gas at owner cost; solar PV cell supply has outstripped demand due to withdrawal of incentives.

At the same time the failure of negotiations at UN meetings and lack of champions for the carbon taxes and policy support for carbon market are giving negative signals to the investors. The rays of hope emerge from emerging economies like China as well as USA. China-the largest global energy user-is speeding the development of renewables to curb air pollution and reduce dependence on imported fossil fuel. China installed a record 12 gigawatts of photovoltaic panels last year, more

Potential biofuels production on abandoned agricultural land

Land-use planning is one strategy to manage competition for land and, at the same time, reduce environmental and social impacts. Assessment of land suitability and availability can identify both high-risk areas where land conversion should be avoided, and areas where bioenergy production is appropriate. Restoring formerly degraded land and using underused and/or abandoned land can boost output without increasing pressure to convert land. Careful assessment is needed as such land may harbour high levels of biodiversity, cultural values, or have been deliberately set aside.



Credit: GRID-Arendal

Further read-

http://www.grida.no/graphicslib/detail/potential-biofuels-production-on-abandoned-agricultural-land_f44f#

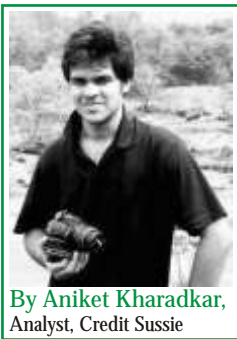
than the total amount of solar power in operation in the U.S.

It's targeting a further 14 gigawatts this year. China also installed about 14 gigawatts of wind power in 2013 and is targeting 18 gigawatts this year. First quarter of 2014 is expected to break the records of renewable energy investment in USA. India is still on single digit gigawatts as far as installed capacity but hopes to do better with young leadership coming in power in 2014.





Kaas - A beautiful plateau, situated just a few hours away from Pune, is not only blessed by the natural blossoms, but also picturesque views of the surrounding Sahyadris and the Kaas lake. Just about a few years ago, this place was completely unknown to the common people. It



By Aniket Kharadkar, Analyst, Credit Suisse

used to be a nature lover's heaven nestled in the Sahyadris, a place with an uninterrupted tranquility...embraced by the monsoon clouds crossing these ranges and stepping into Maharashtra, a splendid little habitat to some of the endangered and rarely spotted species of birds like Malabar Crested Lark and the Crested Bunting. The plateau used to be a pristine ecosystem in itself, which bred these birds along with some interesting species of insects and bees.

Only when the plateau was welcoming these species with open arms, followed some 'highly learned' botanists, who shouted 'Eureka Eureka...!' on the news channels' cameras and newspapers' tourism promotion pages...! What then? In came a new species of 'the educated', 'the highly placed', 'the rich' humans with their huge cars and buses, flocking the poor place as if these people had nowhere to go on weekends before this 'Eureka' stint by the local media. Little did they realise, that this flocking would adversely affect the blossoms, and the species trying to breed in there.

All they, rather we, were concerned about was a long weekend drive in our great cars, our family and friends having a blast, clicking gigabytes of photos of ourselves on the plateau, having a hell lot of tasty food sitting right there, and then a boasting episode about how we clicked all these pictures with all these flowers in our hair, hands and all over us...! Even though all of this came at a huge cost to the blooming nature... Long Drive? At the cost of hour long traffic jams and parking queues, burning gallons of fuel and honking decibels of horns, right on the plateau.. Family and friends having a blast? At the cost of sending the ecological balance of the area on toss? Oh here comes the photographer, and of the model standing right in the middle of purple flowers...! Splendid ain't it? At the cost of stamping a hundred blades of grass and small flowers on those, nectar from which would have served the bees

Kaas - In all its might or at the limit of its plight?

with their daily supply of food.. Yum..the homemade chaat dishes..right here on the Kaas plateau? At the cost of trampling a whole flock of flowers, in turn may be a few insects, by laying a mat on those, and then what do we do of the papers and plastics in which we had it? Well that's a silly question ain't it? We are Indians, we have a right to throw it right here..! Who's going to stop us? We've paid 10 bucks to get in..! Boasting of photos with flowers all over you, or you all over the flowers? At the cost of trampling those delicate flowers again, or chasing a bird in a quest of capturing it in a frame? Trampling the grass, which bears the flowers, not only kills it for that particular season, but it also results in your weight hardening the soil beneath, thus making it difficult for the pollen and delicate roots to penetrate the surface, thus reducing the possibility of a

capabilities of the people employed, this is the maximum sustainable number of daily visitors on the plateau. In case of excess bookings, the online system can easily assign waiting queues on a 'first come first serve' basis. 2) Regulate the amount of visitors through on the spot bookings, in Satara from the southern entry onto the narrow road, and Kaas village at the northern base of the same narrow ghat, so that the parking and long jam issues could be tackled, where the roads are wide enough. 3) Possibly banned four wheelers and larger vehicles, after Satara, and provided CNG operated paid shuttle mini buses to the plateau, through the narrow roads, thereby further reducing the traffic hassles. 4) Provide simple, and essential infrastructure like, dustbins, sitting shelters and toilets in the proximity, so that all the unwanted things like littering, eating amidst the flowers, and dirtying the area could be easily avoided. All these facilities, can be easily managed, and kept clean if the number of visitors would be restricted to a few hundreds. 5) After regulating the traffic, they could have used the excess staff to regulate the crowd on the plateau, thereby prohibiting people from trampling or sitting on the flowers, or even plucking them, thus reducing the damage to the natural treasure. 6) If they find the salaries to the employees, a burden on the

treasury, they could have opened up volunteering opportunities to the nature lovers and trekkers, who would be more than happy to contribute to the upkeep of the environment, free of charge..! I would be one of the first to volunteer...! 7) Educate and spread awareness among the people, about the importance and how delicate are the diversified flora and fauna on the plateau, it should also educate the villagers nearby, about how important this ecological balance is to their daily life in the neighborhood.

Readers' suggestions are honestly requested.

Read the full article here- <http://terrepolicycentre.com/pdf/Kaas-article-by-Aniket-Kharadkar.pdf>

Quick Question → A badger is considered a risk to cattle because-

- ☞ It kills cattle
- ☞ It consumes their food
- ☞ It may transmit bovine tuberculosis
- ☞ It disturbs the food-chain

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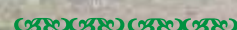
**Answer for the last quiz**

We received a few replies, but none was correct. TEEB is a global initiative focused on drawing attention to the economic benefits of biodiversity including the growing cost of biodiversity loss and ecosystem degradation. The full-form of TEEB is The Economics of Ecosystems and Biodiversity.

*If you know the answer, send in your entry to us at: [info@terrepolicycentre.com](mailto:info@terrepolicycentre.com)*

flower blooming on that spot in the next season too... After all this, we are still highly educated, highly placed, 'adventure loving' 'humans'...!! Unbelievably ironically funny...! I still can't imagine the scenario when 80,000 people turned up on the plateau on a single day, the 29th of September, 2013. And I am still surprised, that at least 30% of the flowers stood there, untrampled up till the 2nd of October, while I visited the plateau. I took it as a shame on the humans..! We individually, have erred while not caring for the nature here. Keeping that aside, let's consider a few other factors. Personally, I think, the authorities should have:

1) Used the well designed and implemented strategy of reservations, to limit the number of visitors to three digit figures. Looking at the width of the road, and the management





# Is Nuclear Energy Renewable ?



By Amol Ghorpade  
Project Leader,  
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'Sources of all energy-whether renewable or fossil fuels - is the Sun. And Sun gets all its energy from its Nuclear Fusion which is inexhaustible and hence nuclear energy can be equated to Renewable energy', that's what we were discussing during the lighter moments of the TERRE's strategy meetings. Though energy from nuclear fusions is yet to be mastered, it is indeed being the goal of the nuclear scientists who are keen to move away from nuclear fission that produces all nuclear energy today. "Nuclear power is not a 'fix-all' option. It is a choice that has a place among the mix of solutions, and expectations for the expanding use of nuclear power are rising."(1) Economic competitiveness, social well-being and environmental protection are prerequisites for sustainable development. Assessments of competitiveness of energy sources should be based upon comparisons of full costs to society including social and environmental costs. For example, electricity consumers in advanced countries pay for nuclear safety and insurance against nuclear accidents, decommissioning of nuclear facilities, and radioactive waste disposal. New nuclear units will have to compete within a broad range of alternatives, including fossil fuels, renewables and demand management, on the basis of full generation costs – i.e. capital, operation, maintenance and fuel costs. The large capital costs of nuclear power plants

create financial risks, especially in deregulated markets, and make its competitiveness very sensitive to the discount rate applied when selecting investments. The development of nuclear energy can broaden the natural resource base for deployment of energy production, and thus increase human and man-made capital. Conventional uranium resources represent 270 years of present annual consumption. Current extraction costs are about \$ 130/kilogram. It is now claimed that there is enough Uranium in the seas to last a millennia. Seawater contains 3.3 mg of Uranium per cubic meter, which adds up to 4.5 billion tons worldwide.(2) Japanese researchers believe it could be extracted at \$ 100 – 300/kilogram. Nuclear plants are believed to be clean over their entire life cycle. An International Energy Agency analysis found that a nuclear power plant's life cycle emissions range from 2 to 59 gram of carbon dioxide-equivalent per kilowatt-hour. However, hydropower's range ranked lower, at 2 to 48 grams of carbon dioxide-equivalents per kilowatt-hour. It is possible to recycle the nuclear waste to some extent and reclaim the plutonium and unused uranium to fabricate new fuel elements. This not only gives energy, but also reduces the volume and longevity of radioactive waste. It is worth noting that present Uranium and other resource extraction

techniques do cause a great deal of pollution and need to be revisited. Bill Gates of Microsoft has proposed gainful utilisation of nuclear waste. As India moves ahead with the Kudankulam and Jaitapur nuclear projects, we need to retrospect on policies of foreign governments. Germany envisions making renewables account for 35% of the energy mix by 2020 and phase out all of Germany's nuclear power plants by 2022. By the end of 2012 it has already achieved 25% of electricity through renewable sources.(3) However, the fast pace into the renewable future has meant that German consumers are faced with skyrocketing electricity bills and that the country's energy grid has suddenly become outdated. On the other hand France has the largest stock of nuclear power stations (56) as over 75% of its electricity is nuclear. It also gains over EUR 3 billion per year as the world's largest net exporter of electricity due to its very low cost of generation.(4) From 1970 till now, France has accumulated around 2700 cubic metres of high-level radioactive waste and about 40,000 cubic metres of long-lived intermediate-level radioactive waste.(5) Although nuclear power is a sign of prosperity for France, rural French people have objected to burial of nuclear wastes 'permanently' in their backyards.

Investing in nuclear research is not just concerned with energy and electricity production. Such research has beneficial applications in numerous areas that affect human life, such as health, including medical equipment using radioisotopes and cancer research, the social field and of course the environment, through the reduction of greenhouse gas effects. Training in nuclear skills represents a formidable economic challenge. Most specialists agree that there is a shortage of nuclear professionals and engineers. Their training is certainly expensive but it represents above all an investment in experience and know-how for the countries concerned. Finally, mimicking the Sun to produce energy by Nuclear Fusion would add one more source for the renewable energy!

1 Mohamed ElBaradei, Ex-Director General of the International Atomic Energy Agency. 2 "Sustainable Energy Without the Hot Air", a book by David JC MacKay/Nuclear Association (April 2013). 3 'Nuclear Power in France', World Nuclear Association (May 2013). 4 'Public comment on French waste disposal', World Nuclear News (16 May 2013) 5 'Public comment on French waste disposal', World Nuclear News (16 May 2013)



## INTERESTING VIDEOS

## Levi's Waste&lt;Less Jeans include 8 PET bottles in every pair



The global average for bottled water consumption each year is 29 liters per person. This statistic inspired Levi's to create the Waste<Less line of jeans. Each pair of jeans incorporates an average of 8 discarded bottles blended into the fabric, which makes them soft and flexible.

[Http://www.youtube.com/watch?v=nj0-F7-Z2Hc](http://www.youtube.com/watch?v=nj0-F7-Z2Hc)

## Recharge



This short film by Sabika Muzaffar was chosen as one of the finalists in the tv/e biomovies film competition in the 'UNEP Energy Prize' category.

[Http://www.unep.org/flvPlayer/videoplayer.asp?id=27344&l=en](http://www.unep.org/flvPlayer/videoplayer.asp?id=27344&l=en)

Number of the Month  
100

Not all trash even makes it to the landfill. The Great Pacific Garbage Patch, which is a swirling vortex of waste and debris in the Pacific Ocean, covers an area twice the size of the continental U.S. and is believed to hold almost 100 million tons of garbage. *Source: www.webcoist.com*

## Global Renewable Energy Grid Project: Integrating Renewables via HVDC and Centralized Storage

The global energy and environment challenges cannot be addressed through a local, regional, or even a national approach. They require a global outlook and a much broader vision, a Global Renewable Energy Grid [GREG].

[Http://www.renewableenergyworld.com/rea/news/article/2014/02/global-renewable-energy-grid-project-integrating-renewables-via-hvdc-and-centralized-storage](http://www.renewableenergyworld.com/rea/news/article/2014/02/global-renewable-energy-grid-project-integrating-renewables-via-hvdc-and-centralized-storage)

## Key food crops head to Arctic 'doomsday vault'

More than 20,000 crops from more than 100 nations have arrived at a "Doomsday vault" in the Arctic Circle. The latest delivery coincides with the sixth anniversary of the frozen depository in Svalbard, which now houses more than 800,000 samples.

[Http://www.bbc.com/news/science-environment-26338709](http://www.bbc.com/news/science-environment-26338709)

## Ukraine crisis is about Great Power oil, gas pipeline rivalry

Resource scarcity, competition to dominate Eurasian energy corridors, are behind Russian militarism and US interference.

[Http://www.theguardian.com/environment/earth-insight/2014/mar/06/ukraine-crisis-great-power-oil-gas-rivals-pipelines](http://www.theguardian.com/environment/earth-insight/2014/mar/06/ukraine-crisis-great-power-oil-gas-rivals-pipelines)

## Killing Wildlife: The Pros and Cons of Culling Animals

Is targeting species like badgers, swans, and deer effective? And is it ethical?

[Http://news.nationalgeographic.com/news/2014/03/140305-culling-badgers-deer-bison-swans-ethics-conservation/](http://news.nationalgeographic.com/news/2014/03/140305-culling-badgers-deer-bison-swans-ethics-conservation/)



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