

INDIA'S EFFORTS TOWARDS MITIGATING CLIMATE CHANGE

Relevant for: Environment | Topic: Environmental Conservation, Sustainable Development, and EIA

Managing change: It is high time to change track and take to proven methods like drip irrigation and aerobic cultivation. | Photo Credit: [G.N. Rao](#)

At the recently held meeting on climate change at the U.N. in New York, the Swedish school student Greta Thunberg directed two scathing statements towards the attending representatives of over a hundred nations. One was, "You have stolen my childhood with empty words," and the other: "You all come to us young people for hope (in mitigating the damage...). How dare you?" As [Krishna Kumar's perceptive analysis](#) of her statements (November 1, issue of *The Hindu*) showed, the audience did not own up that their industries were responsible for the climate change; instead they agreed upon comfortable targets of decades for the reduction of carbon emission. As he points out, not only the richer nations but also the richer people in every nation continue to believe that they can buy relief and escape from the consequence of climate change for their progeny.

It is because of the carbon-rich fossil fuel-burning which started during the Industrial Revolution of the 1750s till today that the globe has warmed by about 2 degrees, affecting the lives of humans, animals, plants, and microbes. Oceans are warmer, icebergs are melting, and hence Greta's *J'accuse*.

It was in 2015 when nations across the globe met in Paris, and 197 signatory countries have promised to own up and to limit the increase to no more than 1.5 degrees over the pre- industrial levels by 2030. India is one of them. Vishnu Padmanabhan, in his blog, points out the four big climate challenges for India. India has promised to cut its emission intensity by 33-35% by the year 2030, as compared to 2015 levels. It looks like this is desirable and achievable. First challenge: Most of India's emissions come from energy (largely coal-based) production (68%), industry (20%), agriculture, food and land use (10%). It becomes vital that we use other means of energy, produced by, for instance, hydroelectric power, windmills, solar power, nuclear power and others. India hopes to produce 40% of its energy from such non-coal sources.

Next, turning to agriculture, land use and water resources, these too contribute to climate change. How? The minimum support price, subsidies, free 24-hour electric power supply, and water-intensive crops are some. It is high time we restrict these and take to proven methods, and work on innovative ones. Some of these are drip irrigation (as Israel has done), aerobic cultivation (a water- saving agronomic practice, and researching on improving specific traits that lead to better roots that go down to deeper levels in the ground, as initiated by the University of Agricultural Sciences, Bengaluru), better and more nutritious grains. Doing these on rice — a major water-guzzling plant of India — will go far in water conservation. More nutritious varieties such as the new Samba Masoori (developed at CCMB and NIPGR, which is incidentally lower in carbohydrate, hence good for diabetics) should be promoted among farmers. Stubble burning must stop; we need to find better ways. This is no 'rocket science'; Indian scientists and technologists can and should find ways that are better and safer.

The third is to bring down atmospheric CO₂ levels through natural means. Forestation and planting of local varieties of trees must increase. Here, it is worth following the steps taken by the Philippines government. Each student there must plant and nurture 10 locally-suited trees before he/she gets a school certificate/ college degree. Note that local trees absorb water and

send it down to earth. India has planned to create additional 'carbon sinks' through forestation and tree plantation, so as to bring down 2.5-3 billion tonnes of CO₂.

Several publications have focused on how climate change and global warming has gradually become injurious to health. The paper "Global climate change and infectious diseases" by Shuman (*NEJM* 2010, 362:1061-63; doi:10.1056/NEJM/09129310) points out, as we burn more fossil fuel, the temperature rise, associated heat wave and heavier rain make perfect conditions for insects (and the germs/viruses they host) to thrive. Thanks to the warmer climate, water-borne diseases such as cholera, diarrhoea, as well as malaria, dengue and chikungunya have increased in numbers and in geographical spread across hilly, cold as well as warm deserts and sea coasts. Another important paper by V Ramana Dhara et al. (Climate change and infectious diseases in India: implications for health care providers, *Ind. J. Med. Res.* 2013; 138(6):847.852) points out how rising sea surface temperatures increase tropical cyclones and storm surges, leading to polluted water, insanitary conditions, population displacement, toxic exposures, hunger and malnutrition across the Bay of Bengal and Arabian Sea coast. Some are transmitted from animals to humans and of course human-to-human. The latest example is Nipah virus, transmitted by bats to humans. It is here that we should appreciate the prompt action taken by Kerala government in arranging to isolate people, work with biological labs in India and abroad to identify more such initiatives from State and Central governments.

Happily enough, many of our labs and drug companies are involved both in-house and collaborative research in order to design drugs from India's natural plant sources, biosimilars, repurposing known drugs for other ailments and vaccines. We will be able to rise to the occasion and can even be world- leaders in this field. Note how our drug and biotechnology companies have provided drugs to the needy across the word at affordable costs, how just a handful of vaccine companies in India supply almost 40% of the world's childhood vaccines and how some of them are already working on vaccines for other current epidemics.

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