Opinion

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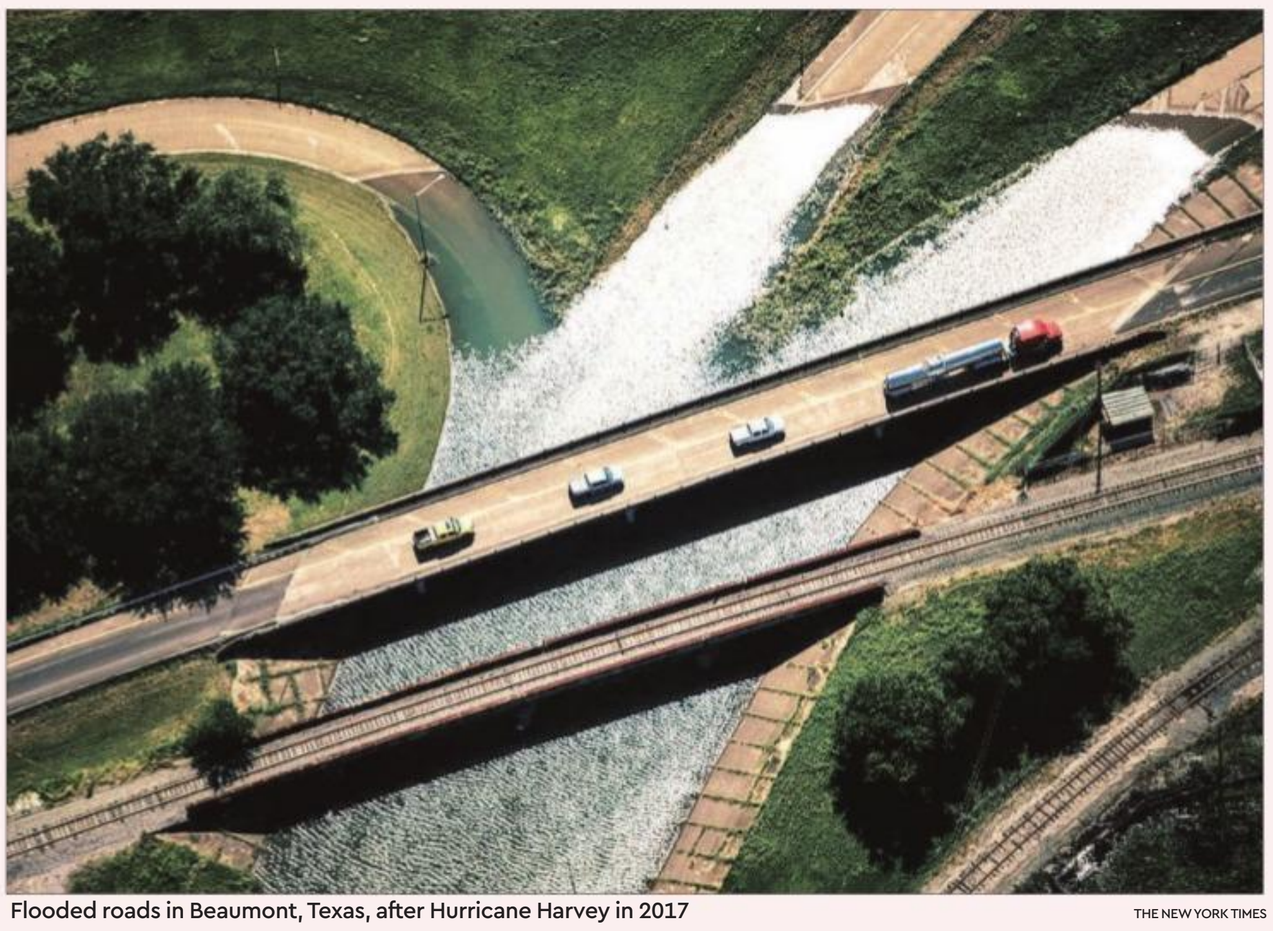
EUGENE LINDEN

Climate change misinterpreted

Scientists tend to underestimate the severity of threats. Few thought it would arrive so quickly. Now we're facing consequences



Flooded roads in Beaumont, Texas, after Hurricane Harvey in 2017 THE NEW YORK TIMES

FOR DECADES, MOST scientists saw climate change as a distant prospect. We now know that thinking was wrong. This summer, for instance, a heat wave in Europe penetrated the Arctic, pushing temperatures into the 80s across much of the Far North and, according to the Belgian climate scientist Xavier Fettweis, melting some 40 billion tons of Greenland's ice sheet. Had a scientist in the early 1990s suggested that within 25 years a single heat wave would measurably raise sea levels, at an estimated two one-hundredths of an inch, bake the Arctic and produce Sahara-like temperatures in Paris and Berlin, the prediction would have been dismissed as alarmist. But many worst-case scenarios from that time are now realities.

Science is a process of discovery. It can move slowly as the pieces of a puzzle fall together and scientists refine their investigative tools. But in the case of climate, this deliberation has been accompanied by inertia born of bureaucratic caution and politics. A recent essay in *Scientific American* argued that scientists "tend to underestimate the severity of threats and the rapidity with which they might unfold" and said one of the reasons was "the perceived need for consensus." This has had severe consequences, diluting what should have been a sense of urgency and vastly understating the looming costs of adaptation and dislocation as the planet continues to warm.

In 1990, the Intergovernmental Panel on Climate Change, the United Nations group of thousands of scientists representing 195 countries, said in its first report that climate change would arrive at a stately pace, that the methane-laden Arctic permafrost was not in danger of thawing, and that the Antarctic ice sheets were stable. Relying on the climate change panel's assessment, economists estimated that the economic hit would be small, providing further ammunition against an aggressive approach to reducing emissions and to building resilience to climate change. As we now know, all of those predictions turned out to be completely wrong. Which makes you wonder whether the projected risks of further warming, dire as they are, might still be understated. How bad will things get?

So far, the costs of underestimation have been enormous. New York City's subway system did not flood in its first 108 years, but Hurricane Sandy's 2012 storm surge caused nearly $5 billion in water damage, much of which is still not repaired. In 2017, Hurricane Harvey gave Houston and the surrounding region a $125 billion lesson about the costs of misjudging the potential for floods.

The climate change panel seems finally to have caught up with the gravity of the climate crisis. Last year, the organisation detailed the extraordinary difficulty of limiting warming to 2.7 degrees Fahrenheit (1.5 degrees Celsius), over the next 80 years, and the grim consequences that will result even if that goal is met.

More likely, a separate United Nations report concluded, we are headed for warming of at least 5.4 degrees Fahrenheit. That will come with almost unimaginable damage to economies and ecosystems. Unfortunately, this dose of reality arrives more than 30 years after human-caused climate change became a mainstream issue. The word "upended" does not do justice to the revolution in climate science wrought by the discovery of sudden climate change.

The realisation that the global climate can swing between warm and cold periods in a matter of decades or even less came as a profound shock to scientists who thought those shifts took hundreds if not thousands of years. Scientists knew major volcanic eruptions or asteroid strikes could affect climate rapidly, but such occurrences were uncommon and unpredictable.

Were the ice sheets of Greenland and Antarctica to melt, sea levels would rise by an estimated 225 feet worldwide. Few expect that to happen anytime soon. But those ice sheets now look a lot more fragile than they did to the climate change panel in 1995, when it said that little change was expected over the next hundred years.

In the years since, data has shown that both Greenland and Antarctica have been shedding ice far more rapidly than anticipated. By 2014, a number of scientists had concluded that an irreversible collapse of the West Antarctic ice sheet had already begun, and computer modelling in 2016 indicated that its disintegration in concert with other melting could raise sea levels up to six feet by 2100, about twice the increase described as a possible worst-case scenario just three years earlier. Then this year, a review of 40 years of satellite images suggested that the East Antarctic ice sheet, which was thought to be relatively stable, may also be shedding vast amounts of ice.

As the seas rise, they are also warming at a pace unanticipated as recently as five years ago. For one thing, a warmer ocean means more powerful storms, and die-offs of marine life, but it also suggests that the planet is more sensitive to increased carbon dioxide emissions than previously thought. The melting of permafrost has also defied expectations. This is ground that has remained frozen for at least two consecutive years and covers around a quarter of the exposed land mass of the Northern Hemisphere. As recently as 1995, it was thought to be stable. But by 2005, the National Center for Atmospheric Research estimated that up to 90% of the Northern Hemisphere's topmost layer of permafrost could thaw by 2100, releasing vast amounts of carbon dioxide and methane into the atmosphere.

For all of the missed predictions, changes in the weather are confirming earlier expectations that a warming globe would be accompanied by an increase in the frequency and severity of extreme weather. And there are new findings unforeseen by early studies, such as the extremely rapid intensification of storms, as on Sept. 1, when Hurricane Dorian's sustained winds intensified from 150 to 185 miles per hour in just nine hours, and last year when Hurricane Michael grew from tropical depression to major hurricane in just two days. If the Trump administration has its way, even the revised worst-case scenarios may turn out to be too rosy. In August, the administration announced a plan to roll back regulations intended to limit methane emissions resulting from oil and gas exploration, despite opposition from some of the largest companies subject to those regulations. Also its actions approached the surreal as the justice department opened an antitrust investigation into those auto companies that have agreed in principle to abide by higher gas mileage standards required by California. The administration also formally revoked a waiver allowing California to set stricter limits on tailpipe emissions than the federal government.

Even if scientists end up having lowballed their latest assessments of the consequences of the greenhouse gases we continue to emit into the atmosphere, their predictions are dire enough. But the Trump administration has made its posture toward climate change abundantly clear: Bring it on! It's already here. And it is going to get worse.

—NYT

INSIDE TRACK

COOMI KAPOOR

JNU escape artistes

The fact that Nobel prize winner Abhijit Banerjee was imprisoned in 1983 in Tihar for 12 days for participating in a *dharna* against the then JNU vice-chancellor has evoked interest. Sunil Gupta, the former legal adviser for Tihar Jail, in his new book, *Black Warrant,* provides an interesting postscript to the tale. Some 250 JNU students were arrested for arson and rioting, but amazingly, 170 students, including 55 women, managed to escape right under the noses of the jailors. A large number of visitors met the students on their first day in jail. In those days Tihar visitors were identified simply by a stamp on their wrists. The students took advantage of the hot and sweaty weather in May to transfer the stamp image from one wrist to another. The bumbling jail authorities did not notice that three times the number of visitors left the jail as had entered. They also discovered belatedly that the arrested students had all given fake names and police never bothered to verify their identities. So the escapees could not be traced. Incidentally, finance minister Nirmala Sitharaman was then a member of the Free Thinkers group, one of the two student bodies which organised the protest.

Crumbling house

The government's decision to convert the historic Parliament House, built in 1927, into a museum is not without reason. Signs of ageing of the iconic circular structure have been apparent for some time. In the 1990s, when Najma Heptulla was the deputy chairperson of the Rajya Sabha, a terrible stench sometimes pervaded the House. Eventually the drainpipes under the floor had to be dug up and diverted. During PV Narasimha Rao's tenure as prime minister, there was pandemonium in the Lok Sabha one day when a piece of cement fell off the roof. To keep away pigeons that regularly perched and cooed in the Lok Sabha's high ceiling, a large net was installed under the dome. Later, the windows of the dome were permanently shut to keep the birds out. Since a major gas fire in the kitchen, cooking in the heritage building has been forbidden. Food is now brought from outside and warmed on electric heaters. Thankfully the parliamentary staff seems to have successfully tackled the monkey menace. There was a time when simians roamed the circular verandahs.

Daunting task

The Jal Jeevan Mission under the Ministry of Jal Shakti is envisaged to achieve for Narendra Modi's second tenure what the Swachh Abhiyan campaign did for his first. The mission's budget is a whopping $51 billion and the goal is set very high. At present only 18 % of rural households have tap water connection and the aim is to provide the entire country safe drinking water. PM Modi hopes to replicate the success of WASMO (the Water and Sanitation Management Organisation), which he established in Gujarat in 2007 as chief minister. Today, 78% of rural households in Gujarat get water supply through taps. Modi has ensured that those recruited for the water ministry have domain knowledge. Secretary Parameswaran Iyer has focused on projects concerning water and sanitation through most of his career, including in the Swachh Bharat Mission. Additional Secretary Bharat Lal is usually associated with his tenure as resident commissioner, Gujarat, and as joint secretary in Rashtrapati Bhavan, but he has worked earlier both with water projects in the rural development ministry and with WASMO in Gujarat.

Not so meek

N C Saxena, who was a member of the National Advisory Council (NAC) during UPA time, in his recent book, *What Ails the IAS,* suggests that Manmohan Singh as prime minister did not follow Congress president Sonia Gandhi's writ unquestioningly, as has been alleged. He notes that Singh and his adviser, Montek Ahluwalia, often differed with Gandhi, who chaired the NAC. The PM was not in favour of safety net programmes such as NREGA, for example, writes Saxena. Significantly, the NAC was not reconstituted immediately after the Congress returned to power in 2009 and, according to the book, Singh reluctantly revived it in March 2010. The Food Security Bill was delayed for two years by the then PM and the Act finally passed with modifications because of pressure from Gandhi, it adds. Saxena also points out that Singh did not renew the membership of three NAC members, including the outspoken Harsh Mander, in 2012 even though Gandhi herself acknowledged their valuable contributions.

Faces to remember

Well-known artist and Trinamool Congress Rajya Sabha MP Jogen Chowdhury, whose term expires next March, has put his years in Parliament to good use. He has sketched the faces of many colleagues in the House over the years, including Manmohan Singh, Smriti Irani, Sitaram Yechury, Amit Shah, Ghulam Nabi Azad and the late Arun Jaitley and Sushma Swaraj. The artist plans to compile his parliamentary sketches for a book. Chowdhury describes his experience as an MP as, "invaluable for an artist. It was like watching different characters on a stage".

Welcome to pink (SG)!

Ganguly has maintained that, albeit scepticism, day-night Test cricket is the way forward

Last year, the Indian cricket team reportedly declined twice to play day-night Tests, a matter which Sourav Ganguly settled in one meeting with Virat Kohli

RINGSIDE VIEW

Shamik Chakrabarty

KERRY PACKER'S WORLD Series Cricket came at a time when change had become the need of the hour. The late Australian media tycoon had the farsight and intelligence to catch the winds of change. Christopher Martin-Jenkins, a doyen of cricket reporting and broadcasting, had described the game under lights, with a white ball and the players wearing coloured clothing as 'pyjama cricket'. The great John Arlott had called it a 'circus'. At the end, Packer was the winner. He revolutionised limited-overs cricket. White-ball cricket under lights gradually became the mainstream in the short-form.

Unlike golf, tennis or hockey, cricket usually is slow to accept a departure from tradition. Purists still take T20 cricket with a pinch of salt, its great success notwithstanding. And given that Test cricket still remains the ultimate—for the right reasons—to the players and connoisseurs alike, it's natural that pink-ball, day-night Tests are viewed with scepticism by many. Former India captain Bishan Singh Bedi, for example, is not against pink-ball Test cricket. But as his tweet suggests, he is probably against its proliferation.

"Much as we admire @SGanguly99's hurry n 10 months as BCCI chief-but am not v convinced if 'Pink' is the only road ahead-#Dada cn do well to resurrect Ranji/Duleep & put everything into 'marketing' Test Crkt!" Bedi had tweeted after Sourav Ganguly became the BCCI president and ensured that the upcoming second Test between India and Bangladesh at Eden Gardens from November 22 would be a day-night affair.

Last year, with the Indian cricket board being helmed by the Committee of Administrators (CoA), the Indian cricket team reportedly declined twice to play day-night Tests—first against the West Indies at Rajkot followed by the series opener against Australia at Adelaide. Ganguly settled the matter in just one meeting with Virat Kohli. According to the BCCI president, the India captain took just three seconds to agree.

"I don't know what's the reason they didn't want to play (Adelaide day-night Test). I met Virat, met him for an hour and the first question was that we need to have day-night Test cricket. The answer in three seconds was, 'yes let's go ahead and do it'. So I really don't know what's happened in the past. What's the reason and who was involved in the decision. But I found him absolutely acceptable to play day-night Test matches. He realises I think that empty stands in Test matches is not the right way forward," Ganguly told the audience during a promotional event in Kolkata last week.

Ganguly has always maintained that day-night Test cricket is the way forward, given the dwindling stadium attendance in the long-form—the spectator response for the three home Tests against South Africa had been dismal. In this day and age, it's difficult for the fans to throng the stadiums on working days and stay put for seven hours to watch a game of cricket. Yes, day-night Test is the way forward but like the Packer revolution, this, too, needs time to become the traditional, day version's replacement.

To start with, a lot of technical issues are involved. Pink-ball, day-night Test cricket tilts the balance significantly in favour of the fast bowlers. Cricket has always been a batsman's game. So once again, there's a departure from the norm. A substantial amount of grass is needed on the pitch to help the pink ball retain its colour. An extra coat of lacquer allows the pink ball to swing more than its red counterpart. And then, there's the 'twilight zone', when the ball moves even more because the air just above the pitch becomes more stable, and as dusk melts into evening and floodlights take over, players find it difficult to pick the ball. Also, and this is very important, the pink-ball hasn't yet passed the test with regards to its longevity – whether it can overcome the dew factor and stand for 80 overs, when the second new ball becomes available. For the first time, a day-night Test is going to be played in full winter and the degree of difficulty will be higher.

The pink Kookaburra, tried out in the Duleep Trophy, had received negative feedbacks from the players. The Eden Test will be played with the SG pink and although the ball manufacturer is very confident, we should keep our fingers crossed. The pink-ball manufacturing technology is still a work in progress and further improvement is required before any attempt to proliferate day-night Tests is made. Till then, it can stay as an exciting diversion—one pink-ball Test in every series. Yes, the cricketers will have to adapt, but for far too long the sport has ignored its biggest stakeholders – fans. Day-night Test cricket allows fans to turn up at the ground during their free time. That has to be the top priority.

Day-night Test cricket is certainly a way forward in terms of bringing the crowd back to the stands. The game's purest format also badly requires hard-selling, which at the moment is virtually non-existent. And as Kohli has proposed, India should have "five strong Test centres"; elite venues where a strong section of fans still covets the long-form. Rotation can happen for limited-overs internationals and the IPL matches.

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