

TIMES
EVOKE

IT'S YOUR NATURE

Climate change is the world's worst existential crisis. To fight it, we must evoke our better selves

In his thought-provoking blog, 'Wait But Why', Tim Urban postulates that all humans carry a Primitive Mind and a Higher Mind within themselves. The Primitive Mind is the ancient animal software inside us that drives us to serve the will of our genes — survive long enough to pass the genes on. The Higher Mind contains the human capacity for rationality, self-awareness and wisdom.

The Primitive Mind is endlessly greedy and totally immersed in the present. The Higher Mind is reasonable, capable of seeing the big picture and overriding our primal instincts. Nobody is ever in one state of consciousness all the time. Sometimes, the Primitive Mind is in charge, at others, the Higher Mind.

Yet, tragically, humanity has apparently switched off its Higher Mind when it comes to the environmental crisis looming over us. With the Primitive Mind controlling us, we've wreaked utter havoc on the ecosystem. We've hurtled down a highway called progress, without pausing to consider where it might be taking us. Well, it has taken us to a precipice.

Climate change is a simple, and vital, truth now. The evidence is undeniable. This beautiful planet is on the brink of catastrophe. And we still don't get it. We engage in endless debates when all our choices are just one — we can either save the world, or see it go up in flames as global temperatures rise.

This planet is all we have. And it needs us to activate our Higher Minds to heal the damage we've done, with compassion and wisdom.

Times Evoke's special coverage is our effort to reinforce your Higher Mind. We will put you in touch with people who have dedicated their lives to making a difference. We hope reading their thoughts will light a spark in you, helping you to be a force for change.

Our planet faces the most threatening existential challenge in its history. But you have the power to help save it. Get informed, get inspired and get empowered. Your time starts now.

When we damage Earth,
we damage ourselves

There is a link between the environment, our economic well-being and our children's future. Our actions are breaking this link

David Attenborough & Christine Lagarde

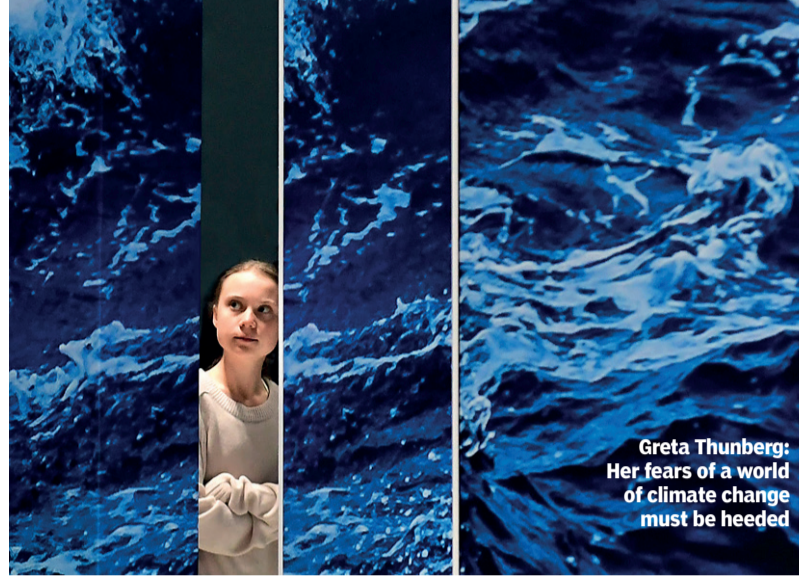
In nature, everything is connected. This is equally true of a healthy environment and a healthy economy. We cannot sustain life without taking care of nature. And we need healthy economies to lift people out of poverty and achieve the United Nations Sustainable Development Goals.

In our current model, these goals seem to collide and our economic pursuits encroach too closely on nature. But nature is what makes industry possible. We cannot have human development without a healthy natural world.

The bottom line is that when we damage the natural world, we damage ourselves. Our growing economic footprint threatens our own future. With the projected rise in ocean levels and the average temperature of the planet, large swaths of land, even whole countries, will become uninhabitable, triggering mass climate-induced migration.

Since the natural and economic worlds are linked, similar principles apply to both. In the financial world, we would not eat into capital to the point of depletion because that would bring financial ruin. Yet in the natural world, we have done this repeatedly. We must treat the natural world as we would the economic world — protecting natural capital so it can provide benefits well into the future.

We can ensure that the price of fossil fuel energy reflects not only production costs but also environmental costs. We must eliminate energy subsidies that encourage new fossil



fuels or promote overuse and waste. IMF research found the implicit global subsidy from undercharging for energy and its environmental costs in 2017 was a staggering \$5.2 trillion, or 6.5 per cent of world GDP.

The private sector can stop supporting industries that damage the planet and instead invest in sustainable development. Governments can roll out policies to fight climate change and the destruction of nature, for example, through promotion of clean-technology research.

We must treat the natural world like the economic world — protect natural capital for the future

Change must begin now, and it must encompass us all. The youth of today understand this — think about courageous people like Greta Thunberg. They are calling on older generations to act now — because it is their futures at stake.

Nature is resilient. We can still reverse some of the damage inflicted on our precious planet. But time is running out. If we don't take decisive action in the next 10 to 20 years, the damage will have passed irreversible tipping points. We must work now. For who among us wants to face harsh reproach from our grandchildren: "You knew it was happening, and you did nothing."

Edited essay based on a conversation between Sir David Attenborough, natural historian, and former IMF managing director Christine Lagarde
December 2019 | Finance & Development 5 | Courtesy: IMF

'US should help
India leapfrog to
clean energy'

Scientist Michael E. Mann, director of the University of Pennsylvania's Earth System Science Center, was a lead contributor to the 2001 IPCC Climate Change Report, which won the 2007 Nobel Peace Prize. Speaking to Times Evoke, Mann discussed why India must renounce fossil fuels — and who should help it:

What is the one most irrefutable piece of data showing that climate change is real and harmful?

■ It is the measured rise in carbon dioxide concentrations. From basic physics, we know this is the thermometer measurements show that it is.

As for harm, the record heat waves, floods, droughts, wildfires, superstorms — we wouldn't be seeing these unprecedented weather extremes if not for the human-caused warming of the planet.

Climate change is also impacting multiple species beyond humanity.

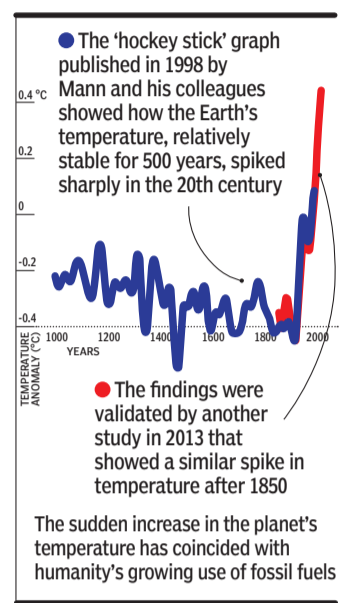
■ We are now seeing major classes of animals — like amphibians — disappearing at alarming rates. Climate change is a major cause. Finally, deforestation's devastating impact on ecosystems leads to the collapse of civilisations.

Why do you say climate change deniers are changing tack?

■ There is a "deflection campaign" — polluting interests are trying to divert attention from the need for systematic change (like a price on carbon) to individual behaviour.

But any real solution requires policies incentivising a shift away from fossil fuel burning. This requests action by governments. And that's opposed by polluters.

We often hear climate change is a 'Western strategy' to limit India by



forcing alternative energy on us.

■ India is suffering climate change's impacts, with unprecedented flooding rains and extreme heat.

Western nations, like the US, with a much greater role in creating this problem through two centuries of fossil fuel dependence, must provide assistance to India, to "leapfrog" past the fossil fuel stage to a clean energy economy.

There's no reason other countries must make the mistakes we did.

You've been researching the Sundarbans for decades. What are the most important differences you've seen there due to climate change?

■ It was the Sundarbans that opened my eyes to the threat of climate change. Even twenty years ago, it was clear that large parts of the forest faced an imminent risk of inundation. However, these impacts cannot be ascribed solely to climate change — human interference with the landscape has hugely magnified the impacts of sea-level rise in deltaic regions throughout the world.

Because of dams and barrages, as well as the extraction of oil and water, river deltas around the globe are sinking at three to four times the rate of sea-level rise.

In the Sundarbans, there is the additional factor of cyclonic activity. The Bay of Bengal is a notoriously cyclone-prone region. Indeed the very word "cyclone" was coined in Calcutta in the 1840s by an amateur English meteorologist named Henry Piddington. Historically, Bengal, and the Sundarbans, have experienced some of the world's most destructive storms. In 1737, a cyclone almost obliterated the city of Calcutta. This storm was accompanied by an earthquake and a storm surge reportedly of 40 feet — more than three times higher than the 12-foot wave generated by Cyclone Nargis.

Two other cyclones in the region killed hundreds of thousands of people — the Backerganj cyclone of 1876 and the Bhola cyclone of 1970. The latter is thought to have killed as many as half a million people — it is reckoned to be the worst natural disaster of the 20th century.

In recent years, advance warning systems and improved evacuation have hugely reduced the death

'Climate change will hit the poor,
but the rich will lose the most'

Amitav Ghosh is a renowned author and anthropologist who has been writing about climate change since the 1980s. The Padma Shri awardee and Jnanpith winner spoke to Times Evoke about crucial environmental changes he has seen while studying the Sundarbans over the years, how renewable energy could empower the developing world — and why climate change might be more challenging for the rich than the poor.



Ghosh has studied the Sundarbans extensively. His books on climate change predict far greater storms coming

This will certainly impact marginalised groups. But why do you argue that richer groups may have a harder time dealing with climate change compared to the poor?

■ In my view, the idea that climate change is a threat primarily to the poor is misleading. The reality is, people will generally lose in proportion to their circumstances. For instance, the impacts will probably be disastrous for subsistence-level farmers, in the sense that they will be completely pauperised. But in aggregate terms, the wealthy stand to lose the most, partly because they have more to lose, and partly because their existence is tied to advanced infrastructure.

When Hurricane Harvey struck Houston in 2017, some of the wealthiest people, in one of the world's richest cities, were very badly impacted. Consider California — the recent wildfires there affected many people who live in the wealthiest parts of the state. Or think of the extreme rainfall events ("rain-bombs") that hit Mumbai and Chennai over the last few years — these urban floods certainly did not spare middle class or wealthy people.

In India, the urban working classes are often much more mobile than middle class people — they travel to their villages and are famil-

iar with local trains. In the event of a cyclone approaching Mumbai, working class people will be able to evacuate while the middle classes probably will not. In fact, many middle class people will resist being evacuated, because their flats are their major asset. They will not want to abandon their flats and cars and move away.

Middle class life is based on an expectation of a certain kind of stability — this will become increasingly rare as the planetary crisis unfolds.

The climate change debate often focuses on the West versus the East's role in creating the problem. But why do you say renewable energy could 'shake up the power equations of the world'?

■ Energy is a critical element of geopolitics. Since the early 20th century, the global strategic order has been based on the control of the flow of fossil fuels — oil, gas and coal. Maritime power is a crucial part of this since sixty per cent of the world's supply of oil and gas is transported by sea. The control of the flow of oil and gas across the oceans is a very important component of Western, and especially American, strategic dominance.

Unlike fossil fuels, renewable energy does not need to be transported across the oceans — wind and solar power can be generated locally. Hence, if there were to be a complete switchover globally to renewable energy, the strategic importance of maritime power (on which Western dominance has long been founded) would be drastically reduced.

There is no such transition happening at the necessary scale in the near future. However, we can be sure that the present planetary crisis will lead to significant changes in the world's geopolitical order — these changes are already unfolding, and they will accelerate in years to come.

AN ARCTIC
EMERGENCY

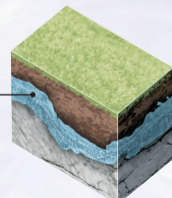
It's at the northernmost part of the earth. But the polar region is no longer distant from our lives. It is central to how climate change will impact us

ICY REALITIES

- Surface air in the Arctic is warming at twice the global rate
- Temperatures in the Arctic over the last five years have exceeded all records since 1900
- Today, the extent of Arctic summer sea ice is at its second lowest since the start of satellite observations in 1979

PIVOTAL PERMAFROST

- Permafrost is a layer of frozen ground, hundreds of feet deep in the Arctic
- It is over double the size of the USA
- Permafrost contains solid ice along with thousands of years of accumulated plant and animal life — its layers are thus rich in carbon stored over millennia
- As the Arctic warms, icy permafrost is thawing too
- Warming permafrost is causing the release of carbon dioxide, nitrous oxide and methane — a greenhouse gas that's 84 times more potent than CO₂



- For every one degree Celsius rise in average global temperatures, permafrost can release up to six years of coal, oil and gas emissions
- An added danger is 'abrupt thaw', or the solid ice in permafrost also melting, creating surface depressions, causing the ground to warm up further, and more ice to melt
- Permafrost could thus soon become as large a greenhouse gas emitter as China — the world's largest emitter

WHY ARCTIC ICE MATTERS

- Arctic ice is a huge shield which reflects solar warming back into space
- It thus prevents this from being absorbed by the ocean, heating up the waters — and melting more ice
- Losing this ice is the warming equivalent of an extra 25 years of emissions at current rates
- This warming, causing the loss of species habitat in the Arctic, is also causing the thawing of permafrost

HOW TO PRESERVE ARCTIC ICE

- It's crucial to reduce carbon emissions via carbon taxes, land use change, etc.
- Alongside, cutting short-lived pollutants — like black carbon, methane and tropospheric ozone — is key
- This can be achieved through limiting methane emissions from landfills, strict norms on hydrofluorocarbons, used in A/Cs, fridges, etc., and reducing diesel emissions

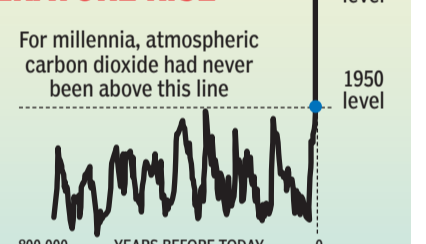
Research: NYT, 14 December, 2019; Geophysical Research Letters, June 2019; National Geographic, September 2019

OUR ENDANGERED PLANET

The evidence for rapid climate change is compelling. Nasa provides the proof

GLOBAL TEMPERATURE RISE

The planet's average surface temperature has risen about 0.9°C since the late 19th century, a change driven largely by increased carbon dioxide and other human-made emissions into the atmosphere

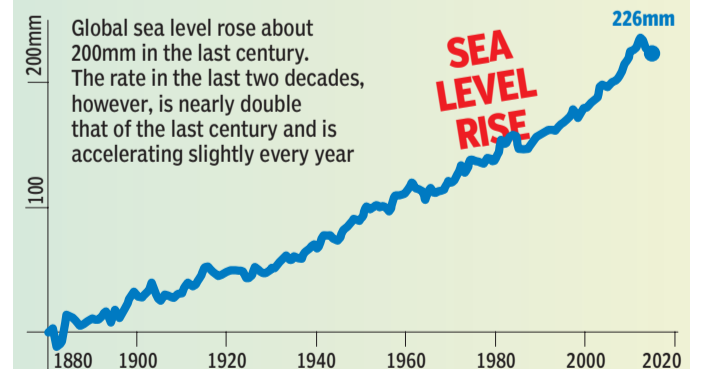


Most of the warming occurred in the past 35 years, with the five warmest years on record taking place since 2010. Not only was 2016 the warmest year ever, but eight of the 12 months — from January through September, excepting June — were the warmest on record for those respective months

WARMING OCEANS The oceans have absorbed much of this increased heat, with the top 700m of ocean showing warming of more than 0.4°F since 1969

SHRINKING ICE SHEETS
AND GLACIAL RETREAT

The Greenland and Antarctic ice sheets have decreased in mass. Data from Nasa shows Greenland lost an average of 286 billion tons of ice per year between 1993 and 2016, while Antarctica lost about 127 billion tons of ice per year during the same time period. The rate of Antarctic ice mass loss has tripled in the last decade



OCEAN ACIDIFICATION

Since the beginning of the Industrial Revolution, the acidity of surface ocean waters has increased by about 30 per cent. This increase is the result of humans emitting more carbon dioxide into the atmosphere and hence more being absorbed into the oceans. The amount of carbon dioxide absorbed by the upper layer of the oceans is increasing by about 2 billion tons per year



Via climate.nasa.gov