



HEAT RESPONSE | BOOK REVIEW | RIDDLE

gobar times

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A DOWN TO EARTH SUPPLEMENT FOR THE YOUNG AND CURIOUS

World Environment Day

Celebrating the spirit with some
successful stories of environmental
activism rescuing our planet



Down To Earth



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YOUNG

ENVIRONMENTALIST

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Air & Mobility

Water

Climate Change

Biodiversity

Energy

Waste

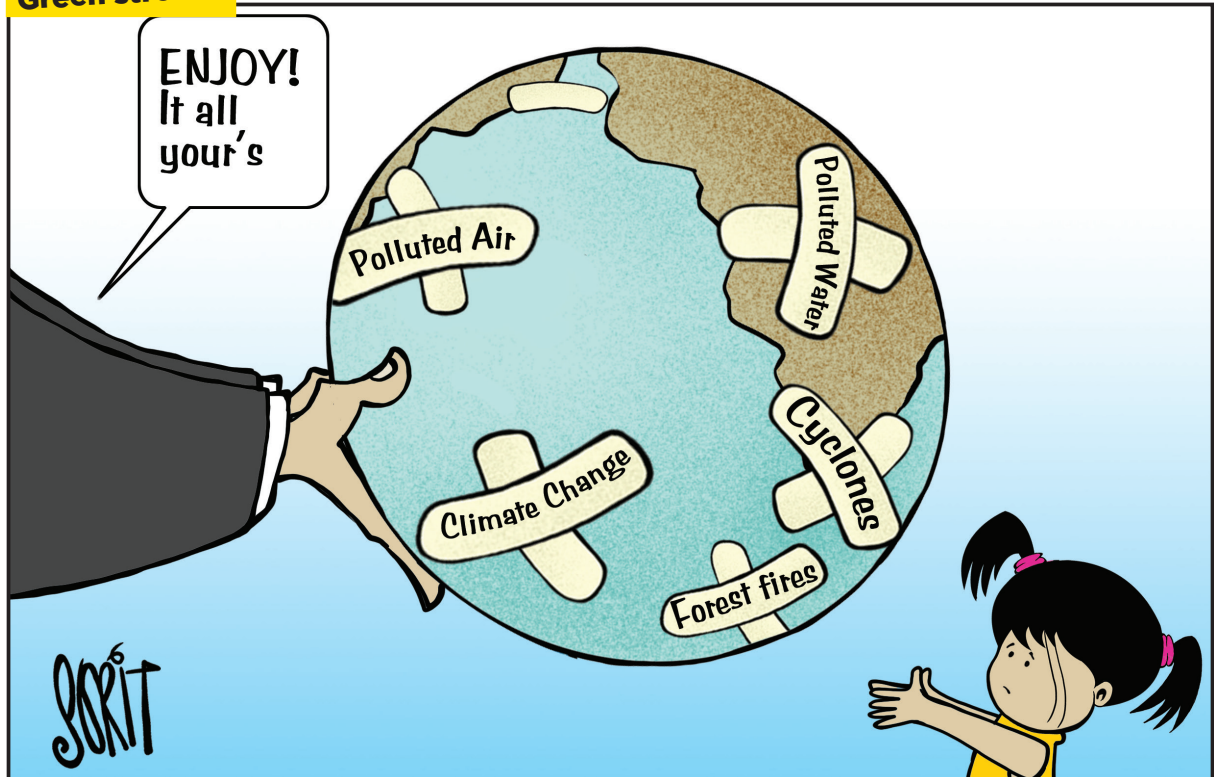
Food

Etc

A website on
Environment and Development
for the Young and the Curious

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Green strokes



Special edit

Let's act before it's too late!

Just in case you have forgotten, there is a building with lots of rooms having desks and chairs inside them. It has a blackboard with the trademark chalk and duster too. We all loved going there, until the fated lockdowns began. No points for guessing, this building is your very own school! Good old days! Hmm...

Now, imagine that the school has reopened. But, you find it in complete shambles! Your benches are damaged, the playground is filthy, and the taps and toilets are twisted and soiled. Not only that, your blackboards, windows, and computers are all bruised and broken. The plants outside are also uprooted. This can almost feel like a nightmare! Now, continue and suppose that all this garbage dump was left by some nasty seniors of yours, who were partying here purely for fun!

Are you enraged? That's exactly what is happening with our lovely home—the Mother Earth. Our air is unfit to breathe. Our rivers are water scarce. Our groundwater is contaminated. Our animals are facing extinction and the forests are chopped rampantly. Even, our diseases are becoming so scary—the covid!!! So, what went wrong with our earth? Who was partying here?

Supplement Editor: Sorit Gupto **Creative Director:** Ajit Bajaj
Copy: Anubhuti Sharma **Design:** Mukesh Kumar Singh, Ritika Bohra
Illustrations: Yogendra Anand **Cover Design:** Ritika Bohra
Production: Rakesh Shrivastava, Surender Singh, Gundhar Das
Email: sorit@cseindia.org **Snail Mail:** 41, Tughlakabad Institutional Area, New Delhi -110062



Environmental movements in India

The Bishnoi Movement

In 1700 AD, Amrita Devi, a resident of Khejarli in Rajasthan could not bear the sight of her sacred trees being chopped off. So, she hugged the trees and encouraged others to do the same. More than 300 Bishnois joined her and were killed in this movement.

The Chipko Movement

In the year 1973, the women of Advani village of Tehri-Garhwal tied sacred threads around their trees and hugged them to prevent them from being logged down. Hence, it came to be known as the 'Chipko' or 'hug the tree' movement.

The Appiko Movement

Also known as the southern version of Chipko Movement, the Appiko Movement was locally known as 'Appiko Chaluvali'. The locals embraced the trees which were to be cut by the contractors of the forest department.

The Save Dehing-Patkai

In April 2020, this online movement rose against the beginning of coal mining in the Dehing-Patkai Wildlife Sanctuary in Assam. The hashtag #SaveDehingPatkai paused the mining activities in this rich biodiverse area.

The Save Aarey Movement

The Situated near the Sanjay Gandhi National Park in Mumbai, the Aarey forest is amongst the last green areas located within the metropolis. When the government decided to clear it for making a car-shed for the metro rail, the 'Save Aarey' protest rallies gained momentum.

The Right to Breathe Protest

As New Delhi became the capital of one of the planet's most polluted cities, the #RighttoBreathe in 2020, campaigned against its hazardous air quality. When even breathing was declared injurious to health, this social media campaign was led by over 1,500 people at the India Gate.

The answer is: the earth, as we have it today, is the result of the choices WE made a few centuries back. That was when we chose development and progress at the cost of our environment!

The history of our earth's pollution is closely associated with the history of human civilization. Our ancestors cut trees to spread agriculture in pristine wilderness and raised cities. They hunted scores of animals to feed their mushrooming population and hence began a trail of destruction. This situation continued until the Industrial Revolution, when it all started changing more quickly and beyond repair.

The Industrial Revolution took place in the 18th century Europe and changed the face of our planet. Since then, a lot of work which was previously done by hand began to be done by machines. Example, the bullock carts were replaced by cars and trains. The age-old ploughs upgraded to tractors. Traditional oil lamps advanced into electric bulbs and so on and so forth. Even the commonplace 'smart' things we have all around are an outcome of the scientific inventions introduced then. The fridge, TV, washing machine, AC, laptop, mobile, smartphone, smart TV, and even you smart children... are all so new!

All these machines made our lives much-easier but they had a strong drawback. Unlike a green plant which produces its own food, a machine can't produce its own electricity. A machine depends on a source of power, which comprises the fossil fuels. Eventually, we took refuge into Mother Nature again. We burnt the fossil fuels made from plants and animals which lived on earth some millions of years ago.

Gradually, we began relying on them so badly that we cannot imagine our lives without them. But in order to obtain them, the 'Nature' had to be sacrificed. That was the beginning of contradiction—we had to choose either the Nature or our 'progress'. We opted for the second. Hence, began a new age where every loot and plunder of Nature was justified. No jungle, river, mountain, or animal was spared. Acres of forests were cleared to mine metals. Endless roads were run through countless animal habitats. Even many forest-dwellers lost their native homes.

At the beginning of this story, we imagined that our schools were turned into dump yards. But, now, owing to the zeal to 'develop,' our leaders are turning our planet into an actual dump. Before it's too late, we need to tell them:

STOP IT! Enough is enough!

Let's tell all our elders that Mother Nature doesn't belong to just one generation. It belongs to all of us! It is the right of us and our coming generations to get a clean home and green Nature.



The Right ^{vs} the Might!

A native Amazonian tribe, the Waorani, successfully defends its sacred homeland from destruction posed by an oil conglomerate

Anubhuti Sharma

The Amazon is the world's largest and densest rainforest, truly priced as the 'lungs of the world'. This jungle conquers over nine nationalities and houses a bewildering variety of plants and animal species seen nowhere else on the globe. All such detail might be already well-known to you along with the news about its constant destruction, which is also much lamented by everyone. However, off late, there has been some hustle within the woods.

A multi-billion dollar company had earmarked half a million acres of forestland for oil drilling in the Amazon. This would have required installation of some mining machinery and huge logging activities in turn. All of this would have fetched oil for the company but after causing humongous loss to the surrounding biodiversity, the cost of which is inestimable.

Therefore, the Waorani, one of the numerous tribal communities that live within this forest in Ecuador, decided to raise

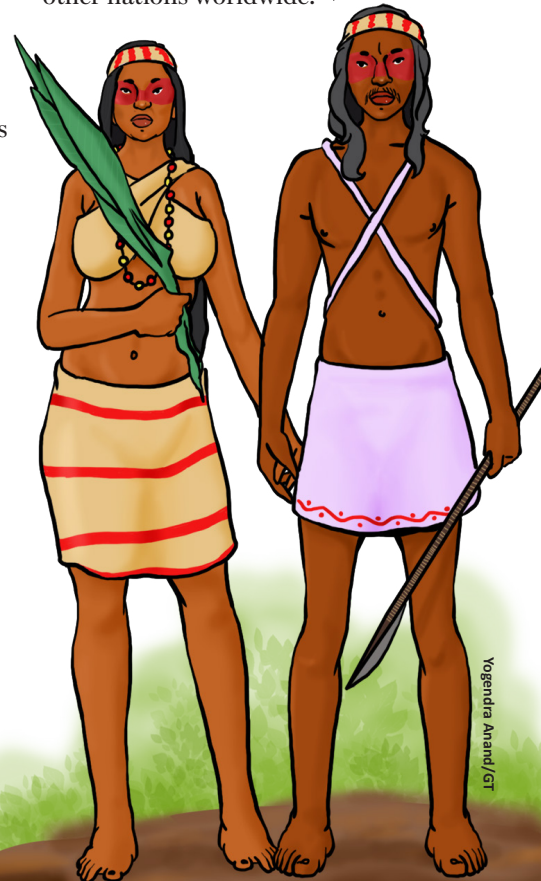
their voice even if it had to be against a mighty multi-national oil giant. This battle was all the more unequal because the oil company also had the backing of the Ecuadorian government. The Waoranis of Pastaza are native to the Amazon and have lived and died here for generations. The forest means the world to them. Its ruination, meant their ruination. Hence, they got together not only to live and die in the forest but to live and die for the forest.

They fought a long legal battle with a number of organizations. Finally, in April 2019, the Waoranis won a historic ruling in a state court. This court accepted their appeal to ban any oil drilling in the midst of the greenery. Its panel of judges simply trashed the consultation process the government had undertaken with the tribe for acquiring their land. They accused it to be full of fraudulent practices and ordered that the government should hold discussions with the tribal folks

once again. This time, these meetings should keep in mind their human rights. The court, therefore, declared all the land already purchased by the company to be null and void! Further, it also halted the auctioning of another 7 million acres, which was also allocated for oil drilling.

"The government tried to sell our lands to the oil companies without our permission. Our rainforest is our life. We decide what happens in our lands. We will never sell our rainforest to the companies," claims a relieved Waorani. Finally, the courts recognized that the government's interests in oil are not more valuable than the tribal rights, their forests, and their lives!

This win established the inalienable, unseizable and indivisible right of the indigenous communities on their homeland. Such an inspiring judgement also set an invaluable precedent for other nations worldwide. ✦



ON THE WALL

Sunderlal Bahuguna

The true Son of Soil—who lived and died for the Environment

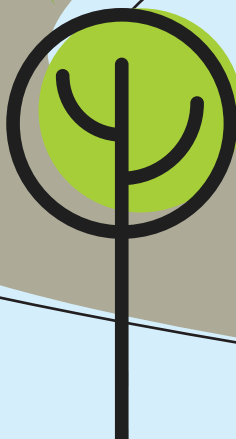
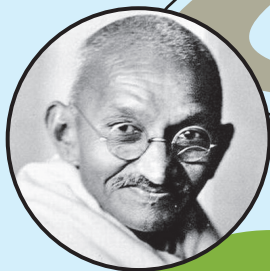
Born on 9 January 1927 in Tehri, Uttarakhand, Sunderlal Bahuguna was a deep environment devotee.

He was also an ardent social activist since he was barely 14 years old. His guide and mentor was Shri Dev Suman, who was a follower of Mahatma Gandhi.

The principles of *satya* (truth) and *ahimsa* (non-violence) influenced the young Sunderlal throughout his lifetime. Thus, he travelled in the Himalayas for about 5,000 kms on foot and pledged to dedicate his life to forest conservation.

In the 1970s, he participated in the Chipko Movement and for several years since the 1980s, spearheaded the Anti-Tehri Dam protest.

Ecology is permanent economy





But, in 2009, he was awarded the Padma Vibhushan, which he finally accepted.



In 1981, he was offered the Padma Shri, which he refused.



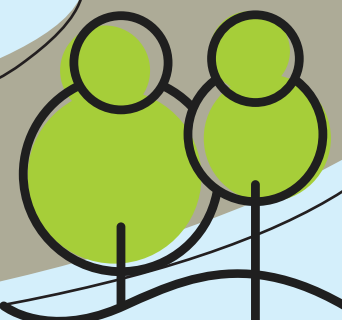
He also fought against untouchability and led anti-liquor movements.



In fact, he also married his wife, Vimla, on the condition that he would work for the upliftment of rural areas and hence set up an ashram.



SORIT





Thank God for this lockdown!

A highly-polluting factory, the Sterlite Copper, shuts down after years of inspiring community effort by the suffering villagers of Thoothukudi

Anubhuti Sharma

When the entire world is suffering from the pandemic and lockdowns, one tiny village in our country is certainly thrilled. This place is Thoothukudi in the Tuticorin district of Tamil Nadu where a highly-polluting factory is locked down after years of inspiring community effort by its villagers. This factory, called the Sterlite Copper, is a subsidiary of the Vedanta Limited. It operated a huge copper smelter, which comprised a refinery, a phosphoric acid plant, and a sulphuric acid plant. (Psst! 'Smelting' is neither smelling nor melting! It is the process of taking out a metal from natural rocks. Therefore, it is highly toxic and polluting!)

The main pollutants of this smelter were sulphur dioxide and tiny dust particles. That is why, since

1992, when the plant was announced to be built, it was fiercely opposed. In fact, it was initially planned to be installed in the Zadgaon village of Ratnagiri in Maharashtra. However, after a successful opposition led by the village folks there, it was kicked out but landed up in Thoothukudi in Tamil Nadu.

In 1996, after the factory's establishment in Thoothukudi, the locals complained about increasing air and water pollution triggering respiratory and skin problems, fainting and other issues. "In every household, at least a couple of people are suffering," said Selva Raj, a village resident. "Children are the worst affected."

Unsurprisingly, Sterlite officials claimed otherwise. But the environment groups countered their assertion with a study by a district medical college. This study revealed that the iron traces in the waterbodies near the plant were up to 20 times more than the permissible limit. Not only that, it was found that the factory contaminated the scarce groundwater and fertile soil, and blatantly flouted the rules and regulations for running the plant. They even illegally released toxic waste into the highly sensitive Gulf of Mannar Biosphere Reserve, an area

The unity of people proved its mettle when about 20,000 villagers fought for their life and environment. The police freaked out and resorted to lathi charge and shooting, injuring many and even killing 14 people!



Yogendra Anand/GT

of coral reefs and mangrove forests! As a result, in 2010, the Madras High Court sealed the plant.

Soon after, the sealing ban was over, there were multiple instances of sulphur dioxide leakage from the factory. The most disastrous was in March 2013 when many people complained of suffocation, nausea, eye irritation, skin irritation, and even miscarriages. Hence, the plant was re-ordered for a closure, this time, by the state pollution control board. However, the very next month, the Supreme Court struck down this order and instead fined Sterlite ₹100 crore for causing pollution! But the culprits still escaped

when a few months later, the National Green Tribunal (NGT) reopened this factory.

In 2018, the villagers of Kumarredyapuram, another village neighbouring the factory, appealed the District Collector to prohibit the building of the second smelting complex. The site for this construction was an agricultural land, which would have further encroached upon the livelihoods of the villagers in an already polluted region. Finally, in March 2018, the people's anger shot and burst as far as London, when activists demonstrated bang outside the house of the Sterlite owner, Anil Agrawal. "Today, Tuticorin is heading towards becoming the capital of

cancer!" said Prof. Fatima Babu, an ardent protestor.

Few months later, the unity of people proved its mettle when about 20,000 villagers fought for their life and environment. The police freaked out and resorted to lathi charge and shooting, injuring many and even killing 14 people! The umpteen sacrifices of the victims finally yielded results when the state government shut the plant permanently. Though again, the NGT set aside this order, the Supreme Court overruled it. The copper giant finally smoked its last in December 2018! Since then, this part of our country is definitely celebrating a lockdown, hard earned and well-deserved! ♣



TARZAN

LADY

An inspiring story of an ordinary Adivasi woman, Jamuna Tudu, who was armed to slay the forest mafia in Jharkhand

Akshat Jain

I am sure you all have seen Tarzan cartoons. What if I told you that we have a real Tarzan in India and that too a lady! Jamuna Tudu of the Santhal tribe of Central India, began her journey towards becoming 'Lady Tarzan' in 2000. This was when she got married, barely at the age of 17, and moved from her childhood home in Odisha to her husband's village in Jharkhand.

One day, when Jamuna went to collect firewood, she was taken aback to see trees being cut down by outsiders. What she was witnessing then was a menace inflicting the state forests—illegal logging by timber

mafias. These forest mafias had reduced the state's forest cover by nearly 50 per cent! Jamuna knew that such rampant logging would eliminate the forests and ruin her people, who are entirely dependent on it for their survival. So, she resolved to protest against such wanton destruction.

Jamuna led awareness campaigns amongst her villagers to arouse them to defend their livelihood. The people were naturally afraid to fight against the powerful mafias, who had the tacit backing of big landlords, businessmen, and even government officials. But not one to back down, Jamuna patrolled the jungles thrice a day along with half a dozen motivated women. They chose amongst their weaponry—wooden sticks, bows and arrows, water bottles, and pet dogs.

The women combed the forests for several hours every day, keeping an ear for the slightest thud sound—produced when an axe hits the wood. This artificial sound echoes distinctly

in the natural surroundings, listening to which, the women would track and shoo away the culprit logger. As they became successful in their cause, the mafia became annoyed and threatened them. It even tried to burn the forest during nights, therefore, the women undertook night vigilance in response.

As these tribal women continued fearlessly, many people joined them. When their group count hit sixty, they formed the 'Mahila Van Rakshan Samiti'. Soon, Jamuna formed a strong battalion of about 300 women and 100 men. In 2019, the movement had about 6,000 members. The mafia had no way to retaliate against this large army and has mostly cowed down by now.

There onwards, Jamuna launched some other social initiatives to preserve the forests. Her Adivasi folks plant 18 trees at the birth of a girl child. They gift 10 saplings each to the bride and the groom during a wedding. On Rakhi, the women tie large rakhis on tree trunks, sealing their personal relationship with the forest. Thus, not only did Jamuna succeed in conserving the forests for her people, but also did so for the many animals and plants dependent on them.

For her great work, Jamuna was awarded the Godfrey Phillips Bravery Award in 2013, the Sthree Shakti Award in 2014, the Women Transforming India Award in 2017, and the Padma Shri in 2019!



Yogendra Anand/GT

The Plastic Man of India!

Dr Rajagopalan Vasudevan proves how even an individual effort can clean the face of our country, as he invents new ways to reuse plastic for roads and buildings

Anubhuti Sharma

One day, a professor of Chemistry was watching TV. He saw a doctor blaming plastic for water pollution. This set him wondering—how can plastic cause pollution when it is chemically a hydrocarbon and insoluble in water! The doctor was of course mistaken but his concern was genuine: plastic is an environmental nuisance. Polybags have infested our marketplaces, are swallowed by cattle, clog drains, choke ponds... Where you go, you name it and you will find it! Hence, the professor determined to find a solution to this menace.

When he observed the people around a garbage dump, he realized that plastic was not the actual villain. Rather, “plastic is a poor man’s friend,” he says. They are so much dependent on it that any costly alternative to it will severely affect their lives. Even for the urbanites, from our pens to toys, our whole life is unthinkable without plastic and rightly so. Plastic is long-lasting, unbreakable, light-weight, easy to produce, odourless, safe to touch, and cheap. Hence, he believed that banning plastic won’t help. We have to find better ways to dispose it.

Hence, he invented a new method of reusing plastic. If heated at a high temperature, plastic can release very toxic gases. But if heated at low temperatures and only allowed to melt, it can serve as an excellent binding material. Thus, he shredded some commonly available plastic packets into

tiny particles and heated some stones which are used for road construction. He added these shreds to stones which coated them quickly. Next, he added these stones to asphalt, a thick black mixture of hydrocarbons. The scientist then observed that because both plastic and asphalt were hydrocarbons, they formed a very strong bond. Hence, plastic sealed the stones with asphalt, leaving very few gaps in between them.

Any road that is constructed using such process would prove more water-resistant during rains, will render less potholes, will allow heavy-weight and fast traffic, and will not melt easily in summers. Such an all-weather road will also have low-maintenance and, most importantly, will rid us of our plastic mounds. When our late President Dr Kalam visited the professor, he advised him, “Don’t worry if people don’t approve or get convinced. You just do your work at your place.”

That is how India’s first plastic road was constructed in the Thiagarajar

College of Engineering, Madurai. Many countries contacted the professor regarding his technology but he first offered it to our own country, that too, for free. Currently, about 11 state governments funneled their plastic waste into roads, extending for over a lakh kms nationwide. The road ministry has also made plastic reuse mandatory for highways now.

The professor further invented a new cement-like material called plastone (plastic + stone) using granite and ceramic waste. These are highly durable and water-resistant plastic-coated blocks.

For all his good work, he was offered many awards, including the Padma Shri in 2018. This professor, you might be wondering by now, is Dr Rajagopalan Vasudevan. ✦



Tarique Aziz/GT



**IT'LL CATCH ME...
IT'LL CATCH ME NOT!**

The COVID-19 is so deceptive that many asymptomatic patients are tested positive and vice-versa. Stress, anxiety, and uncertainty loom large as the third wave of pandemic is predicted to target children. Please take lots and lots and lots of care!