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16-31 JANUARY 2019

Down To Earth

FORTNIGHTLY ON POLITICS OF DEVELOPMENT, ENVIRONMENT AND HEALTH

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A PARIIAH

Trade restrictions and cow vigilantism disrupt the economy of the poor

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environment

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- Raise greenbelts and house hold gardens to increase the green cover.



ANDHRA PRADESH POLLUTION CONTROL BOARD

AMARAVATHI, VIJAYAWADA

BRUTAL TO KILL INDIA'S ANCIENT UBER ECONOMY

WOULD NOT advocate vegetarianism. When I reasoned this out in this column a few years ago, I received the usual insults. Environmentalists are expected to be vegetarian, or better, vegan! But what did not register to many was my emphasis: “*I am saying this as an Indian environmentalist; not global or Western environmentalist.*”

My argument has been that Indian farmers practise an agro-silvo-pastoral system and that livestock is a crucial part of their economy. Taking away the meat would demonetise their assets. It would kill their income. I argued that it is the quantity of consumption and how we produce that matters the most to environment. Industrialised meat production is done at the cost of the environment—by clearing vast forests, feeding animals cereals, antibiotics and all the other junk that they should not be using. But Indian farmers still practise cow-buffalo-goat economy that is of small scale. In fact, this economy has been sustainable for the fact that it is in the hands of small farm owners. Animals are their insurance policy; their ways of managing bad times, made worse today because of climate change induced variables and extreme weather.

We need to find ways to nurture this economy in which individual farmers benefit from the small-scale operation.

This was the Anand experiment—made famous by the venerable man of India's White Revolution, Verghese Kurien. I am not sure how many of us have seen the wonder of this movement, as young girls, women and men bring their milk to the local dairy, which gives them a receipt of the fat content and the money that is due to them. This local dairy farming is built on the concept of small, disaggregated animal owners, who are enjoined to the big dairy farm. This is the cooperative-producer model that is best suited for our people-heavy and employment-desperate country.

Ironic as it is, we celebrate the Uber and the Airbnb as disruptive models for growth. These models are what Kurien propagated—maximise the return from individual assets. Today, we call for a taxi, which is not owned by any taxi company; or book accommodation, which is not owned by any company. This is what Kurien did. He made dairy the big business of small producers. It was, and is, disruptive. We don't recognise it because it is not in “our” world.

But it worked because there was a cow-buffalo economy

in place, which included the cost of feeding and maintaining the cattle for milk and then its sale for meat. Farmers do not have the means to keep unproductive cows. Let's be brutally honest about this. Why am I writing this today? Because as my colleagues report from their travels, in the past few years, the strident and often violent call for cow protection has led to the total breakdown of this economy of the poor (see ‘Worshipped and abandoned’, p22). Cattle are now abandoned. They have become a menace, marauding fields and destroying crops. Remember Indian farmers do not fence their fields; they cannot afford it and actually this is good for soil and water conservation. Now this is not going to work.

The only change I can see is that farmers will altogether give up keeping cows and will switch to buffalo economy. But this will also work only when the state cracks down on all cases of cow-related lynching mercilessly. Note that in most cases where the meat has been tested, post the lynching, it has been found to be that of a buffalo and not cow. This is because the state has often protected, not the poor cow, but her so-called worshippers who have taken law into their hands. This must stop.

I would also argue that we shouldn't adopt the protein-obsessive Western diet.

This is also part of health and environmental problems. A recent article in the UK daily *The Guardian* says that this protein obsession is leading to vast over-consumption. Citizens of the US and Canada get roughly 90 grams of protein per day, which is twice the recommended average (based on an adult weight of 62 kg); Europeans eat an average of 85 grams of protein per day. Indian averages really don't count because of the vast numbers of protein-deprived and malnourished people, but our urban consuming class is picking up this bad habit as well.

Being (non)-vegetarian is a personal choice. We must fight for this. Even as we fight for growing meat in a way that is environmentally sound. ■



TARIQUE AZIZ / CSE

Sunita Narain

🐦 @sunitanar

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Love for animals

A sanctuary in Haryana shelters inmates, right from dogs and horses to bovines, and even birds. Watch what founder Anjali Gopalan has to say about her passion.

Extra chilly winter

Are you shivering more in the national capital this winter or wearing extra layers? The minimum temperature dipped to 2.6 degrees Celsius this season. Find out the reasons behind this extreme coldwave condition.



CSE-DTE DATA CENTRE

Not a tiger land

India launched a nationwide tiger conservation project in 1973 that ensured the protection of the big cat through the establishment of sanctuaries and national parks. But tigers continue to be killed. Ninety-six tiger death cases were registered in 2018. Of these, 41 occurred outside reserves. Of the 96 incidents, 14 occurred in Maharashtra, which accounted for over 34 per cent of all deaths outside reserves. Ninety-eight



tiger bodies were recovered in 2017 while 17 were presumed dead on the basis of body parts seized.

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WEB SPECIAL

It's in the genes

One out of 10 cases of chronic kidney disease in adults is the result of genetic factors, says a new study.

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River development

Experts have demanded mandatory environmental clearance for the development of inland waterways in India's 111 rivers for navigation.

f FACEBOOK

India losing forests

According to the NITI Aayog, India has 21.23 per cent forest cover against the recommended 33 per cent in the forest policy.

f @down2earthindia

GLIMPSES FROM OUR ARCHIVE

Tackling defecation

A World Bank research says building toilets will not stop Indians from defecating in the open as long as their attitude towards latrines does not

change. For the research, five villages in Ghazipur district of Uttar Pradesh were studied. In *Open-ended* (1-15 October, 2018), *Down To Earth* reported that in India's water-scarce districts toilets are used during monsoon and post monsoon when there is



water availability. How the states manage to solve this problem would be crucial in ending open defecation.

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letters



TARIQUE AZIZ / CSE

Fighting a changing climate

This refers to the column Last Word, “Sum and substance of climate diplomacy”, (16-31 December, 2018). Though countries like the US are still denying the effects of rising global temperatures on our planet, the good news is that nations such as India are concerned about climate change and taking measures to mitigate emissions. However, seriousness is lacking when it comes to addressing the adverse impacts of climate change like unseasonal rainfall, floods and drought.

To mitigate climate change effects, we should go in for green energy sources like solar, wind and geothermal. The introduction of electric vehicles is a good way of moving away from carbon-based fuel. Efficiency of solar devices should also be improved while bringing down installation costs.

D B N MURTHY
BENGALURU

Green Revolution favoured big farmers

This refers to the article “Is India food surplus?” (16-30 November, 2018) and the letter “Green Revolution hiked food prices” (16-31 December, 2018) by K K Lakshmanan in this context. Nobel Laureate Amartya Sen once said, “Starvation is the characteristic of some people not having enough food to eat. It is not the characteristic of there being not enough food to eat.” There is adequate availability of food in the market, but as Lakshmanan has pointed



AGNIMIRI BASU / CSE

out starvation prevails as there is deprivation of access to food in economic terms.

Undoubtedly, the Green Revolution led to a substan-

tial increase in agricultural output (mainly rice and wheat) to the extent that it transformed India to self-reliance from ship-to-

Down To Earth welcomes letters, responses and other contributions from readers. Send to Sunita Narain, Editor, *Down To Earth*, 41, Tughlakabad Institutional Area, New Delhi - 110062

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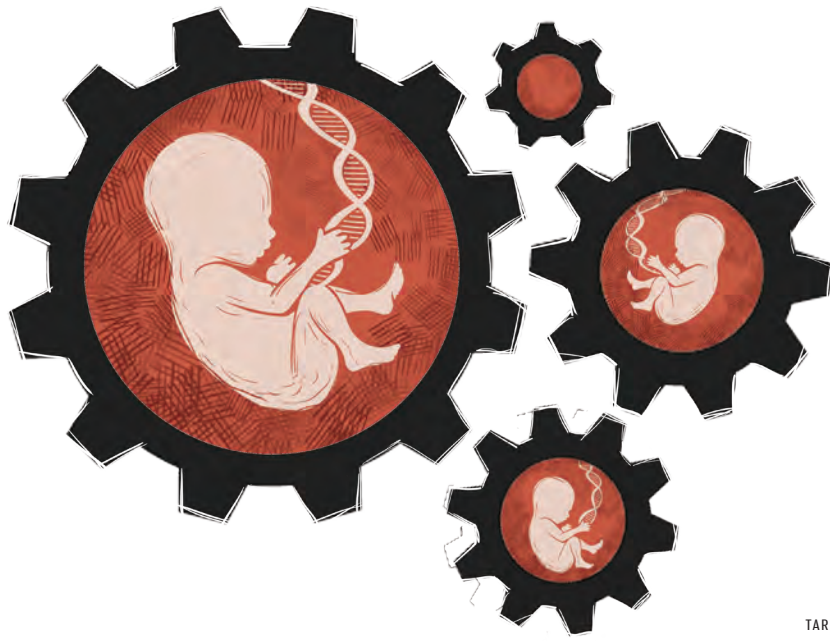
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TARIQUE AZIZ / CSE

mouth situation. But to ensure food security, nutrition security has been compromised to a great extent as a result of the blinkered attitude of our policy makers towards the poor man's crops like maize, barley and millets. While the benefits of the Green Revolution were enjoyed by big farmers and traders, it did not benefit small and marginal farmers of India.

JAYDEV JANA,
KOLKATA

Making babies

This refers to "Custom-made babies" (16-31 December, 2018). The latest threat to mankind is manufacturing humans. The scientist behind the idea says that the goal is to develop an ability to resist future HIV infection. This kind of gene editing is banned in many countries. It can lead to the commercialisation of human bodies and instigate the killing of human beings. Playing with nature's laws always results in dangerous

consequences as we are witnessing daily. Already we are paying a heavy price for playing with nature like pollution and environmental degradation. Are all these inventions worth taking the risk for our future safety?

MAHESH KUMAR
NEW DELHI

Indoor pollution

This refers to the column Last Word, "Environment as the enemy" (1-15 December, 2018). While we talk of air



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Tomato wholesale prices dipped by 54% this year

(posted on 29 December, 2018)

The price of tomatoes per kg is ₹40 in Kerala. Who is taking all the money? The root cause of farmer distress lies here.

PARTHAN APPU

I don't know what it means in India, but in the US, tomato prices were up by 50 per cent some time ago. Tomato pickers in Florida asked for a 100 per cent raise.

DERICK JOHNSHNE



twitter.com/down2earthindia

Govt's reason for CRZ amendments: 'See and enjoy beauty of mighty seas'

(tweeted on 29 December, 2018)

The essence is that rules are simplified further without thinking much about their significance and conservation. Prominently, reduction of NDZ (no development zone) is going to have far-reaching implications.

@Amitksingh45199

These amendments don't augur well for the already compromised sensitive coastal zones. Economy vs ecology really?

@shivkswamy

When will they learn, that you can't eat money.

@btsquarepeg

pollution, we generally ignore indoor pollution, which can be hazardous. The presence of tiny particulate matter, which easily penetrates the human respiratory tract, can cause lung cancer and tuberculosis. Ventilators are no more part of any house and the height of the ceiling is reduced to the minimum for commercial purposes. One should remain outdoors during the day for a sufficient period of time and indulge in regular walks and exercise. Also, a healthy lifestyle can increase immunity to pollution.

MAHESH KAPASI
NEW DELHI

Farmer suicides

This refers to the news "Amid falling prices, crops land in manifestos" (16-31 December, 2018) carried in The Fort-night pages. Agrarian crisis leading to farmers' suicide has compelled all political parties to include liberal sops and loan waivers in their election manifestos. This was witnessed in the five states which went to the assembly polls last year. But this is not the right way to mitigate farmers' woes. Waiver of loans has negative consequences as it punishes honest and hardworking farmers. In short, farm loan waiver is not only a bad idea, but also proves detrimental to the banking system reeling under a deep stress on account of high non-performing assets.

Only 25 per cent of farmers avail themselves of institutional credit and tenant farmers form a sizeable percentage of those outside its purview. When this is the scenario year after year, loan waiver is a political gimmick to score brownie points. However, the Telangana model to mitigate farm distress has been successful, thus benefiting poor farmers.

K R SRINIVASAN
SECUNDERABAD

Maternal mortality

This refers to "India among worst performers in maternal and child health" published in the website on 17 August, 2015. Maternal and child mortality rates are taken as important health indicators



SALOME YESUDAS

because they reflect the state of female healthcare. Health organisations should wake up before it is too late.

ANJANEYULU
VIA EMAIL

Exotic recipe

This refers to "Bamboo shoots: Plants of nutrition and employment" published in the website on 27 December, 2018. I want to thank *Down To Earth* for highlighting this delicious recipe, which is a part of Manipuri cuisine. I want to inform that bamboo is locally known as *waa* in Manipur and *soibum* is the fermented product of the young tender shoots of bamboo.

RAJIV KANGABAM
VIA EMAIL

Poor public research

This refers to "A vicious nexus" (16-31 December, 2018). I am very happy that Sunita Narain has picked up an impor-

tant topic. The article mentions that there is inadequate research on pesticide toxicity, but the fact is that scientific research is passing through a bad phase in the country due to the acute shortage of funds. It is a highly demotivating situation, which requires urgent push to reverse the trend and revive scientific temper. Also, atmospheric pollution, including air pollution, is a highly complex problem. Targeting only the transport industry will not help. As a nation, we must learn to manage dust, particularly in the Indo-Gangetic plains. It will bring a perceptible change in improving the environment.

ANUPAM VARMA
VIA EMAIL

Building toilets

This refers to "Building toilets won't make India open defecation free: World Bank study" published in the website on 26 December, 2018. I would like to know what kind of large-scale campaigns were conducted for behavioural change under the Swachh Bharat Mission. I have seen the opposite in the tribal villages of Madhya Pradesh in the past three years. I have observed coercion and also threats to force people to build toilets without their consent. The only campaign that was run for behavioural change was clicking photos of people going for their morning ablution. There were no trainings, workshops, speeches, and mobilisation around this topic.

BARKHA TANVIR
VIA EMAIL

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Payment blues

Court order asking Ramdev to share profit with communities over use of bioresources is an eyeopener

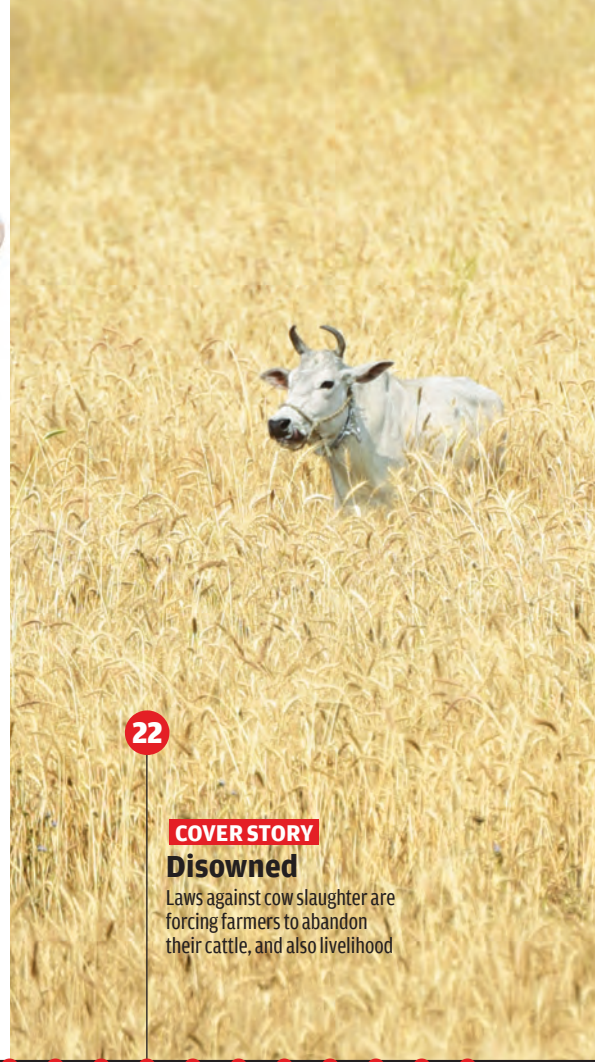


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THE FORTNIGHT

Volte-face

India has withdrawn the National Policy for Treatment of Rare Diseases, which aimed at financial aid to over 70 million patients



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COVER STORY

Disowned

Laws against cow slaughter are forcing farmers to abandon their cattle, and also livelihood

Illegal route

Despite the 2014 National Green Tribunal ban, rat-hole mining continues in Meghalaya

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The import of animal feed from the US containing genetically-modified corn can spell trouble for India

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Rainwater harvesting can help overcome water shortage in India's cities and villages



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Mining has to be eliminated for the success of the proposed Similipal-Satkosia wildlife corridor

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Uttarakhand's flavoured salts loaded with micronutrients are sure to tickle your taste buds



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Women in West Bengal are turning raw cotton into 'climate-friendly' Jamdani



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Though studies have connected the gut microbiome with diseases, data on Indian intestinal diversity is in short supply

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Lone survivor

Janmorcha, a newspaper published from Faizabad in Uttar Pradesh, still manages to survive as a cooperative entity



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An account of how the scientific community came to terms with the changing landscape of the Arctic

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Stormy affair

Furore over Disney trademark on the Swahili phrase Hakuna Matata heats up the appropriation debate



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LAST WORD

For 2019

The governance blueprint to combat critical environmental issues must be enforced



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India without rare diseases policy

JUST MONTHS after announcing the National Policy for Treatment of Rare Diseases (NPTRD), which had a corpus of ₹100 crore to provide financial assistance to the over 70 million patients in the country, the Centre has abruptly withdrawn it. Instead, the Centre has promised “an interim arrangement” by February 9 to the

Delhi High Court, which prompted the Centre to announce the policy in the first place. The policy is crucial as treating rare diseases is expensive in the country. The document of the withdrawn NPTRD says the cost of treating a child suffering from a rare disease can be anywhere between ₹18-70 lakh a year. ■

POINT

18%

of the 0.4 million babies born globally on January 1, 2019 were in India

Source: UNICEF

1,000 WORDS BY VIKAS CHOUDHARY



A COLD STARE: As Delhi's temperature dipped below 3°C on the New Year, a child, along with many others, rests outside an overcrowded Sarai Kale Khan shelter home in New Delhi. The cold wave has already claimed over 70 lives in neighbouring Uttar Pradesh
For more photos, check out @dtemagazine on Instagram

Karnataka's solid waste management is in disarray: CAG

THE COMPTROLLER and Auditor General of India (CAG) has observed that Karnataka has the most outdated solid waste management (SWM) policy. Dating back to 2004, it should have been revised to be in tune with SWM Rules, 2016. The CAG report, tabled in the state legislative assembly on December 17, 2018, looked at SWM in 35 urban local bodies (ULBs) from 2012-13 to 2016-17. CAG auditors observed that ULBs failed in conducting any realistic assessment of waste generation and instead adopted per capita estimates that were shrouded under questionable assumptions. While even the 14-year-old SWM policy of the state prescribed preparation of action plans and strategy documents, CAG found ULBs had not prepared short-term or long-term plans. ■

Mahua flower under minimum support price scheme

THE MINISTRY of Tribal Affairs on December 27, 2018, included 17 new minor forest produces (MFPS) under its minimum support price (MSP) scheme. The new MFPS include dried *mahua* flowers, dried *tejpatta* and dried *kokum*. The Union ministry also increased MSP of 23 MFPS already included in the scheme since 2013.

The government had for the first time in 2013 declared MSP for MFPS, after years of demand by forest-dwelling communities. A report by the erstwhile Planning Commission had noted that MFP contributes up to 40 per cent of the income of forest-dependent communities, especially the landless with a dominant

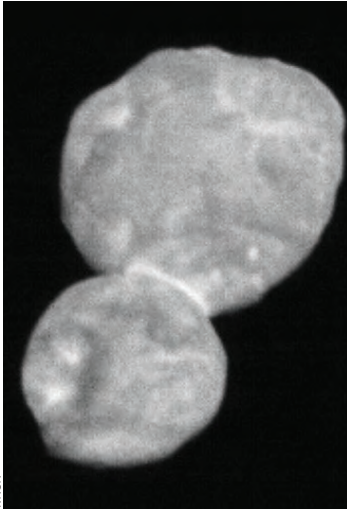


AMIT SHANKER / CSE

population of tribals, and provides critical subsistence during lean seasons. MFP economy, however, is known to suffer from unorganised and uncertain market demands, affecting economic returns to these communities. ■

IN FOCUS

Farthest celestial body



NASA

On January 1, NASA's New Horizons spacecraft hovered over **Ultima Thule**, a celestial body six billion kilometres away from the sun, making it **the farthest and potentially the oldest cosmic body ever observed** by a spacecraft.

The US agency said **the celestial body**, which was first identified in 2014 through a telescope, **looks like a giant snowman**. The body **is roughly 30 kilometres long** and **completes its own rotation in about 15 hours**.

The celestial body used to be two separate objects and is likely to have formed over time when rotating cloud of small, icy bodies started to combine. Eventually, the two larger bodies remained and slowly spiraled closer until they touched, forming the bi-lobed object we see today. NASA has named the larger lobe Ultima, and the other, which is about three times smaller, Thule.

Ultima Thule's surface reflects light about as much as "garden variety dirt," as **the sun's rays are 1,600 times fainter there than on Earth**.

Before that flyby, the only image scientists had was a blurry one showing Ultima Thule's oblong shape, resembling something like a bowling pin or a peanut.

The **image was taken at a distance as close as 27,000 kilometres** with a resolution of 140 metres per pixel.

IN COURT

The Delhi High Court has issued an interim ban on the sale of medicine by online pharmacies while hearing a petition that claims online medicines sellers operate "without a drug licence and cannot be regulated". The next hearing will take place on March 25.

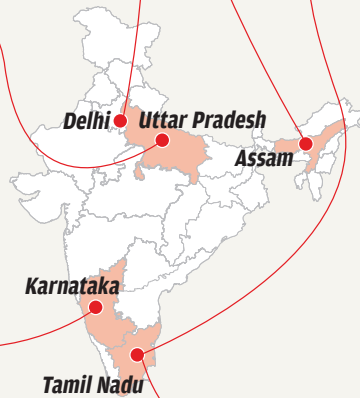
The National Green Tribunal (NGT) rejected the appeal by 12 "grossly polluting" industries that went to court against Uttar Pradesh pollution control board's decision to shut them as a precautionary measure during the Kumbh Mela in Prayagraj.

NGT has asked the Karnataka State Pollution Control Board to fix timelines and carry out regular monitoring to ensure timely implementation of its action plan to clean the polluted lakes between Tumkur and Magadi Road in Bengaluru.

NGT has asked the Assam government to consult the Railways and the National Power Grid Corporation of India to identify new spot for the relocation of the municipal solid waste plant situated on Deepor Beel in Guwahati. The Railways has proposed to build two tunnels in the Deepor Beel area to eliminate the chances of trains running over wild elephants there.

An appeal has been filed in the Supreme Court against NGT's decision to uphold the environmental clearance granted on March 26 last year to the Tata Institute of Fundamental Research for the construction of a Neutrino Observatory in Tamil Nadu. The appeal alleges that the observatory is "an underground laboratory in close proximity to the Western Ghats" and it would entail "blasting and tunnelling activities".

NGT has set aside the Tamil Nadu government's order to close Vedanta's copper smelter plant in Thoothukudi permanently and directed the administration to pass a fresh order of renewal of consent within three weeks. It also directed the company to spend ₹100 crore within three years for the welfare of inhabitants in the area.



SO FAR...



Number of cases on environment and development tracked from January 1, 2018 to December 12, 2018

SUPREME COURT
254

HIGH COURTS
156

NATIONAL GREEN TRIBUNAL
337

Make Tamil Nadu completely plastic-free: Madras HC

THE MADRAS High Court on December 27 last year rejected a petition seeking exemption of use-and-throw plastic products from the ban introduced in Tamil Nadu from January 1, 2019. The court said that the state government should aim at a complete plastic ban, without any exception. The current ban, which was notified by a government order on June 25, 2018, does not include "plastic bags which constitute or form an integral part of packaging in which goods are sealed prior to use at manufacturing/processing units". It also exempts sale of milk, milk products, oil, medicine and medical equipment in plastic package. Further, plastic bags and sheets were permitted to be used in forestry and horticulture.

Compiled by DTE-CSE Data Centre. For detailed verdicts, visit bit.ly/1C1FrCf

EXTREME

\$85 billion

Cost of the 10 worst climate-linked disasters in 2018, says a study released by Christian Aid

\$32 billion The US lost due to Florence and Michael hurricanes from September to October

\$9-13 billion California lost due to fires between June and September

\$7.5 billion Europe lost due to droughts caused by extreme heat waves between May and August

\$9.3-12.5 billion Japan lost due to floods and typhoon Jebi between June and August

\$6 billion Argentina lost due to droughts between January and March

\$9.3 billion China lost due to floods between July and August

\$5.8-9 billion Australia lost due to droughts that continued throughout the year

\$3.7 billion Kerala lost due to floods between June and August

\$1-2 billion Cape Town, South Africa lost due to droughts between January and April

\$1-2 billion Philippines and China lost due to Typhoon Mangkhut from September to October

Extreme weather hits India's coffee production

COFFEE PRODUCTION in Karnataka, Kerala and Tamil Nadu—which contribute 80 per cent of Indian coffee—has dipped due to extreme weather events in the past four years. The country had record coffee production (348,000 tonnes) in 2015-16. Since then, the output has been declining. In 2016-17 and 2017-18, the production was 312,000 tonnes and 316,000 tonnes respectively. During the period, the coffee-producing states have witnessed

a series of extreme weather events. A senior official at Coffee Board of India, on anonymity, confirms that extreme rainfall and resultant floods and landslides in August 2018 in Kerala and Karnataka have affected 20 per cent of the total coffee production. “There is going to be around 63,000 tonnes lesser coffee in 2018-19,” he adds. Extreme weather events have also impacted the premier coffee market. ■

Q & A by Ishan Kukreti



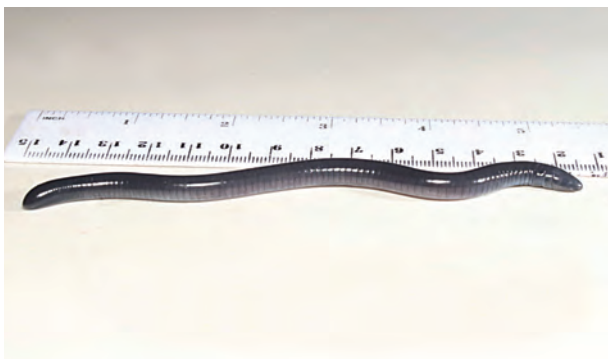
‘Minting the coasts’

WHO: Debi Goenka
Executive trustee, Conservation Action Trust

WHAT: The contentious new Coastal Regulation Zone notification gives precedence to economic developments over saving fragile ecosystems.

WHY: The final notification is not in the public domain yet. However, based on the press release issued on the Cabinet decision, it seems they will allow the construction of new buildings along the coast. This is worrying as we are already staring at sea level rise. It does not make any sense to encourage more buildings along our coast lines, most of which are already facing severe problems of erosion. These problems are only going to worsen by the decision. There is no point talking about climate change and sea level rise only in international conferences—these factors need to be considered whilst taking decisions that will impact our country in the near future. ■

Amphibian that buries head in sand named after Trump



WWW.ENVIROBUILD.COM

A NEWLY discovered amphibian that buries its head in the sand has been named after US president Donald Trump because of his stance on climate change. *Dermophis donaldtrumpi*, discovered in Panama, was named by the head of a company that had bid \$25,000 at an auction to win the naming rights. The company says it decided to

name the amphibian after Trump to raise awareness about climate change. “(*Dermophis donaldtrumpi*) is particularly susceptible to the impacts of climate change and is therefore in danger of becoming extinct as a direct result of its namesake’s climate policies,” said EnviroBuild co-founder Aidan Bell in a statement. ■

COVERAGE

Japan to resume commercial whaling from July

The country will withdraw from the International Whaling Commission which imposed the ban

JAPAN WILL resume commercial whaling this July for the first time in more than 30 years. Maintaining that whale's population has recovered in the region, Yoshihide Suga, Japan government's chief spokesperson, said the country will withdraw from the International Whaling Commission (IWC) which had introduced a global ban on commercial whaling in 1986.

Suga said the country will end its controversial scientific whaling programme, which it started after the 1986 ban to continue whaling. He said the country will confine whale hunting only to its territorial waters and exclusive economic zone.

The announcement has prompted international condemnation. Michael Gove, UK's environment secretary, tweeted he was "extremely disappointed" by Japan's move and that the UK "will continue to fight for the protection and welfare of these majestic



mammals". Greenpeace has disputed Japan's view that the population of whales has recovered, noting also that ocean life is being threatened by pollution as well as overfishing.

The Australian government has issued a statement saying it is "extremely disappointed" that Japan was withdrawing from the commission and resuming commercial whaling.

A mammoth problem

Despite the 1986 IWC ban, Japan, Iceland and Norway have "illegally" continued whaling. Japan, through its scientific whaling programme, sold whale meat in

food markets or distributed them for free to schools and hospitals in marketing drives to encourage the consumption of whale meat.

Norway only respected IWC's whaling ban until 1993. Using a loophole in the International Convention for the Regulation of Whaling, Norway objected to the whaling moratorium, and resumed hunting for minke whales. Norway sets its own quota for the number of whales permitted to kill for commercial reasons. This number has gone up, from being allowed to kill 671 minke whales in 2002 to more than 1,000 a year now.

Like Japan, Iceland initially conducted a "scientific" whaling programme. Then, in 1992, it withdrew from IWC. Iceland re-joined in 2004, but resumed commercial whaling in 2006. In 2010 alone, Icelandic whalers killed 148 endangered fin whales and 60 minke whales. ■

LATITUDE



A new NASA-led study has determined that an increase in snowfall accumulation over Antarctica during the 20th century mitigated sea level rise by 0.4 inches. However, Antarctica's additional ice mass gained from snowfall makes up for just about a third of its current ice loss. The red spots suggest ice loss while the blue spots suggest increase in ice cover

VERBATIM



"It is high time to correct the trends indicating demographic imbalances, lest the state may turn senile in the next two decades, marked by more eating mouths and less working hands"

— N Chandrababu Naidu, Chief Minister, Andhra Pradesh, urging couples in the state to have more than two children

Pressed for sharing

The Uttarakhand High Court order on Ramdev's firm to pay for use of bioresources has put herbal companies on notice

LATHA JISHNU | NEW DELHI

DIVYA PHARMACY, owned by yoga teacher Baba Ramdev and his partner Acharya Balakrishna in a writ petition filed in the Uttarakhand High Court had, after a long dispute over payment of benefit-sharing fees with the State Biodiversity Board (SBB), challenged the latter's right to demand fair and equitable benefit sharing, and whether such a rule can be imposed on domestic companies.

Ramdev, who has in the past four years conducted an abrasive campaign against multinationals in the fast moving consumer goods segment, has pitted his companies, Patanjali and Divya, which produce ayurvedic medi-

cines, cosmetics and food, as *swadeshi* or home-grown enterprises. Although several other companies selling ayurvedic products have been engaged in disputes with several SBBs, it was Divya Pharmacy that filed a writ petition challenging the right of these bodies to impose the rules notified by the National Biodiversity Authority (NBA). On December 21 last, Uttarakhand High Court judge Sudhanshu Dhulia

put paid to their hopes by dismissing Divya Pharmacy's petition.

There is a two-pronged assault on the laws of biological conservation of genetic resources—by scientists and the industry, and in both cases, India has become the launchpad for the campaigns. The first led by Indian scientists is an international movement against the Convention on Biological Diversity (CBD), which they

REUTERS



say has spawned national regulatory regimes on access and benefit sharing (ABS) with “unintended consequences”. They want the regulations to be watered down or eliminated to allow unfettered global research.

In an article in the June 2018 edition of *Science Magazine*, K Divakaran Prathapan from the Kerala Agricultural University, Thiruvananthapuram, argued that “not-for-profit research, such as inventories and taxonomic studies should be differentiated from commercial research leading to proprietary rights. Access has to be open when the benefits are in the public domain.” The article was backed by a signature campaign by scientists from across 35 countries.

CBD is an agreement signed by 196 nations to conserve biological diversity, use its components sustainably and share fairly and equitably the benefits accruing from the use of genetic resources. To further the aims of the last goal, CBD especially instituted the Nagoya Protocol (NP), which came

into force in 2014.

Although CBD acknowledges the importance of research and sharing of knowledge, scientists claim that the ABS regime put in place by many countries are restrictive. “Though well-intentioned, the regulations are inimical to the pursuit of basic biodiversity science,” according to Prathapan and his co-authors who warned that unless there is “close cooperation between scientists and national policy-making bodies, the broader goals of CBD will be difficult to achieve”.

Profit motto

Tracing the history of CBD and NP, Dhulia said that “biological resources are definitely the property of a nation where they are geographically located, but these are also the property, in a manner of speaking, of the indigenous and local communities who have conserved it through centuries”. Ordering Divya Pharmacy to share its profits with local and indigenous communities, Dhulia upheld the order passed by the Uttarakhand SBB asking Divya Pharmacy to fork out its dues, estimated at some ₹2 crore in some reports, as part of Fair and Equitable Benefit Sharing (FEBS), since it would be invidious to differentiate between foreign and Indian companies.

While this argument does have merit, the attack by industries on ABS is profit-driven. Here, commercial outfits have been refusing to abide by the benefit-sharing regulations in the Biological Diversity Act, 2002, claiming that only foreign entities are obliged to do so.

Fair share

FEBS rates are minuscule given the huge turnovers of ayurvedic companies. The sales of Divya Pharmacy in 2017, for instance, was ₹870 crore while Patanjali Ayurved accounted for ₹9,346 crore in an overall turnover of ₹10,561 crore for Ramdev’s ventures.

Dhulia’s ruling that SBBS have the powers to demand FEBS under several sections of rules framed by NBA means companies using biological resources will have to fall in line. The problem is the wording of the Biodiversity Act, specially Section 7. Acknowledging this, the court observed that “a simple textual interpretation,” would, indeed, show that the petitioner is not liable to contribute to FEBS. “But then a plain and textual interpretation here defeats the very purpose, for which the law was enacted!” It then went on to define the importance of purposive interpretation of law when the legislation being considered is a socially or economically beneficial one, like in the case at hand.

So, while there is general celebration of the Divya Pharmacy verdict as a “landmark judgement”, lawyers speaking for the corporate lobby have warned that the judgement will not stand if challenged, glossing over the fact that Dhulia has cited several precedents for issuing a “purposive interpretation” of the Act. One would have to wait for further developments to test the veracity of the claims made by such lawyers.

What is needed though is to clear the myriad confusions in the way SBBS function. There have been many a whimsical decision by these boards and transparency in the way these bodies reach their decisions would help everyone involved. Laudable as the claims of the SBBS are, we have no information of how the FEBS monies have been shared with communities, if at all. This has given rise to suspicion that SBB is just a new order of bureaucrats out to secure their own turf with little idea of the goals of biodiversity conservation. It is time that legal ambiguities are removed to ensure clarity in the way it is implemented. This would assuage the fears of all: scientists, communities and industry. ■

 @ljishnu

The sales of Divya Pharmacy in 2017 stood at ₹870 crore while Patanjali Ayurved accounted for ₹9,346 crore in an overall turnover of ₹10,561 crore for Ramdev’s enterprises

Toxin feed

The proposed import of animal feed ingredient from the US containing genetically modified corn can spell trouble for India's livestock industry

MEENAKSHISUSHMA | NEW DELHI

VIKAS CHOUDHARY / CSE



Around 30 million tonnes of feed is produced every year in India. Of this, 20 million goes to the poultry sector

TO TIDE over fodder shortage, the Indian feed industry has demanded the import of distillers dried grains with solubles (DDGS), the byproduct of ethanol produced from corn, from the US. It is a cheap source of protein, fat, minerals and vitamins and can be added as an ingredient to livestock feed. However, DDGS in the US, is made from genetically modified (GM) corn. In India, there is till now no regulation

to control the entry of GM DDGS. Unable to come to a decision on this, the Genetic Engineering Approval Committee (GEAC), under the Ministry of Environment, Forest and Climate Change, formed a special sub-committee in September 2018 to look into the matter, but the group is yet to meet. During the last GEAC meeting held on November 20, 2018 it was agreed that the committee would consider the application related to the import of

DDGS. Sujata Arora, adviser and vice-chairperson of GEAC, who is also part of the sub-committee, told *Down To Earth* that applications regarding the import of feed are on hold. “The sub-committee is planning to meet shortly and come up with import guidelines,” she says. Besides DDGS, the application for import of horse feed containing GM soybean has also been deferred. Delhi-based P R Seeds & Grains Pvt Ltd, a horse feed supplier, has been requesting its import for over a year, says manager Anil Shirshat. According to him, imported horse feed has improved nutrition. “As horse meat is not eaten, feeding imported products obtained from GM soybean should not be a problem,” adds Shirshat.

Need for more fodder

According to a study published by the Jhansi-based Indian Grassland and Fodder Research Institute, conducted in June 2013, India had 50.2 per cent deficiency in feed. Raghavan Sampath Kumar, executive director at Compound Livestock Feed Manufacturers’ Association of India based in Maharashtra, says that around 30 million tonnes of feed is produced every year. Out of this, 20 million goes to the poultry sector, 9 million to dairies and 1 million for aquaculture.

Meanwhile, in the absence of adequate and nutritious feed, farmers are finding it difficult to raise cattle. “Gujarat dairy farmers are spending ₹500-600 per kg on cattle feed,” says Ketul Patel, managing director of Miki Maize Milling Pvt Ltd. He adds that the shortage is pushing farmers to feed 2 kilogram (kg) fodder instead of the recommended 4 kg. “Sometimes, farmers are adding vegetable peels and water in the feed. This impacts the milk quality. Farmers, who sell directly to consumers, thus fail to match market standards and incur losses. We have been requesting GEAC for importing DDGS as this is a good feed

supplement and the cost will reduce to ₹200-250 per kg. But the application has been kept on hold for more than two years now,” says Patel.

Earlier, farmers used to get the by-product from beer processing, which they used as feed. This was added in cattle feed in the wet form, which had a low shelf life. But now processing industries have started collecting the waste, and after drying, it is sold in the market. “This has increased the price,” says Anurag Wadhwa, one of the partners of Nurture Organics Pvt Ltd, a Delhi-based feed manufacturer.

Negative impacts

India has only one biotech product approved for animal feed—cotton seed cake. But experience using GM cotton seed cake has thrown up problems. The Supreme Court’s Final Report of the Technical Expert Committee released in 2012 points out the findings of an experiment where BT cotton

India has only one biotech product approved for animal feed, cotton seed cake. But cows fed on Bt cotton first and then non-BT showed a decline in yield after switching over to the latter, thus suggesting a carryover effect

seeds were fed to cattle. The animals were divided in two groups and their milk yields recorded. The yield in cows fed on non-Bt cotton first showed no change during the first phase and also later. On the other hand, cows fed on Bt cotton first showed a decline in yield after switching over to non-Bt feed, thus suggesting a carryover effect. Farmers too have observed such changes. Gopal Sutriya a cattle farmer at Sarkhej village near Ahmedabad, says that the reproductive cycle of cows was badly hit. This started to occur when farmers in my village started feeding BT cotton seed to cattle. “Some of them became sterile at an early age. In Gujarat, 95 per cent of the area is under Bt cotton,” he says.

But others disagree. Amit Sachdev, the representative of global network, US Grains Council in South Asia, says, “DDGS is made from GM corn, but it is a non-living modified organism as per the Cartagena Protocol on Biosafety passed in 2003. In many countries, DDGS does not come under GM, as it is a byproduct. Import is needed to make livestock feed affordable. The need for feed is increasing with greater demand of meat, milk and eggs.”

But Rohit Parakh, agriculture and food policy analyst based in Mumbai, says, “India’s decision to import subsidised GM feed will not be fair to farmers. We must not forget the Technical Expert Committee report which found that Maharashtra-based Mahyco’s data indicated reduction in milk yield in animals fed on Bt cotton.” However, Kumar allays such fears. “As India does not produce DDGS, we are seeking permission for its import. This will be an option for the industries, and

in case of deficit in local feed.”

Experts say that alternatives such as azolla, a type of water fern, cactus and pods of mesquite tree are being developed as feed. Vitthal Keshav Kauthale, the-matic programme executive of BAIF Development Research Foundation, a Pune non-profit, cites research conducted on thornless cactus (*Opuntia ficus indica*) with financial aid from NABARD in 2015. Field trials showed that goats fed on this particular cactus gained body weight. BAIF has developed cactus plantations on its campuses across India. But it remains to be seen whether such measures will stop the entry of GM feed in India. ■

 @meenakshisushma

Dumped in a pit

The 2014 National Green Tribunal ban has not only failed to contain rat-hole mining, but has also stopped the Meghalaya government from regularising the trade

LINDA CHHAKCHHUAK | SHILLONG

MEGHALAYA'S CLOSELY guarded secret is slowly crumbling down. Two rat-hole mines in its East Jaintia Hills mining district have collapsed in the past one month, exposing the lawlessness in the state. While 15 labourers remain trapped due to flooding in the Ksan coal mine on December 13 last year, two labourers got killed due to falling boulders on January 6. Ironically, the state government has maintained that rat-hole mining has stopped following the 2014 National Green Tribunal (NGT) ban on it for being “unscientific, hazardous, and functioning out of the purview of the mining laws of the land”. On August 31 last year, NGT had its final sitting on the case where it upheld the ban, and handed it over to the Supreme Court for the final disposal.

Far from closing the mines down, the ban has made them more secretive and dangerous. State advocate general Ranjan Mukherjee, during a fresh petition filed in the Supreme Court to fast track the rescue operations, said the rescue work is handicapped because the mines in the district do not have blueprints. “The mines are unknown and unmapped tunnels are making the rescue more difficult than the famed Thailand mine rescue where 12 members of a football team and their coach were saved after 18 days,” says Brian Daly Kharpran, an expert on caves from the state. A senior government official says the mine is so remotely located that it is not even electrified. “When the disaster



SUGANDH JUNEJA / CSE

happened, electricity lines had to be drawn in to run the pumps,” he says.

Troubled past

The annual coal production of Meghalaya in 2015 was 6 million tonnes and revenue collected was ₹600 crore, according to former Meghalaya chief minister Mukul A Sangma. Coal reserves in the state are estimated at 640 million tonnes. When coal was nationalised in 1973,

Meghalaya, a tribal state under the Sixth Schedule of the Constitution, was allowed to continue its “traditional cottage” mining status unhindered by the legal regulations of mining. With no legal hassles and easy access to land, most people jumped into the business of mining coal in their backyards.

The coal-rich areas of South Garo Hills and the East Jaintia Hills became booming towns, employing thousands. The high earnings lured many

There are over 24,000 rat-hole mining shafts in Meghalaya's greater Jaintia Hills that is spread over 3,819 sq km



into death traps. “We could earn about ₹30,000 a month,” says D Basumatory, a retired mine labourer.

Coal in the state is extracted through the rat-hole mining method, where horizontal tunnels are made after removing the forests till the time the coal seam is reached. Initially, mining required little investment. Over the decades, the first coal seam exhausted and people were forced to dig deeper. This required major

investments. Dominic Pala, headperson of Lamarsiang village in East Jaintia Hills district, says he used to spend more than ₹1 crore every mining season to pump out water from his three pits before 2014. The mine owners of his circle annually spent at least ₹ 70-80 crore collectively just to pump out water. This led to the formation of a cartel that practiced unfettered mining in the area. The entire region of greater Jaintia Hills, the most mined region in the state, today is a ravaged mine-pocked land and its main rivers are polluted due to acid mine drainage for decades.

In the mid-1980s and early 1990s, several politicians from the area—including former Congress leaders OLNongtdu and Herbert Suchiang—voiced against the rampant mining and demanded legalising the trade. The coal lobby made sure they lost the elections. Since then only people who own coal mines or are backed by the lobby win the elections in Jaintia Hills district. The recent citizen’s report, submitted before the Supreme Court last December, clearly exposes how politicians are involved in mining. Parliamentarian Vincent Pala along with four state ministers—Kyrmen Shylla, Sniawbhalang Dhar, Lakmen Rymbui and Comingone Ymbon—are involved in coal mining. Even Meghalaya’s Opposition Congress party has coal mine owners. Dikkanchi D Shira, wife of former chief minister Mukul A Sangma, owns several coal mines in Garo Hills.



The ruling National People’s Party, a partner of the Bharatiya Janata Party, came to power on the promise that it will get the rat-hole mining ban lifted. The first decision taken by chief minister Conrad A Sangma after

coming to power in 2018 was to constitute a Group of Ministers to find out a solution to the NGT ban. The coal lobby’s influence has been evident. The Supreme Court in 2010 asked the state to come up with a mining policy. The state government notified the Meghalaya Mining Policy in 2012, but the policy was never implemented due to the mining lobby. “The Supreme Court simply accepted the state government’s assurance. We knew that the state government would not bring a policy on its own,” says Kharpran, adding that the policy would have averted the tragedy.

Looking beyond the ban


Environmentalist H H Mohrmen says rat-hole mining has to be regulated and not banned as it will impact the livelihood of many people. He adds that the current legal limbo is only benefitting the rich.

Ampareen Lyngdoh, Congress leader, says the only way out of the tangle now is for the Centre to invoke Para 12 A (b) of the Sixth Schedule to the Constitution. “This will authorise a Presidential notification to exempt Meghalaya from the current mining acts in the country. Unless that is done, whatever the state does will be considered illegal due to the NGT ban,” she says. This demand has also been echoed by the current government that has sent several delegations to the Centre to issue the Presidential notification.

“It’s so complicated now that it will take a long time before our mines can resume legally again. But we cannot go any other way as this is about our tribal rights,” says Erwin Sutnga, counsellor for the Khasi Hills Autonomous district Council.   @down2earthindia

A black and white close-up photograph of a cow's face, looking directly at the camera. The cow's face is mostly white with dark patches around its eyes and on its ears. Two strands of barbed wire are stretched horizontally across the frame, one above and one below the cow's face, partially obscuring it. The background is dark and out of focus.

**WORSHIPPED
AND
ABANDONED**

A black and white photograph showing a close-up of a cow's head, specifically its eye and part of its face, looking through a barbed wire fence. The cow's fur is dark, and its eye is a bright, almost white color. The barbed wire is in sharp focus, with its twisted strands and sharp points clearly visible. The background is blurred, showing more of the cow and some foliage.

The circular economy of cattle has been ruptured. Restrictions on cattle trade are forcing cattle rearers to abandon the cows, and therefore, their livelihood. **Jitendra** and photographer **Adithyan P C** travel across the cow belt in the country and neighbouring Nepal to understand how it has hit the poorest

RAHAMDIN KHAN has not slept well for over a year. Resident of Khoabas, a bucolic village of 500 households at the foothills of Aravali mountain range in Rajasthan's Alwar district, Khan witnessed a cruel turn of fate. Life has undergone a change, and nothing but his traditional white *kurta* and *pyjama*


remains the same. Goats and buffalos ramble around his house, but cattle, that once dictated his family's economy, are conspicuously absent. For centuries, villages like Khoabas have depended on cattle for their primary economy and have lived a fairly sustainable livelihood. Food crops here drive the secondary economy.

In 2017, when Khan was on way to a local cattle fare, cow vigilantes thrashed him and took away his two milking cows and two calves. "Between 2014 and 2017, I have been arrested twice," he says, alleging that ₹40,000 was extorted from him to be freed. Bruised, battered and humiliated, Khan abandoned his cattle. And with that he gave up what was driving his prime economy. "From being the caregiver, I was branded as the enemy of cows, and called a cow smuggler," he says staring blankly at the floor. Police raided Khoabas several times, charging dairy farmers like Khan with cruelty against animals and putting them in jail.

"A strange restlessness has gripped me since I abandoned my 65 cattle. It singularly defined the prosperity of my family. I cannot imagine financial growth without it," he says. Once a prosperous farmer, Khan now lives below poverty line. "I don't get sleep without my cattle," he says.

In the backdrop of rising threat of violence over cattle movement and stringent anti-cow trade laws in Rajasthan, many Khoabas residents, like Khan, have started quitting cattle rearing as a profession. Some households keep buffaloes while others either have goats, or both.

Raids by cow vigilantes in Rajasthan have become regular, and violent. Police registered 389 cases in 2017 alone under the Rajasthan Bovine Animal (Prohibition of Slaughter and Regulation of Temporary Migration or Export) Act, 1995. The state government amended this Act in 2015 to enable seizure of vehicles that carry



Bruised and battered by vigilantes, cattle rearers like Rahamdin Khan have abandoned their cows

cattle. The Act also fixes punishment for those who smuggle cattle. There were 474 such cases in Rajasthan in 2016 and 543 in 2015. People were lynched merely on suspicion of being cow smugglers or slaughterers. In August 2018, the Supreme Court took note of a lynching incident that took place in Alwar in July that year and directed the Principal Secretary of the state's home department to file an affidavit and give details of the action taken in the case.

Violence over cattle has increased across north India in the recent years. A report by Bhumi Adhikar Andolan, an association of civil society groups, states the country has witnessed 78 cases of cow-related violence since 2010. Of these, 50 were in northern India, and 97 per cent of the attacks were reported after 2014. As many as 29 people were lynched, the victims mostly being those who traditionally survive on cattle- or livestock-driven economy. But the Union government denied in Parliament the existence of any such



report, as it is the state government's job to prepare such a data, and it had not done so.

History shows that restrictions on cattle rearing have fundamentally changed the rural economy. Many states have decades-old laws that ban cattle slaughter. It has forced several farmers to shift to buffalo rearing. Between two livestock censuses in 1951 and 2012, cattle population increased by only 23 per cent while buffalo population shot up by 150 per cent. States with tough anti-cow slaughter regulations have more buffalo than cattle population. Rajasthan's 50 per cent livestock comprises buffaloes, while Haryana has 77 per cent of them, Uttar Pradesh has 61 per cent and Punjab 67 per cent. But Kerala and West Bengal, which do not have the ban, show diametrically opposite numbers—93 per cent cow and bull population in Kerala and 96.5 per cent in West Bengal. With raids on cattle trade having become the new normal, villages are fast turning into economic bad zones.

"I CAN NEITHER SELL MY CATTLE, NOR CAN I KEEP THEM"

Khoabas village typifies the change. As Army has fenced off the only grazing land in the village for a defense project, residents take the cattle along the national highway that runs parallel to the village. This is where most of the raids by cow vigilantes take place. Farmers cannot depend on stall-feeding the cattle because fodder is prohibitively expensive. The situation leaves cattle rearing as an unsustainable proposition. "I can neither sell my cattle, nor keep them," says Abadal Khan, a once-prosperous resident of Khoabas, who is now a daily wage labourer at a construction site in Alwar. "I let go 40 of them, and kept only two." His neighbour Baddan Khan abandoned 50 of his cows and is now a contractor for the public distribution scheme for foodgrains.

Some 45 kilometres from Alwar, Subba Khan

of Sahuwas village is caught in a debt trap. On October 3, 2017, local police colluded with cow vigilantes and seized his 51 cattle that were grazing on the Aravalis. His son Imran was arrested for “cow smuggling”. The Kishangarh Bas police station did not file a case, but left the cattle with the local Sri Krishna Gaushala. “I pleaded with the *gaushala* caretaker to free the milking cows as their calves needed to be fed,” says Subba. “Neither police nor the caretaker paid heed. I bought five litres of milk to feed the calves. But that was of no help as a week later, 20 calves died of starvation,” he says.

“Worse, the *gaushala* caretaker demanded ₹2 lakh for feeding my cattle. After a long trail to officials and a demand by human rights activists and lawyers, the cattle was released and a certificate issued that Imran was not involved in smuggling of cows. “But eight cows died within a week, and I lost around ₹3 lakh in the entire incident,” says Subba. Once trading around 300 litres of milk every day, he now sells only 30 to 40 litres in a day.

Subba is an exception for showing courage to stand by cattle rearing. As many as 25 households in his village have deviated to other professions. Most have migrated to work as wage labourer either in Alwar, Jaipur or Delhi. “I do not know any other profession,” he reasons. Subba’s elder brother has already migrated out in search of a daily wage job to supplement the losses.

The instability in cattle rearing is slowly showing its impacts. Official data shows up to 90 per cent reduction in cattle trade in the animal fairs of Rajasthan. In 2012-13, about 54,000 cattle were brought for sale in nine fairs, of which 37,000 were traded. In 2016-17, the number dropped drastically. Of the 11,000 cattle that came to the fairs, only 3,000 were traded. In the popular Pushkar fair, only 161 cattle were brought for trade in 2017 and only eight were sold. In 2012, over 4,000 cattle were brought to Pushkar and half of them were traded.

Cattle economy is a perfect example of the circular economy of the country’s poorest. Cows live up to 15 to 18 years and are considered productive till they give milk—from three to 10 years. They are then sold off, presumably for slaughtering. Earning from this is ploughed back to buy young cattle. It is thus, a self-sustaining economy. Farmers also sell male cattle.

The number of cows in unproductive age accounts for only 1 to 3 per cent of the total cow population, estimates Kirit Parikh, former member of

the erstwhile Planning Commission. He estimates that male cows older than 10 years account for only 2 per cent of total male cow population. In its life time, a cow passes through the hands of four to five farmers. This helps improve the cattle’s breed. This also explains how farmers strike a balance between productive and non-productive cattle.

Livestock economy is bigger than the crop sector, though both are clubbed together when referred to the agriculture sector. The Economic Survey of India report, 2018 shows crop share declined from 65 per cent in 2011-12 to 60 per cent in 2015-16. In the same period, the share of livestock increased from 22 per cent to 26 per cent. “Livestock is the best insurance against agrarian distress as the sector is a source of sustained income and generates revenue more frequently than the crop sector,” states the government-appointed Committee on Doubling Farmers’ Income. In fact, for the last 35 years the livestock sub-sector has not reported negative growth, the committee points out.

But the circular cattle economy of the farmers has been punctured.

"GOVERNMENT SHOULD STEP BACK FROM LAWS WHICH HAMPER DAIRY GROWTH"

Many milk collectors from the villages of Alwar and nearby districts vouch for a dip in milk production. Sahabuddin, milk collector in Ghajaud village, earns only half of what he used to two years back. “I had employed five persons to collect around 800 litres of milk every day from five villages about three years ago. By 2018, milk collection dipped by one-fourth,” says Sahabuddin. He falters as he reasons out, “People now have fewer cows.” He is the lone milk collector in Ghajaud now. Residents say that just about three years ago, every village had five to 10 milk collectors. This could be a scary warning for India’s over ₹6.14 trillion (2016-17 estimate by the Central Statistical Office) dairy industries that engage 73 million small and marginal dairy farmers. “It would be better if the government understands this early and steps back from the regressive laws which hamper dairy growth,” says R S Khanna, chairman of Kwaliti Limited, a Delhi-based dairy company.

In the neighbouring Haryana, the fear of raids and the stringent anti-cattle slaughter laws have not only stifled the local economy but also threat-

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ened to disrupt other meat and livestock businesses. “How can one keep a veterinary doctor, fodder and a water tank inside a small pickup van,” says Nooruddin, 50-year-old goat-keeper turned daily wage labourer, while referring to the Haryana Gauvansh Sanrakshan and Gausamvardhan Act. His work now involves putting identification marks on buffaloes that arrive in the weekly Firozpur Jhirka animal market, in Mewat district. For this, he gets ₹200 per day, twice in a week. He also works at butcher shops. His total monthly earning comes to around ₹3,000. This is only 20 per cent of what he used to earn every month till last year. “Why is the government strangulating goat meat business?” asks Nooruddin, resident of Rehan Tappar village in Nuh block, 35 kilometres from the weekly market. Spread across two hectares, the market used to trade more than 1,500 cattle and buffaloes in one week. Nuh municipality issued contract of ₹2.11 crore last year for livestock trading. But in the past one year, livestock trade, especially of cattle, buffaloes and goats, has drastically slowed down.

One can argue that Mewat is the hub of indige-

nous cattle, a fast declining breed despite the huge concern for protecting it. According to 19th Livestock Census, Haryana’s indigenous varieties of cattle have been declining by 18 per cent annually. As males are declining at a rate of 21 per cent, female cattle are reducing at a rate of 15 per cent. Mewat has the state’s lowest number of crossbred, called exotic, cattle. It has only 15,000 in comparison to the state’s one million exotic cattle population. On the other hand, the district has more than 33,000 indigenous cattle. This means communities here depend on the indigenous breed for survival. So, where are the cows?

In 2015, the state enacted its law, which prohibits sale, slaughter and consumption of cows and storage of beef. Violation of the Act attracts three to 10 years’ rigorous imprisonment and fine between ₹30,000 and ₹1 lakh. “Trade has come down by nearly 80 per cent,” says a district agriculture official on the condition of anonymity, and refused to show *Down To Earth* data related to animal trading in such markets. While buffaloes are still being traded, cattle trade has almost come to an end. Noor



Police locked up 51 cows in Sri Krishna Gaushala. A week later, 20 of them died of starvation

Shah, a livestock trader says, “One can barely find cattle even in villages now. The fear of being punished has gripped those who deal with other animals as well.” Rumours of government crackdown on cattle keepers spread like wildfire. Residents of Ahmedbash village say government officials came to survey the population of cows in October 2017. Though district officials deny this, the fear of raids by cow vigilantes has forced people to abandon their cattle in the open. “In many surrounding villages as well, people let off their cows,” says Khalid, resident of Ahmedbash.

According to the Socio-Economic Caste Census, 2011, Mewat is the lowest in the ladder of every development indicator, be it economy, health or education. Around 70 per cent of the households have income less than ₹5,000 per month. More than 50 per cent households are engaged in casual labour. The district has the lowest representation in government, public and private jobs. Livestock is a major source of income for people here. The extent of the economic losses of Nooruddin is, therefore, not difficult to ascertain.

"AFTER POLICE SEIZED MY GOATS, I NEVER DARED TO ENTER THE TRADE AGAIN"

“It was a day before Eid in 2018 when I was carrying 30 goats on a small pickup van to Gurugram,” says Nooruddin. On Sohana Road, police stopped the van and seized all the goats citing cruelty against animal laws. “I was asked to carry only 17 goats, keep a doctor, fodder and water inside the small van,” he says. It took Nooruddin 15 days to get back the goats from the police station. Without care, 19 of them died, six managed to survive and the rest just disappeared. “It put me in debt of ₹2 lakh. I did not dare to venture into goats trade again,” he says. Generally, cattle traders raise their working capital on high interest to buy goats, buffalos or cattle. They return capital with interest either the very next day or in two days.

A dip in livestock trade and slaughter also means a reduction in related employments and industries. Kanpur is the biggest producer of finished leather in northern India and supplies it to industrial centres such as Chennai, Agra, Kolkata and Punjab. Finished leather goes to factories for production of different products.

The ban on illegal slaughterhouses and increase of raids by cow vigilantes have shattered the leather industries in Kanpur. In Uttar Pradesh, one out of every 1,000 people work in cow-related industries. The Small Tanneries Association estimates that “illegal” slaughterhouses provide 40 per cent of all leather to small and medium enterprises, and 10 to 20 per cent to big leather industries. The leather industry employs nearly half a million people in Kanpur alone.

Jajmau Tannery Effluent Treatment Association (JTETA), engaged in waste management and compiling data of tanneries, claims there has been a sharp decline in the number of tanneries. According to the association, there were 402 small, medium and large leather industries in 2016 in Kanpur. Now, only 146 remain. “Thousands of unorganised leather industries which prepared finished leather and had only three to four persons, have close down,” says Nayar Jamal, a small tannery owner in Jajmau who worked closely with the association. Data of the Council of Leather Export shows decline in the export revenue of finished leather. In 2014-15, India was earning ₹81.26 billion, which reduced to ₹59.61 billion in 2016-17.

There has been a slight decrease in export revenue of leather garments, leather goods, and saddles and harnesses between 2014-15 and 2016-17. In the meantime, non-leather footwear revenue has increased from ₹18.73 billion to ₹22.8 billion. But the government denies that the supply crunch in raw hide is due to the clamp down on illegal slaughter houses and raids by cow vigilantes. It wants to believe that external factors such as recession in major European market, instability in Middle East and others are responsible for the decrease in export revenue.

The livestock economy is at a crossroads now. In the early 1970s, the nature of cattle economy had shifted from being agriculture- and transportation-oriented to milk-yielding, after farms became mechanised. In four decades, intensive mechanisation eliminated draught cattle breeds from the fields. Data with the National Sample Survey Office shows 18 per cent fall in the number of livestock in rural areas, from 169 million in 1971 to 135 million in 2012. However, as draught cattle became unproductive, the focus shifted to high-yielding cow breeds. During 2007-2012, the number of milch breeds increased by over 28 per cent.

Rearing these suits the farmer, but it's not without challenges. According to the World Animal Protection Report, 2010, as many as 50 million cows across the country's dairy farms are suffering from health problems and short lifespan due to over-breeding, poor housing, confinement and over-medication. A good number of them have already reached their unproductive age and have been abandoned. According to the 19th Livestock Census, the country has 5.3 million stray cattle. Odisha has the maximum with more than 1 million stray cattle, followed by Uttar Pradesh, Rajasthan, Madhya Pradesh, West Bengal and Gujarat. These are the states under the grip of cow vigilantes.

Depending on the breed, the cost of rearing a cow varies. Go Anusandhan Sanstha, a cow research institute in Mathura, has calculated the economic cost and return in rearing a milch cow. A Sahiwal cow can earn ₹85 per day, but an unproductive one can incur loss of ₹60 per day. This means, to maintain the 5.3 million stray cattle, the cost would be around ₹11,607 crore (see page 31).

Abandoned cattle have managed to create an overwhelming menace in villages and towns alike, forcing states to introduce cess for their welfare and putting them in shelter homes. The problem is

bigger in places where cattle-related violence is more pronounced. Let us take a tour of such a region in Uttar Pradesh.

WHAT HURTS MOST IS THE RISE IN FARMING COST DUE TO THE ADDED FENCING COST

It is a usual dark and calm night in Nizampur village of Lakhimpur Khiri district. But all the men here are wide awake. The sound of a tractor that just stopped by creates a sudden chaos. The men, carrying sticks, swords, iron rods in one hand and torch in the other, charge towards a farm to chase away cattle that the tractor offloaded. Unidentified people regularly come in the night with truck loads of cattle to abandon in the farms. Guarding the village from stray cattle has become a routine exercise for the men. "We ensure that people in other villages do not get affected by our night vigil, as it may result in violence," says Mukesh Singh, a marginal farmer of Burahgaon village in Hardoi district.

In most villages, it is common to see residents fencing their farms. Mukesh lost his 1.5 hectares of Rabi crop to stray cattle. It was after frantic search for a livelihood that he got the job of guarding this patch of farm, from which he was promised 150 kg of wheat. He got injured while chasing the cattle away. Though the landlord is getting him treated in a hospital, Mukesh will get only 100 kg wheat now to compensate for treatment cost.

In many villages, residents have formed committees to guard their farms. "The slightest sound of a tractor wakes us up," says Vinay Shukla, farmer in Sonsari village. What hurts most is the rise in the cost of cultivation due to near-compulsory fencing of farms. The cost varies from ₹8,000 to ₹10,000 per 0.4 hectare. This is substantial for a marginal farmer who earns up to ₹6,200 per month, going by government estimate. Frequent cattle raids damage the fences resulting in recurring repair costs. Many families which cannot afford fences report complete crop damage due to cattle raids.

"In the past one year, I have not seen one complete crop cycle. Cattle strayed into my field and damaged standing crops," says Nusarat Jahan of Nauwanpur village of Sitapur district. She planted sugarcane in April, 2017. Just when it started taking root, hundreds of stray cattle invaded the farm and completely chewed the crop out. In July she planted paddy. But at the fag end of monsoon, she again

Hidden cost of CATTLE

The cost of rearing a cow may vary from region to region based on its breed. *Down To Earth*, in consultation with Go Anusandhan Sansthan, a cow research institute in Mathura, has calculated the economic cost and return in rearing a milch cow. A Sahiwal cow can earn ₹85 per day. But an unproductive cattle can incur a loss of ₹60 per day. The cost of rearing 5.3 million of stray cattle can cost the country ₹11,607 crore

TO MAINTAIN 10 SAHIWAL COWS

TOTAL EXPENDITURE: ₹18,70,850

One-time capital expenditure: ₹10,00,000

To purchase 10 cows @ ₹40,000 = ₹4,00,000
For cowsheds and other structures = ₹3,50,000
Machineries like fodder cutter and cart = ₹1,50,000
Other expenditure like labour = ₹1,00,000

Annual fixed expenditure: ₹1,44,500

Depreciation cost of infrastructure @ 5% = ₹17,500
Depreciation cost of machineries @ 10% = ₹15,000
Interest on bank loan @ 12% = ₹96,000
Annual insurance charges = ₹16,000

Annual variable expenditure:

₹7,26,350

Green fodder @ 30kg/cow/day when it costs ₹250/quintal = ₹2,73,750
Dry fodder @ 4kg/cow/day when it costs ₹700/quintal = ₹1,02,200
Cattle feeds @ 4kg/cow/day when it costs ₹2,000/quintal = ₹2,40,000
Labour charges @ 1 labour for a year @ ₹140/day = ₹50,400
Medicines and other expenses = ₹60,000

ANNUAL EARNINGS: ₹11,80,000

From milk: ₹11,20,000

(28,00 litres/cow earning @ ₹40/litre)

From cow dung as manure: ₹20,000

(@ ₹2,000/cow/year)

From calf: ₹40,000

(@ ₹4,000/calf/year)

NET ANNUAL EARNING: ₹3,09,150*

* The difference between annual expenditure and earnings

PER DAY EARNING FROM A COW ₹85

THE COST OF STRAY CATTLE

Once a cow reaches its unproductive phase of life, it becomes expensive to maintain

STATES THAT DUMP THEIR CATTLE (in million)



Odisha
1.14



Uttar Pradesh
1.09



Rajasthan
0.95



Madhya Pradesh
0.44



West Bengal
0.37



Gujarat
0.29



Bihar
0.26



Maharashtra
0.15



Haryana
0.11

TO FEED THIS CATTLE POPULATION INDIA NEEDS ₹11,607CR



Prepared by DTE/CSE Data Centre
Infographics: Raj Kumar Singh



People keep night vigil with iron rods and swords at Nizampur village in Uttar Pradesh

lost her crops to cattle. They destroyed two more crops of wheat in between. “We had invested ₹10,000 to fence our fields,” says Jahan, at the brink of debt trap. She borrowed money on interest from the local money lender. “Please help us get compensation from the government,” her 70-year-old bed-ridden husband pleads.

Those who cannot afford fences, guard their farms all day and night. “We cannot afford to install barbed wires,” says Sunita Devi. She and her two minor sons spend the entire day guarding the crop. Her husband Brijesh Arak sits through the night. A few days back, she suffered a cardiac arrest when stray animals attacked her sugarcane crop. With no hope of ever earning from crops, one of her sons has started working as a daily wage labourer to support the family. “I do not have the courage to invest more in farming,” says Arak. He works as a guard in another farmer’s field for ₹1,500 a month.

Fed up with the menace of stray cattle, residents of Semri village, close to the Nepal border, called a meeting on April 3, 2018. It attracted over a thousand people. After heated discussions, everyone agreed to do something bizarre—dump all the stray cattle in Nepal. They collected ₹37,000, hired 22 tractors, loaded 225 stray cattle into them, and headed to the border.

“More than 40 motorcycles carrying over 100 people escorted the caravan,” says Jayshankar Mishra, one of the organisers of the event. Residents of villages that came on way stood against cattle abandonment, and it was, therefore, decided that the cattle would be left in the Katarniaghat Wildlife Sanctuary, a strategic con-

necting point between Dudhwa National Park and Nepal’s Bardia National Park.

As they started off-loading the cattle in the forest, people from the nearby Gajiapur village came out to protest. The offloaded cattle were tied to the nearby railway tracks. Heated verbal exchanges resulted in a violent conflict. In the meantime, a train sped over more than 30 cattle and injured over a dozen people. Finally, everyone fled from the gory crime scene. Police was not informed, but a local daily ran a small news report.

The decision taken in the Semri meet is not rare. In many villages, people herd stray cattle into Nepal. “It helps in two ways,” says Alok Mishra, a Bharatiya Janata Party cadre based in Lakhimpur Khiri, near Nepal border. “It does not create tension among people, and animals remain safe in Nepal, which is a Hindu nation,” he adds. Mishra claims it happens on large scale in bordering districts like Lakhimpur Khiri, Bahraich and Shravasti.

Now, the stray cattle menace is a big problem in the villages of Nepal that lie along the border. Three kilometres from the Indian border, 50-year-old Kidi Devi of Jugera village in Dhangadhi guards her 0.2-hectare wheat crop from stray cattle. The farm is the only source of foodgrains for her 16-member family. Most of her family has migrated to India for jobs. She had never imagined that cattle from India would threaten her livelihood.

“The cattle come from the forests of India,” claims Kidi Devi, just as her husband Parane Kame wakes up from his four-hour sleep after spending the night guarding his field. Nepal has its own stray cattle problem, but it has increased in the last one



ADVANCED TRAINING ON URBAN LAKE MANAGEMENT

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Lakes are an important component of the urban hydrological cycle, they act as source of water, run-off controller and play a significant role in enhancing groundwater recharge, regulating micro-climatic conditions and improved overall resilience of the area. Various ministries, departments, city-level public institutions, NGOs and research institutes are dedicatedly working on lake conservation but still the effort is inadequate given the scale of work required for lake management across the country. The School of Water and Waste, AAETI, Centre for Science and Environment (CSE) is organizing this training in association with Biome Environmental Trust, and other leading organisations working in urban lake management, for providing hands-on practice based sessions for those who are directly involved in lake management.

AIM

The aim of this training is to develop capacity of various stakeholders who are responsible for or are involved in urban lake management.

OBJECTIVES

Improve knowledge on lake management – the concepts, tools and processes.

Develop understanding of data requirements and tools such as GIS and remote sensing

Develop skills to identify unique challenges and specific solutions

Enhance confidence through practical sessions on lake management

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Opportunity for interaction with the real implementers/beneficiaries through field visits.

WHO CAN APPLY?

City officials from urban local bodies, development authorities, water supply and sewerage boards and public health department involved in lake management

Candidates from community based organisations, NGOs and institutions working for conservation of water bodies

Urban planners, engineers, consultants, independent researchers with experience of working on urban lake management/conservation.

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Only the short-listed candidates will be informed and the selection decision of School Committee would be final.



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Nepal has built a cattle shelter in the forest area near Dhangadhi municipality for stray cattle

year. “Why is India sending so many cattle to Nepal,” asks Rani angrily, a village elderly. “Cattle in market areas, roads and fields are making our lives difficult,” she adds.

The shutting down of slaughterhouses in India, particularly in Uttar Pradesh, has hit hard the Nepalese farmers as well. “Uttar Pradesh closed a number of slaughterhouses after the new government came to power, so our stray cattle is no longer being supplied there,” says Sher Bahadur who works with a government-owned newspaper in Dhangadhi. Cattle slaughter is banned in Nepal as well. The thriving business in India helped the traders of Nepal earn from unproductive cattle. Closed slaughter houses in India and stray cattle dumped into the farms of Nepal are causing double economic losses to the Nepalese farmers.

To meet the challenge, the Nepal government is spending a huge amount of money on building cow shelters in Dhangadhi, Attaria, Bhumdutt, Shukla Kanta, Lamki and Tikapur municipalities. “Nepalese ₹10 crore has been allocated for cowsheds and their management,” says Lokendra Bist, senior journalist based in Dhangadhi town. “The money would have, otherwise, been spent to construct 50 km of roads in rural areas,” he says.

As if the sufferings of cattle rearers were not enough, the state governments in India are putting in place laws to penalise farmers for abandoning cattle. The Madhya Pradesh government has made abandonment of cows an offence and punishable under the Indian Penal Code. District collectors have the power to book cow owners. In Haryana,

people have to pay a penalty of ₹5,100 for abandoning cows. Recently, Uttar Pradesh chief minister Yogi Adityanath ordered district collectors to initiate action against people after they locked up stray cattle on government premises.

The Uttar Pradesh government has allocated ₹11 crore to each municipality corporation to manage stray cattle. The state also has a committee headed by the Chief Secretary to evolve a financial package on stray cattle management. The Madhya Pradesh assembly has been debating the stray cattle menace and widespread crop damage in drought-prone areas like Bundelkhand. Haryana, which aimed to be the first stray cattle-free state by August 2015, plans to offload them to Madhya Pradesh.

The big question is if the government’s efforts to “conserve” cows will actually do so. What seems more likely is that constant restrictions based purely on “faith” and “sentiments” will turn cow into a pariah breed. Cattle rearers are showing clear signs of quitting the economically important trade. Punishing those who abandon cattle would be the proverbial last nail on the coffin.

Cattle are abandoned after they cross their productive age and become economically unviable. The best option for cattle rearers is to sell them. They least bother about what the buyers do with the cattle. With restrictions on trade, owners take the easy way out and abandon them. With even abandoning them becoming illegal, it is most likely that people will stop purchasing cattle altogether, thus putting an end to a flourishing trade for the poor. ■

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It's all about gut

Studies across the globe have linked gut microbes with protection from diseases, but data on Indian intestinal microbe diversity is in short supply

AKSHIT SANGOMLA

THERE IS a surge across the world in studies on human microbiome—the community of microorganisms, mostly bacteria, that lives in intestines. Gut microbiome is essential for digestion, nutrition, immune system maturation and the overall health of an individual, and there have been several studies that link changes in gut flora with almost all major diseases.

Sample these. A study published online in *Clinical Gastroenterology and Hepatology*, the clinical practical journal of the American Gastroenterological Association, in October 2018 says that gut bacteria have an impact on an individual's brain. It finds that there is a communication channel with neural, endocrine and inflammatory mechanisms between a person's gut and brain. A major part of this channel gets established in the first three years of life but can get influenced later by diet, medication and stress.

Another study, published online in the same journal in July 2018, says that environmental conditions affect the health of the microbiome which can, in turn, lead to colorectal cancer. Alterations in the microbiome induce changes in the expression of genes, the process of metabolism and the immune response of an individual. All these are crucial for the development

and propagation of the cancer.

Another report published in a supplement of *Nature* in March 2018 says that poor gut health of a baby can

be linked with the onset of diseases like diabetes later in life. It says that without the microorganisms that are transferred from a mother to her new-



born and the ones that it picks up after birth, the baby's very survival could be in jeopardy.

The second genome

The high variability in the composition and characteristics of gut microbiome—which vary on the basis of age, gender, genetics, diets and environmental conditions—have led experts to call gut microbiome the second human genome. Owing to India's ethnic and geographical diversity, the gut flora of the people here should be a mine of

information. Studies have also indicated that microbiomes of different communities are different and the effectiveness of therapies depends on knowing the unique gut bacteria profile of the individual. But little is known about the gut microflora of Indians. The most expansive research on Indian gut microbiome, published in October 2018 in *Nature*, found 993 microorganisms unique to the Indian population. The researchers studied 1,004 individuals in 18 geographical locations across the major regions of the

Haryana. Das' group is now working on isolating indigenous Indian probiotic bacteria from gut, vaginal and stomach samples. The lack of knowledge of indigenous probiotic bacteria has led to the Indian market getting flooded with probiotic drinks such as Yakult, based on bacteria from other countries like Japan.

However, research establishments have recently taken steps to address this. The Council of Scientific and Industrial Research (CSIR) is seeking government's approval to create a representative healthy Indian gut microbiome at a cost of ₹150 crore. "The project proposal has undergone two rounds of review and is expected to be cleared in the current financial year," says Yogesh Shouche, lead coordinator of the project and senior microbiologist at the National Centre for Cell Science, Pune.

The project will also involve some ethnic groups in the tribal areas which have not been exposed to modern lifestyles and environments. Studying their microbiomes will throw light on what an Indian microbiome would look like without the impacts that the modern world has accorded us.

"Most of the modern human diseases have been linked to human microbiomes, especially the ones present in the human intestines or the gut. The research conducted in the last 10 years has thrown up correlations between various diseases and the microbes in the gut. These include metabolism-related diseases like irritable bowel syndrome, heart disorders and even brain-related diseases like Alzheimer's and schizophrenia," says G Rajamohan, senior scientist at the Institute of Microbial Technology, Chandigarh. "The microbiome in the gut could even turn out to be the master regulator that controls diseases or the main switchboard that is controlled by diseases," Rajamohan adds. ■

[@aks7489](#)

Microbes of different communities are different and the effectiveness of therapies depends on knowing the unique gut bacteria profile of the individual



country. It shows the high diversity of gut flora in the Indian population.

Such differences are crucial because even within the country there are differences that need to be understood. For example, a paper published in *Nature* in July 2018, talks about gut microbiomes in people living in rural and urban areas of Ballabgarh in Haryana and Leh and Ladakh regions of Jammu and Kashmir. It says that the gut bacteria of people in high altitude regions like Leh have less diversity but a greater number of beneficial anti-inflammatory bacteria as compared to the people living in the plains. It also says that the gut microbiomes of people in rural areas are much more diverse and similar to each other as compared to people living in urban areas. This understanding can help in identifying ideal subject donor for faecal microbiome transplants which are now picking up pace in India. "The ideal donor should have minimum number of inflammatory bacteria which was seen in the people of rural Leh," says Bhabatosh Das, lead author of the paper and senior scientist at the Translational Health Science and Technology Institute, Faridabad,



Try some salt, fresh and seasoned

Uttarakhand's age-old flavoured salts loaded with micronutrients are not only a healthy option, but can also tickle your taste buds

MEGHA PRAKASH

DEHRADUN

SALT CAN add piquancy to any food. But is there something that can add colour and freshness to this pale edible mineral and enhance its taste? Ask people of Uttarakhand and they will tell you a myriad ways of doing so. "I remember my mother preparing a variety of flavoured salts," says Vimala Rawat of Clement Town, Dehradun. "We call it *pisi loon*—salt ground with herbs and spices. And my all-time favourite is *daindoosa*—a pungent flavoured salt made with

mustard seeds and chilli. In winters, she used to spread *ghee* on chapatis, dust them with *daindoosa* and offer us as rolls. In summers, she would sprinkle it over fruits to prepare *chaat*," recalls Rawat. In fact, says Rekha Kothari from Dehradun's Shivanagar locality, most people in the region use *pisi loon* as a relish with *mandua* (finger millet) *ki chapati* or rice.

Though little historical evidence is available about how and when *pisi loon* became a part of *pahadi* cuisine,

PHOTOGRAPHS: MEGHA PRAKASH



Traditionally *pisi loon* was made using rock salt or Himalayan pink salt, that come loaded with micronutrients



Rekha Kothari's *pisi loon* now sells in the international market

people offer their own theories. Rawat says people in the hills tend to consume less water in winters. Since salt induces thirst, making it part of the diet could be a way of ensuring hydration. Then there are others who believe it is a way of adding herbs to one's daily diet. Garlic, cumin seeds, ginger and carom seeds, which aid in digestion, are common ingredients in *pisi loon*. Kothari, however, says the enhanced taste and flavour of *pisi loon* is the reason behind its popularity. "In several households, it is served as a side dish, particularly during the lean season when vegetable supplies become scanty." Every day after finishing household chores, Kothari returns to her *sil-batta* (grinding stone) to prepare *pisi loon* of varied flavours. While earlier, she used to prepare it for her family, these days she supplies it to stores catering to its growing demand beyond the hills.

@namakwali

This is the Instagram handle of Kothari whose flavoured salt has reached the

international market through Mahila Navjagran Samiti (MVS), a non-profit in Dehradun. "MVS supplies the raw material and pays me ₹100 for preparing a kilogram of *pisi loon*. This has not only added to our income but has earned me respect. Several others now approach me for *pisi loon*," she says.

In nearby Haldwani city, Rakesh Joshi and his wife Kiran run a self-help group that prepares 10 varieties of flavoured salt. "We had exhibited the products at a recent fair and received good response from people. *Hara namak*, a mix of green coriander, mint and garlic, was the fastest selling one," says Kiran.

Realising the potential, two online retailers have started selling flavoured salts. While Paharivirasat sells *bhaang* (Indian hemp) *ka namak* and *lehsun* (garlic) *ka namak*, Ejafoods deals with four flavours. Birendra Matiyali, co-owner of Ejafoods, says to ensure livelihood opportunity to village women through this traditional culinary art, they have joined hands with Himalayan Flavoured Salts (HFS), a venture in Kakrighat village along the Khairna-Almora Highway that sources its herbs and spices from women farmers in nearby areas. "Lakhori yellow chilli salt is made from a chilli native to the hills, and is named after a village Lakhora in Almora district. Since we have started procuring it, the chilli is being grown in villages near Nainital," says Deepa Khanayat Negi, the brain behind HFS. "Women in nearby villages have started growing mint, coriander, ginger, garlic, sesame seeds, *bhang* seeds and *bhangjeera* spice following our demand. We directly buy the produce from the farmers so that they save on the transport cost," quips Negi.

Taking a step further Ejafoods is now exploring whether to sell products made of packaged table salt or those made of rock and sea salts, which were traditionally used in *pahadi*

RECIPE

Daindoosa

INGREDIENTS

Mustard seeds: 3-4 spoons
Sea salt or rock salt: 1-2 spoons (powdered)
Red chillies (roasted): 2-3

METHOD

Roast mustard seeds on a flat-bottomed pan over medium heat till they splutter. Let it cool. Grind it with the other ingredients on a grinding stone. Store it in an air-tight glass jar. Serve along with ghee as an accompaniment to rice or chapati.

Lehsun ka namak

INGREDIENTS

Fresh garlic leaves: a few strands
Green chillies: 2-3 (preferably pahadi green chilli)
Coriander leaves: a few twigs
Ginger: 1 inch
Cumin seeds: 1 teaspoon
Sea salt or rock salt: 1-2 spoons (powdered)

METHOD

Grind all ingredients together. The paste can be spread over cucumber and other fruits to prepare chaat. It can also be dried in the sun and stored for a month. Mix it with ghee and serve with rice or chapati.

cuisine. "Since packaged salt is easily available and comes in powdered form, most people prefer using it in *pisi loon*," says Matiyali. His concern stems from studies that say rock salt comes loaded with micronutrients. Himalayan pink salt contains 88 micronutrients and using table salt denies the user of these benefits. Processed, packaged salts lack these micronutrients. As the jury's still out, Rawat suggests consuming freshly ground *pisi loon* with unprocessed salt. It not only gives the condiment a coarse texture but also enhances its aroma. ■

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‘Capital lies with a few, power with the masses’

Soon after Independence, a good 350 newspapers started as a cooperative venture. But only *Janmorcha*, published from Faizabad in Uttar Pradesh, has managed to survive. Its editor **SHEETLA SINGH** fearlessly wages a battle against the government which has made five attempts to shut the newspaper down. **ANIL ASHWANI SHARMA** spoke to the 87-year-old sentinel of cooperative journalism about the perils of newspaper publishing in the country

Why did you join journalism?

I entered journalism in 1958. The aim was to serve the masses and turn it into a vehicle of awareness and a means of protecting democracy.

How did you think of bringing out a newspaper as a cooperative?

In 1954, the Press Commission published a report which pointed at the threat capitalism posed to journalism and freedom of expression. It stated



RAM SEVAK

that cooperative newspapers could be the only solution. I was greatly influenced by it and started working in that direction.

Janmorcha will soon turn 60, but are there other newspapers that run on the cooperative model?

A survey was conducted in 1985 which found 247 newspapers in the country operating as cooperative. Sadly, none managed to survive. Other mediums are trying to use cooperative a profit-making tool. *Janmorcha* has never taken money from the government, nor has any of its member taken shares worth more than ₹10,000. Journalists of this institution have the sole aim of working for the country. We have spread our reach to Bareilly, Prayagraj, Lucknow and Faizabad.

What is the biggest challenge for cooperative newspapers?

There are three reasons why other newspapers could not survive—lack of resources, lack of willpower and lack of entrepreneurial acumen. Those who have the resources work as the biggest hindrance. They sell newspapers at a price much lower than the cost price. People like us are unable to compete because we cannot bear the losses and eventually perish.

So is capital the biggest threat?

In these times of globalisation, capital is a big deciding factor. Therefore, we are not in a position to do away with social disparities. But this does not mean that the situation will not change. People will get fed up of these disparities and root for change. The supremacy of capital does not scare me. While capital is accumulated with a handful of people, the masses have unlimited power. We must never forget this fact.

What is the biggest resource for a cooperative newspaper?

Credibility is our biggest capital. What one writes, speaks or thinks does not matter till one forcefully stands by them. This is paramount to the spirit of cooperation and imparts credibility to our movement.

The first Press Commission on journalism had set a few benchmarks. Were these adhered to?

The Press Commission had stated that not more than one-third of a newspaper should comprise advertisements, else it would turn into an advertisement-paper. Newspapers did not adhere to it. The prices are also not uniform and sell for ₹2, ₹3 and even for ₹4. A newspaper should be sold at the cost

"Other mediums are trying to use cooperative as a profit-making tool. *Janmorcha* has never taken money from the government, nor has any member taken shares worth more than ₹10,000. Journalists of this institution have the sole aim of working for the country"

of its production. So newspapers with fewer resources battle for survival.

Is the Cooperative Societies Act, 1912 lacking in any way?

The Act gives unlimited powers to the registrar. This helped the government make attempts to take over my newspaper not once, but on five occasions. We emerged victorious every time owing to our firm conviction. We did have to move the high court and the Supreme Court for this. Questions were raised in Parliament as well. We want the registrar who is a judge in some court.

How did the government try to take over your newspaper?

We were working as per the rules. But the government suddenly changed the election term from five to two years and said we had not conducted elections. We expressed our inability to comply owing to the sudden change. If

a change was to be made, we should have been informed in advance.

Does the government do nothing to promote cooperative societies?

According to the Cooperative Act, promotion of cooperatives is government's duty. But not a single newspaper has benefited from this.

Who would you credit for this 60-year battle for cooperative journalism?

The credit definitely goes to my colleagues. Their belief in me has enabled me to keep working to this day. The newspaper is now ready to install its second printing machine. At present, we have capital wealth of ₹5 crore.

Has GST affected cooperative newspapers?

Yes, we had to pay ₹3 lakhs as GST. The legalities are not really in our favour. There are newspapers which indulge in private businesses using private capital. They have vested interests and should be banned. They harm cooperative journalism. There should be a system to check that people who publish newspapers do not indulge in any other business. We should not forget that journalism is a public service.

Should media be guided by ideologies?

Journalists should never support ideologies. They should place facts and opinions in an unbiased way.

Has your journalism been influenced by the Leftist ideals?

Never. After I joined journalism, I devoted myself to it. ■

 @down2earthindia



Reign over rain

Rainfall deficit can be a challenge as well as an opportunity. Last year, Dhanbad faced a rainfall deficit of 60 per cent. **EKLAVYA PRASAD** narrates his personal experience of catching rainwater where it falls in his home, Uttarayan. By constructing rainwater harvesting structures, Uttarayan not only showed the way to address urban water scarcity, it also helped recharge groundwater with 1.06 million litres of rainwater



By constructing numerous rainwater structures, Uttarayan in Dhanbad was able to harvest 3.66 million litres from just 2,819 sq m of rooftop and paved surface area



PHOTOGRAPHS: EKLAHYA PRASAD

WHEN I was a child, the dug well in my home, Uttarayan, in Dhanbad, Jharkhand, was the most captivating landscape, especially during the monsoon. During this period, the dug well would be brimming with water. It used to be a mesmerising sight when the dug well would overflow. But for the past two decades, this phenomenon has ceased, and so has the incessant charm of the dug well. While researching, I found that this was not just my home's story; it was the recurring narrative for the entire Dhanbad city. I also found that the reason for the decline in dug wells as well as groundwater was the domination of tube wells over traditional sources of water. For uninterrupted water supply, residents were extracting groundwater from greater depths.

An interesting development took place in May 2017. The Gang of 20—Future Water Leaders from Carmel School, Dhanbad, under the Participatory Action Research on Urban Groundwater—in collaboration with Megh Pyne Abhiyan, a Delhi-based non-profit working in Bihar and Jharkhand, conducted a survey of 734 households. The survey found that a majority (about 65 per cent) of residents were dependent on groundwater, followed by surface water (31 per cent). The dependence on both sources was 4 per cent.

We decided to harvest rainwater due to four reasons. The first was the conclusion of the survey that found overdependence on groundwater. The second reason was the continuous decline in groundwater levels. The third reason was that in Dhanbad, the average annual rainfall was 1,306 mm, according to the Central Water Groundwater Board and the India Metrological Department. And the fourth important reason was that there was no mention of rainwater anywhere

in Dhanbad's water sources.

To ascertain the value as well as to demonstrate the ramification of rainwater harvesting, rooftop rainwater harvesting was implemented at Uttarayan. Uttarayan has 2,819 sq m of rooftop and paved surface area, with the potential to harvest 3.66 million litres of rainwater. In 2018, while Dhanbad was hit by an acute water stress, Uttarayan was able to harvest rainwater and recharge groundwater levels.

From June 3 to October 12, 2018, Uttarayan received 49 days of rainfall (528 mm), of which 1.06 million litres of rainwater was harvested, and all of it was utilised to recharge groundwater. Even with a 60 per cent rainfall deficit, Uttarayan recharged the groundwater with 1.06 million litres of rainwater, and if the harvested rainwater was stored then it could ensure availability of 2,922 litres of water per day for the entire year—all from 2,249 sq m of rooftops.

According to the Central Public Health & Environmental Engineering Organization, urban residents consume 70 litres per capita per day (lpcd), without the sewage system. With the prescribed water supply criteria, the rainwater harvested by Uttarayan has the capacity to provide water to 42 households throughout the year. But if Uttarayan could harvest rainwater according to its capacity, it can provide water to about 130 households annually. This is the potential of rainwater harvesting.

Challenges ahead

In 2018, Dhanbad was hit by acute water crisis. The problem lasted from late April to the end of June. The reason for this shortage was erratic surface water supply as well as depleting groundwater levels. And herein lies a paradox. Let's understand this so-called "water shortage". Of the 220,783 households residing in



Among the techniques employed to harvest rainwater and recharge groundwater, water channels were dug and pumps were installed

Dhanbad Municipal Corporation (DMC) area, only 47,641 households (about 21.57 per cent) have access to piped water. According to the Service Level Improvement Plans and State Annual Action Plan, the water supplied to DMC is 98 lpcd at present, which is about 24.2 million litres per day (MLD) for an estimated population of 247,733 persons (average household size of 5.2 persons).

But on paper, DMC has more than enough capacity to meet the demand. The installed capacity of the six water treatment plants (WTPs) in DMC is 356.60 MLD and the utilised capacity is 110.50 MLD. What's ironic is that the total water supply is a measly 24.2 MLD! The water shortage was so severe that there were demonstrations held across the city. How can there be scarcity despite the available resources?

According to the Master Plan 2041 of Dhanbad, the estimated population in 2041 will be about 1.4 million and the requirement of water for domestic and non-domestic use would be 226.80 MLD at 155 lpcd as per the norms of the Ministry of Housing and Urban Development. The present installed capacity of WTPs, which is 356.60 MLD will remain appropriate in 2041 and beyond, keeping in view the total domestic and non-domestic use.

If that is the case then why is an additional 143 MLD capacity being created under the Jawaharlal Nehru National Urban Renewal Mission and the Department of Drinking Water and Sanitation?

Moreover, there is a definitive need to better understand why there is a gap of 246.1 MLD between the installed capacity and utilised capacity. And when the installed capacity exceeds the

utilised capacity, then what measures have been taken to ensure that water scarcity does not occur again.

On the other hand, according to the 2017 document of the Urban Development & Housing Department, Government of Jharkhand, DMC is spread across an area of 275 sq km. Even if we consider that half of this area is appropriate for harvesting rainwater, with approximately 60 per cent of runoff, the total capacity of rainwater that can be harvested in the DMC area annually is about 293.8 MLD. Whereas, according to the Master Plan 2041, the estimated requirement of water for domestic and non-domestic use would be 226.8 MLD.

If rainwater harvesting alone has the capacity to address the water requirements of Dhanbad, then why is it being ignored? ■

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ENVIRONMENTAL MANAGEMENT IN INDUSTRIES

TRAINING PROGRAMME

February 5-8, 2019

Environmental issues like climate change, water availability, pollution, waste generation and disposal are commanding considerable global attention. Industries, as a major user of raw materials and energy and source of pollution and waste generation, have a major role in addressing current and emerging environmental issues. Environment managers in industry have a challenging task to keep industry clean, competitive and compliant with national and international rules, Acts and treaties.

Centre for Science and Environment (CSE) had been conducting training programme to build capacity in industry for the past two decades and has trained hundreds of environment managers. This time a four-day training programme is scheduled in February, 2019 in New Delhi.

The takeaway from this training programme includes improved understanding for participants on:

1. Environmental Laws for better compliance;
2. Roles and responsibilities of environment managers to comply with such legal requirements and strengthening self regulation mechanism;
3. Processes and procedures to obtain environment and forest clearance, Consent to Establish (CTE), Consents to Operate (CTO), authorization for hazardous wastes and other clearances/licenses;
4. Implementation of Continuous Emission Monitoring System (CEMS);
5. Environment, Health and Safety (EHS) Management System and its implementation;
6. Protocol for conducting environmental audit for improving resource management;
7. Understanding sustainability reporting as per GRI G4 guidelines and
8. How to review Environmental and Social impact assessment report.

FOR REGISTRATIONS mail at: ishita.garg@cseindia.org

COURSE FEES

Rs 23,000/- per participant for Double occupancy accomodation
Rs 30,000/- per participant for single occupancy accomodation
(Fees includes training material, boarding and lodging, travel from New Delhi to AAETI and back)

COURSE DURATION

February 5-8, 2019

COURSE VENUE

Anil Agarwal Environment Training Institute (AAETI), Nimli, Rajasthan

LAST DATE FOR APPLYING

January 25, 2019

OPEN FOR ALL

Industry professionals such as Environment Managers; Production Managers; Health Safety and Environment Experts; Environment Auditors; Environment Consultants and Environment Engineers





Jamdani, naturally

How the women of Burdwan and Nadia districts in West Bengal weave magic, turning raw cotton into niche and ‘climate-friendly’ Jamdani

MOUSHUMI BASU

A COUPLE OF years ago 30-year-old Lokkhimoni Das, from Bagila village of West Bengal’s Burdwan district, was a content homemaker. While her husband toiled in their 1-1.5 *bighe* (0.12-0.16 hectare) agricultural plot, she leisurely caught fish from community ponds, chased domestic cattle, and did some weaving on the family loom. But climate change has reshaped the lives of the people of Burdwan and Nadia districts. “I am able to sustain my family with my traditional knowledge of weaving,” says Das.

Ponds have silted and shrunk in size, causing native fish to disappear. “Rains have become erratic—they get delayed, are insufficient or in excess. Agriculture is also getting uncertain. So my husband has to scout to distant states for work,” she says. Other farmers have resorted to chemical-intensive farming of high-yielding paddy. This is ruining the biodiversity of agricultural fields and ponds that provided food to cattle.

Like Das, about 60 women from at least a dozen neighbouring villages have started weaving “climate-friend-



MOUSHUMI BASU

A weaver makes white muslin on her pit loom in Burdwan district of West Bengal

Making of the yarn

MGGSS began its own story in 2010 at Kolkata by collaborating with different organisations across the country to hand-hold women weavers.

MGGSS, which functions under the brand name of Sutrakara, purchases 200 kilogrammes of raw yarn every month from Gram Seva Mandal at Wardha in Maharashtra. The yarn comes from the cotton grown naturally in Akola district of Maharashtra. Here, marginalised farmers work with Chetna Organic, a non-profit engaged in ecological farming in Odisha and Andhra Pradesh apart from Maharashtra.

In Akola, 92 small and marginal farmers, including 15 women, cultivate *desi* cotton in 115 hectares across seven villages, says Rahul Bole, state coordinator of Chetna Organic. Each farmer, holding 1 to 2 hectares, produces 4 to 5 quintals (400 to 500 kg) of short staple cotton per acre (0.5 hectare). "We buy almost 80 per cent of their produce at ₹6,000 per quintal. This is ₹600-₹800 more than the open market. We are ready to pay more because *desi* cotton ensures 40 per cent better recovery of seed and lint than the hybrid variety," says Bole. Cotton harvested from the last picking season is poor in quality and quantity. It is sold in the open market at ₹5,000 per quintal.

"The farmers use natural manure such as cow-dung, cow's urine and other homemade fertilisers. They use *neem* as pesticide, and natural soil enrichment processes such as crop rotation, legume mixed cropping and timely weeding. The natural environment of soil and its biodiversity is thus, retained," says Ashok Kumar Mahavadi, agronomist with Chetna

Organic. This is how the organisation avoids the cultivation of chemical-intensive Bt cotton, largely grown in the rest of the country.

A part of the *desi* yarn procured by Sutrakara is sent for dyeing to Wrukshatone, a non-profit based in Erode, Tamil Nadu. "They use faster and brighter colours derived from reliable natural sources. Wrukshatone has the skill and knowledge to provide one of the best dyed yarns in the country. Low humidity in Erode is ideal for the yarn to dry faster than in the eastern part of the country," says Rubi, explaining why Chetna Organic prefers to work with Wrukshatone despite the distance. "Having worked together for over four years we trust that the dye used is natural. This is important as it determines our ultimate credibility among customers," she adds.

Raw yarn is soaked in concentrated solution of *reetha*, or soap nut, and left for two days to get rid of external impurities such as oil, fat and wax, explains A Sivaraj, co-founder of Wrukshatone. After washing, the fabric is ready for dyeing with plant products such as flowers, leaves, seeds and tree barks. Dried *Delphinium* flowers are processed for reddish blue shade, the bright golden yellow tone is achieved by using marigold petals, bell shaped flowers of *Tacoma* lend the lemon yellow shade.

"We use 18 such raw materials that are mostly provided by the local forest communities. Each kilogramme of dried leaves, flowers or other plant parts are bought for ₹2,500-₹3,000," says Sivaraj. Rare flowers bloom once a year. For instance, *Delphinium* flowers from December-end to February in Ooty and Kodaikanal. Wrukshatone buys 35 to 50 kilogramme of the flower, even if it is at a higher price.

Nearly 100 kilogrammes of naturally grown forest flowers can yield 8 to 10 kgs of dye. "The output is much higher from such flowers," says Sivaraj.

ly" cotton to earn their living. "The cotton they weave is short stapled, which can flourish only with natural fertilisers and pesticides," says Rubi Rakshit, co-founder of non-profit M G Gram Udyog Seva Sansthan (MGGSS).

The non-profit mentors the 60 women to make eco-friendly fabric. Their work needs no electricity, and very little natural resources. Even the raw cotton they use is grown, processed and dyed naturally. In their own small way, they contribute to mitigate the impact of climate change, and leave no or minimum carbon footprints.

Kolkata-based M G Gram Udyog Seva Sansthan collaborates with different organisations across the country and mentors about 60 women affected by climate change to earn a living by making green fabric



Yarn is cleaned, strengthened, dried and straightened on drum-like wooden structures

The organisation coordinates with the local communities of 10 to 12 villages in Tamil Nadu and nearby areas.

“Even the colour fixer, called *navchar*, is natural. It is prepared from the waste of grass-eating animals such as cow, goat, camel, deer, or the waste of paddy, wheat, millet and lentil,” says A Thirumurugan, also the co-founder of Wrukshatone. *Navchar* is manufactured in Rajasthan but procured from the local traders of Madurai.

Two kilogrammes of *navchar* is added to obtain light colours in a 15-kg yarn, and 5 kg is used for dark colours of the same quantity, he says. Wrukshatone uses 100 kgs of the colour in one month, one kg costing between ₹125 and ₹150. In all, the company invests ₹500 to dye one kilogramme of yarn, and sells it between ₹600 and ₹700 to customers such as Sutrakara. The water released after dyeing is rich in potassium and other nutrients due to the addition of natural derivatives, which in turn, enriches the soil. The yarn then, comes to the women weavers of Bengal.

To prepare the yarn for the loom, it is soaked in limewater for two days for

softening and cleansing. “We avoid chemicals and use lemon for its mild acidic property,” says Notuba Bibi of Bagdanga village in Nadia.

After drying, the yarn is kneaded in a stone bowl with a starch solution of both cooked and puffed rice. “This provides strength to the yarn to withstand the rigours of weaving,” she adds. This practice is exclusive to West Bengal. The yarn is then left to dry for at least two days. It is reeled on the traditional drum-like wooden structure. Finally, the yarn is ready for weaving.

On the loom

It is a visual treat to watch women weave magic with multiple hues of yarn in pit looms. These lie two feet below the ground and are operated by feet. “Our communion with mother Earth is essential because our work requires tremendous mental composure and concentration, which she alone can provide,” says Neelima Pramanik of Deideipara village in Nadia. The weavers make fine muslin or coarse cotton fabrics that are embellished with ethnic and exquisite Jamdani motifs, part of Bengal’s heritage.

Depending upon the design, two weavers may be seen working on one loom. While one weaves the fabric, the other deftly crafts designs on it by sequencing threads using special needles usually made from the wood of tamarind tree. The final output can be a saree, dress material or a stole. A typical Jamdani saree, costing between ₹12,000 and ₹24,000, can take up to 25 days to complete. But the weaver earns only ₹4,000 to ₹5,000 per month for this. Though every weaver agrees that the income does not match their hard work and time, their priority is to procure work orders. “Weavers’ income must be at par with the price of their products to make the work sustainable,” says MGGSS co-founder Arup Rakshit and Rubi’s husband.

MGGSS is now working on strategies to market these green fabrics. “The products are niche, eco-friendly and good in terms of texture, design and colour. They can find buyers in pan Indian markets,” says Nalini Pandey, alumni of the National Institute of Fashion Technology. She runs Fashion Studio, a store in Nagpur that sells branded clothes, and has been a Sutrakara customer for two years.

The products find market in various textile fairs, and rural and urban *haats*. They are also sold online and promoted through social media and other outreach platforms by Rubi’s daughter Prerona Rakshit.

Now, Rubi aims to nurture weavers’ skills by involving them in new training programmes. A trained spinner herself, she not only teaches rural women to spin yarn from short stapled cotton, but also coaches them on the upcoming trends on colour, design and texture of the fabric.

The underlying message at the heart of MGGSS’ efforts is to make a unified effort to provide organic fabric to all while also fighting climate change, says Rubi. ■

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TRAINING PROGRAMME ON CORPORATE SOCIAL RESPONSIBILITY (CSR) AND BEYOND

Centre for Science and Environment (CSE) is pleased to invite you to a four-day Residential training programme at the Anil Agarwal Environment Training Institute (AAETI), Nimli, Rajasthan, on 'Corporate Social Responsibility (CSR) and Beyond' to be held from February 19 to 22, 2019.

CSE recognises CSR as a key component of inclusive and responsible businesses. In view of CSR (addressing and reporting) becoming mandatory, it is desirable for all stakeholders to formulate a CSR policy, and implement and monitor its effectiveness. This training programme is designed based on the provisions of the Act and Rules. It aims to give practical exposure on CSR to the participants, with specific references to the regulatory framework and processes to formulate policies—need-based assessment, stakeholder engagement, methodologies for implementation, performance evaluation and statutory reporting.

Alongside, the programme will go beyond the 2% expenditure on social - environmental initiatives and cover numerous aspects of the Business Responsibility Reporting (BRR), National Voluntary Guidelines (updated), Responsible Financing and similar international practices.

The objective of the training programme is to build a cadre of professionals who would assist in effective development and implementation of CSR and related activities of organizations for development that is sustainable in nature. This training programme would be relevant to the CSR leaders, senior and middle-level managers, practitioners and implementation partners, NGOs, students, etc.

WHAT IS THE TAKE AWAY FOR THE PARTICIPANTS FROM THIS PROGRAMME?

1. Regulatory Framework for CSR—Companies Act 2013 and CSR Rules 2014, international guidelines and best practices
2. CSR Implementation status—Challenges, risks, and learning
3. Approach for identification of CSR activities through needs assessment
4. Developing CSR policy
5. CSR; sectors - renewable energy, sanitation, municipal solid waste management, etc.
6. CSR planning and implementation
7. Monitoring, measurement and evaluation of CSR activities for outputs and outcomes
8. Success stories in CSR in India
9. Assessment of capacity of implementing partners
10. Grievances redress (processes and practices)
11. Reporting guidelines
12. Inclusive and sustainable businesses

TRAINING METHODOLOGY:

Lectures, case studies, class exercises, discussions, and site visit

COURSE DURATION

February 19 to 22, 2019

COURSE VENUE

Anil Agarwal Environment Training Institute (AAETI), Nimli (Alwar), Rajasthan

COURSE FEES

(inclusive of tuition fees, accommodation, food and local travel):

Double room

Rs. 23,000/- per person

Single room

Rs. 28,000/- per person

LAST DATE FOR APPLYING

February 13, 2019

OPEN FOR ALL

CSR practitioners, officials from companies, PSUs, consultants, academicians, students, NGOs and other

FOR REGISTRATION MAIL AT:

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COURSE COORDINATOR:

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Anthropocene in the Arctic

A behind the scenes account of how the scientific community came to terms with the changing landscape of the Arctic

ANANT MISRA



.....
BRAVE NEW
ARCTIC

Mark C Serreze

Princeton University

Press | 264 pages | \$18.27
.....

BUT THE Arctic tells no lies”. It is with these words that Mark C Serreze closes the last chapter of his book, *Brave New Arctic*. The words are at once mournful as well as menacing. What makes them truly ominous is that throughout the book, Serreze’s tone remains neutral and matter-of-fact, sometimes painfully so. Soon after discussing the declining population of polar bears—which he takes care to point out is due to a variety of factors—Serreze cheerfully mentions that bowhead whales are actually doing quite well as the loss in sea-ice has led to a bounty of food supply.

As is evident from the aforementioned example, climate change is a complex phenomenon—one whose effects are still not entirely understood even by those who have spent a lifetime studying it. It is this complexity which drives the book and comes across as its most prominent theme. Serreze is forthright in admitting that throughout the 1990s



and early 2000s, the scientific community was not clear on how to best distinguish human footprints of global warming from natural climate variability. This was mostly due to unreliable accounts and records which did not go far back enough to provide sufficient data for mapping climate change. The biggest challenge for scientists, therefore, has been to study a phenomenon that stretches across the entire planet in spatial terms, and has probably been underway before any well-recorded, objective study of climate patterns existed.

It was only around 1996-97 that scientists of various disciplines studying the Arctic started organising in official/unofficial groups to pool their resources and expertise. A prominent example being the “atmospheric reanalysis” efforts, which primarily entailed the collation of all available historical atmospheric information into a numerical weather model—thereby connecting small, isolated instances of climate change to a larger pattern.

It is through such descriptions that Serreze provides a chronological account of how research on the Arctic—and by extension global warming as a whole—evolved over the last two decades. He discusses important studies and major breakthroughs that have paved the way to our present understanding of the Arctic. In a way, the biggest achievement of the book lies in its ability to showcase the messiness and imperfections of scientific research. It provides a behind the scenes account of how the production of knowledge takes place with each new study building on earlier works until the cumulative weight of research reaches a critical threshold that turns a theory into a widely accepted “fact”. And therein lies the irony too, for it is hard to find any other modern scientific “fact” facing as much denial and backlash as climate change. Perhaps astutely, the author delves into the politics of climate change only briefly towards the end of the book to highlight the significance of public involvement and government support for independent academic research.

At its heart, *Brave New Arctic* remains a personal narrative of the author as he got over his ambivalence and doubts to take a publicised stand in 2008 about the Arctic sea-ice cover being in a “death spiral”. Serreze captures his desperation of getting the word out when while testifying to a US Senate Committee, he shed all nuance and doubt to declare that global warming was indeed the culprit behind the decline in sea-ice cover. A statement he later justified by saying, “When speaking to the hard of hearing, one should speak a little louder.” Given the lukewarm reaction to the recent Intergovernmental Panel on Climate Change’s special report, *Global Warming of 1.5°C*, one wonders if Serreze was loud enough. ■

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‘We’ve got to get out of our comfort zones’

MARK C SERREZE speaks to *Down To Earth*

With respect to tackling climate change, the last few years seem to have taken us further back. How will this pan out in the future?

At least in some countries, notably the US, we do indeed seem to have taken steps backwards in recent years. Although there is a rough road ahead, I am optimistic that truth will prevail in the end. Scientists need to be much more effective and proactive in engaging with the public about the reality of climate change and its implications. Many of us are introverts and are comfortable just doing our science, but if we have to make more of an impact, we’ve got to get out of our comfort zones.



Do you feel the scientific community has not been aggressive enough?

While we need to be more aggressive—and we certainly have missed some opportunities—we need to be seen as honest brokers of data and information. Part of being honest is in acknowledging that there are uncertainties. If we ascribe every extreme event to climate change, we can come across as shrill and alarmist. The National Snow and Ice Data Center (www.nsidc.org) is a great example of a scientific organisation making effective use of the internet and the social media. The challenge is that unless one is steeped in the science, the scientific facts based on hard data can be very hard to separate from fiction and deliberate misrepresentation.

What are you working on now?

I’m working on a new book. I have always been interested in why people choose to become scientists. What I’m finding is that scientists have some very amusing stories about how they got to where they are, and I’m not above using these stories to poke a little fun at ourselves.

Love's labour

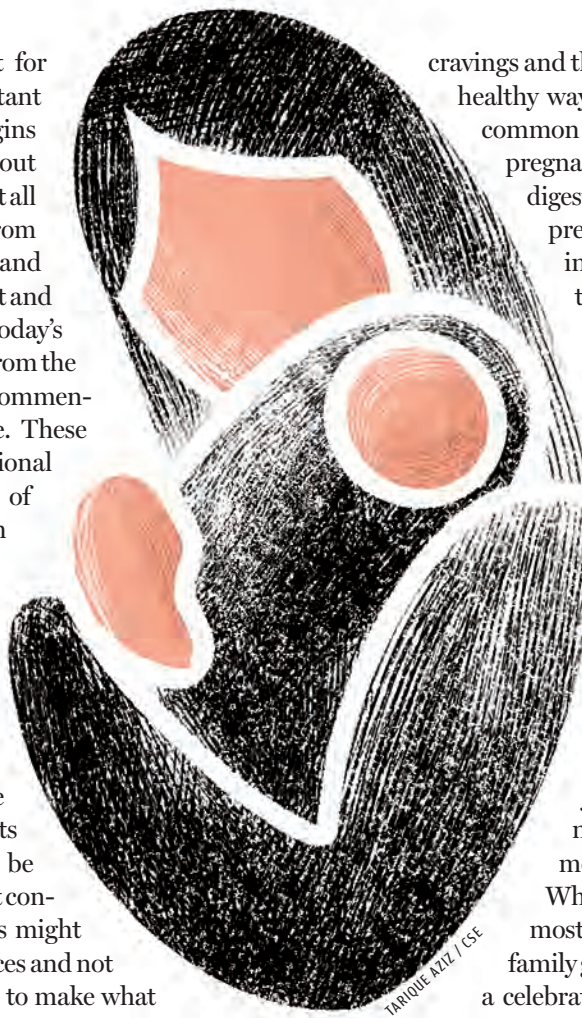
The traditional dishes that pregnant women eat for centuries

VIBHA VARSHNEY

EVERYONE WANTS the best for their child. For expectant mothers, this urge begins the moment she finds out that a baby is on the way. They get all kinds of advice from everyone—from their own mothers, relatives and friends—on what they should eat and what they should not. But in today's times, pregnant women live far from the folds of their families and recommendations are not easily available. These suggestions were based on traditional knowledge honed by centuries of experimentation, and modern day doctors do not have the comparable experience.

Nutritionists Sonal Chowdhary and Supriya Arun have tried to fill this gap in their book on traditional recipes for pregnant and lactating women. They have given the eating choices from different parts of the country—12 states to be specific—which are very relevant considering that expectant mothers might not be staying in their native places and not having access to the ingredients to make what their family recommends. The book provides 80 recipes along with sample diets to help the uninitiated and useful tips are sprinkled across the pages. The introduction provides an overview of the nutritional requirements during pregnancy.

The expectant mother is known to have strange

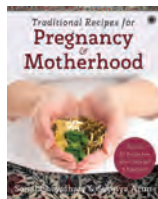


cravings and the book can help meet them in a healthy way. The book also has recipes for common problems that emanate during pregnancy. For example, disturbance in digestion is a common problem during pregnancy and many recipes have ingredients such as cumin seeds that aid the process. Other recipes can boost natural immunity, which is important considering that pregnant women are supposed to avoid medicines such as antibiotics.

Apart from the health benefits, the dishes are tasty too. In Uttar Pradesh, from where I come from, eating *harira* is common after childbirth. For the first three days, a concoction of dry ginger, carom seeds and cumin seeds roasted in *ghee* (to which jaggery and water) is given to the new mother. This recipe is then modified to include powdered nuts. While the new mother gets to eat most of this dish, other children in the family get a taste of it and this ends up as a celebration. Invariably, it increases the bond between the newborn and other children in the family.

The book also provides non-vegetarian recipes. The authors say that fish is more suitable during pregnancy than meat. Recipes like *surua puttlu* from Tamil Nadu, which is scrambled white shark fish, are easy to prepare and consume—1 cup each day can increase protein intake by as much as 25 grams. The book gives an overview of six superfoods—moringa, gum, turkey berry, sharavari, garlic and fenugreek that are a must for all mothers. Overall, the recipes can help meet the basic requirements of consuming a rich diet to ensure that sufficient calories are consumed for the development of the baby. ■

[@vibhavarshney](https://twitter.com/vibhavarshney)



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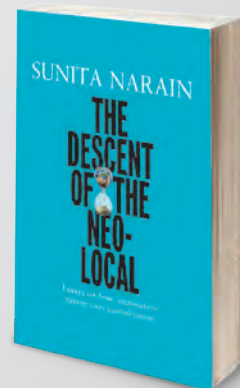
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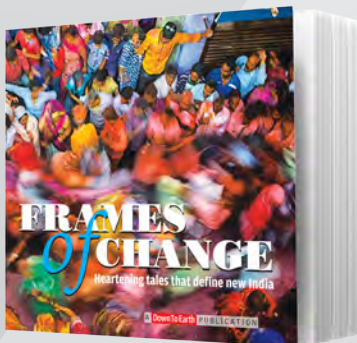
BOOKS



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PATENTLY ABSURD LATHA JISHNU

No worries? Ask Simba

A furore over Disney's trademark on the Swahili phrase *Hakuna Matata* heats up the cultural appropriation debate

HAKUNA MATATA. Some of us might remember Timon the meerkat and Pumbaa the warthog singing this curiously titled song in *The Lion King*, the 1994 Disney blockbuster. As Timon explains to Simba the lion cub, it means no worries, summing up the motto of their carefree life. This wonderful phrase, as Timon calls it, was no Disney invention but was borrowed from Africa's Swahili language. It's a language that's spoken by close to a 100 million people in over a half dozen countries in the continent. Yet, Disney thought fit to trademark the phrase after the popularity of the film and the song. If anyone could have done so legitimately it would be the Kenyan band Them Mushrooms which popularised *Hakuna Matata* in their 1982 hit song *Jambo Bwana*. But then, Them Mushrooms are artistes and do not possess the sharp business sense of US corporations.

Across the world there is outrage over the trademark with online petitions and scores of articles by African writers and activists inveighing against the cultural appropriation by Disney. Some have accused the famous film company of greed. Others have said it insulted "not only the spirit of the Swahili people, but also, of Africa as a whole". Why the furore now since the trademark was registered more than two decades ago? The reason for the tsunami of outrage that has built up since the end of December is the announcement by Disney that it will be releasing a live action remark of *The Lion King* later in 2019.

Intellectuals, too, have come out strongly in support of the campaign. Kenyan author Mũkoma Wa Ngũgĩ has asked if it is "cultural

appropriation or just good old fashioned exploitation". Cultural appropriation is a term used to the lifting of another culture's practices without consent, and covers a wide range of sins. In early 2018 an American high school student was accused of "cultural appropriation" for posting online photos of herself in a traditional Chinese cheongsam, or *qipao*, that she wore as a prom dress. That's as ridiculous as such controversies can get sometimes.

It's a different story with Disney. It clearly has a penchant for grabbing the intellectual property rights on anything that might yield a profit. Earlier, it had tried to trademark the name of a Mexican festival called *Dia de los Muertos*, which is Spanish for Day of the Dead, following the success of its film *Coco* which was themed around the festival. But in the wake of widespread protests the trademark quest was abandoned.

The company thinks the protests are overblown since the registration is only clothing. A spokesperson says: "Disney's registration for 'Hakuna Matata' T-shirts, which was filed in 1994, has never and will not prevent individuals from using the phrase. Indeed, for many years, trademarks have been registered for popular words and phrases such as 'Yahoo!', 'Vaya con Dios (Go with God)', and 'Seasons Greetings' without impeding the use of these phrases and words in any cultural way."

It's not an explanation that will wash with the Africans, or at least with the 200,000 who have signed online petitions against Disney. For them, *Hakuna Matata* is more than a phrase; it's their cultural heritage. ■



🐦 @ljishnu

CERTIFICATE COURSE ON INTEGRATED WASTE MANAGEMENT



Rapid urbanization and rising consumption of goods make waste management in India a massive challenge. Urban India produces 62 million metric tonnes (MMT) of municipal solid waste every year, 31 MMT of which is dumped in landfills and dumpsites. Figures for recycling are abysmal; for instance, only 1.5 percent of e-waste is recycled. Mixed-waste collection patterns add to the challenge of plastic-waste management. The need of the hour is to shift the focus of waste management towards source segregation, recycle and reuse.

The Centre for Science and Environment (CSE) has been working on policy and implementation with regard to waste management at the national and global levels. In 2016, it published Not in My Backyard, a seminal report on the existing status of waste management in the country.

The Anil Agarwal Environment Training Institute (AAETI), a CSE initiative, recognizes the need to segregate, recycle and reuse, and offers an advanced five-day training programme on 'Integrated Waste Management'. The objective of the programme is to provide a better understanding of the key aspects of management of solid, plastic, biomedical, construction and demolition (C&D), and e-waste; technologies involved in their treatment; legislative framework; and stakeholders involved.

COURSE HIGHLIGHTS

- Status of waste management in India
- Major provisions of the new Waste Management Rules, 2016 and the status of their implementation
- Roles and responsibilities of different stakeholders
- Inventorisation and extended producer responsibility
- Decentralised waste management
- Using information, education and communication for behaviour change
- Site visits to learn about best practices

WHO CAN APPLY

Waste management practitioners, officials from central and state urban departments and municipalities, urban and town planners, village panchayat officials and members, academicians, students, and NGO representatives

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FACULTY

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Technical experts, CSE and other
Civil society institutions

COURSE DURATION

19th February to 23rd February 2019

LAST DATE FOR APPLYING

4th February 2019

COURSE VENUE

Anil Agarwal Environment Training Institute
(a Centre for Science and Environment
initiative), Nimli (near Alwar), Tijara,
Rajasthan

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COURSE COORDINATORS:

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Centre for Science and Environment



CORRIDOR CATHARSIS

The proposed Similipal-Satkosia wildlife corridor in Odisha can be connecting link for the survival of endangered species.

But mining activities need to be eliminated

DIPAK ANAND, SYED AINUL HUSSAIN AND RUCHI BADOLA

IN 1976, Satkosia in Angul district of Odisha was established as a wildlife sanctuary. It was designated as a tiger reserve in 2007 and comprises the Satkosia Gorge Wildlife Sanctuary and the adjacent Baisipalli Wildlife Sanctuary. It is a paradise of immense scenic charm and is one of the best ecosystems in the country, home to diverse floral and faunal species. The major plant species in this mixed deciduous forests include *Sal* as well as riverine forests. The area is also a part of the Mahanadi elephant reserve. At present, the area houses some tigers and there are plans to introduce more from other areas.

Importantly, the National Tiger Conservation Authority has identified a potential link for the migration of wild animals from the Similipal Tiger Reserve to the Satkosia Tiger Reserve and has proposed a corridor. It is a very long corridor, but is highly fragmented due to intense mining activities, power stations and a large number of human habitations. According to a study by the Wildlife Institute of India, Dehradun, conducted in 2014, there are more than 250 villages in and around of this corridor.

A part of this proposed corridor connects the Similipal National Park with the Hadgarh Wildlife Sanctuary through the Noto and Satkosia Reserve Forests. The other corridor considered to be important for the movement of the animals is the Baula-Kuldiha corridor, which is 15-16 km long. This corridor connects the Kuldiha Wild-



life Sanctuary with the Hadgarh Wildlife Sanctuary through small hillocks in the Garsahi Reserve Forest, Gaguapahar, Balihudi and Baula hills. This corridor is being used by herds of 20-25 elephants. The Hadgarh-Kuldiha corridor is also being used by small herds of 10-15 elephants.

Thus a connection between the Similipal Tiger Reserve, the Hadgarh Wildlife Sanctuary and the Kuldiha Wildlife Sanctuary forms a U-shaped path that provides a potential movement corridor to tigers and elephants. The movement of elephants has also been observed from Kuldiha to the Satkosia Tiger Reserve. The complete length of the proposed Similipal-Satkosia corridor may not be effectively functional due to several anthropogenic pressures, but from a conservation point of view, it is very important.

Mining disturbances

The Diatari iron ore mining lease of the Odisha Mining Corporation (OMC) is spread over an area of 1,018.3 hectares

(ha), of which 846.4 ha is forest land. The lease area of this mine spreads through the Keonjhar wildlife division and the Cuttack forest division. The habitat in the vicinity of the mining lease area supports various wild animals, including Schedule 1 species like the Indian Elephant, Indian Wolf, Mouse Deer, Ratel, Sloth Bear, Jackal, Barking Deer, Sambar, Peafowl, King Cobra, Russel's Viper, Hill Myna, Indian Soft-Shell turtle and the Large Bengal monitor lizard, according to an Environment Impact Assessment report submitted to the Union Ministry of Environment, Forest and Climate Change in 2010.

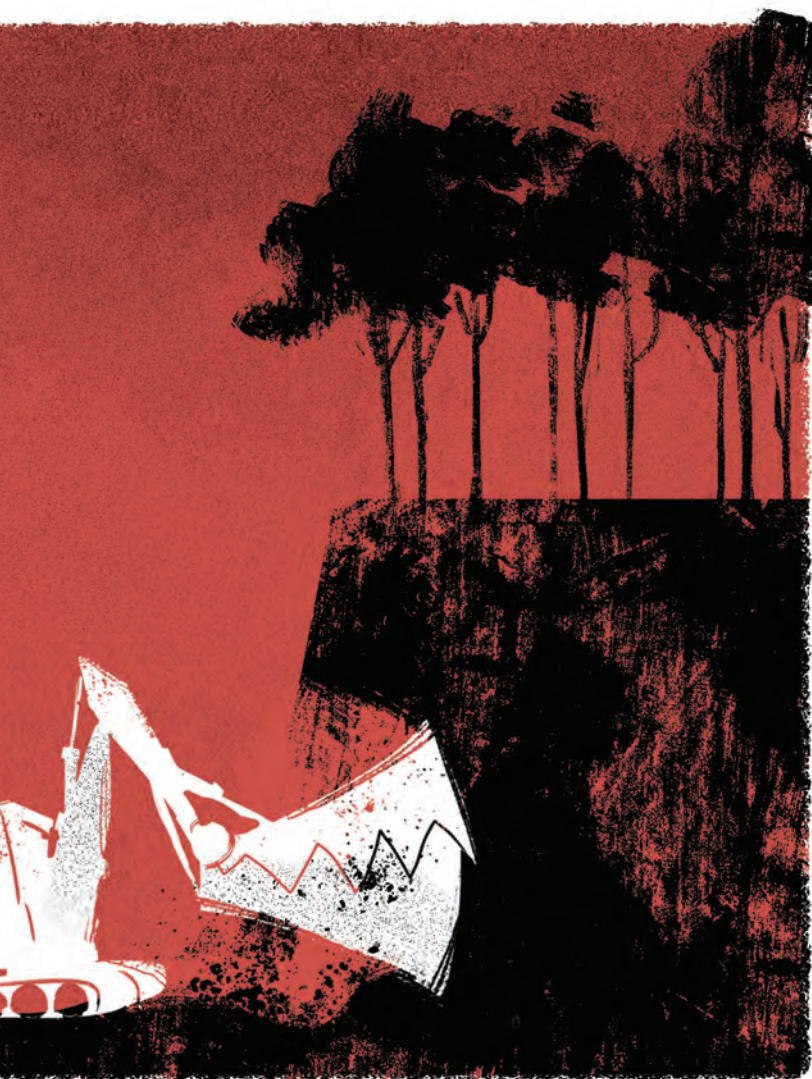
The Diatari iron ore mine has been in operation since 1966. When the lease deed expired in 1996, it was renewed for another 20 years. Though the ongoing operations have no legal validity, OMC has applied for a further extension. This iron ore mine is located within the Similipal-Satkosia proposed corridor connecting two potential habitats for tigers, elephants and other wildlife resources. It is also close to the Similipal-Hadgarh-Kuldiha corridor, which is a vital movement route for elephants and tigers.

For the Satkosia Tiger Reserve, Similipal is considered to be the source population of tigers because of seclusion of Satkosia from other connected protected areas. Conservationists hope that the proposed corridor will help recover tiger populations in the Satkosia Tiger Reserve in the near future. They say further expansion of Diatari mining lease area will pose a threat to the abundance and diversity of flora and fauna and would further worsen the connectivity. From an ecological perspective, the cumulative impacts of mining in this region will further aggravate the sustainability challenges of the landscape due to disturbances, deterioration of forest ecology and alteration in drainage system.

At present, tiger densities in both Similipal and Satkosia are depressed and there is a lack of a source population to ensure tiger occupancy within the larger landscape. With appropriate protection and managerial changes, tiger populations in both these reserves can revive, but their long-term survival would depend on the gene flow between these populations. Therefore, multi-layered strategies will be required to keep this corridor functional. At the same time, there is an urgent need for an assessment of the impact of mining on the wild flora and fauna before clearance is given for further extension of the lease for mining. ■

(The writers work with the Wildlife Institute of India, Dehradun)

 @down2earthindia



TARIQUE AZIZ / CSE

Agenda for 2019

The governance blueprint to combat major environmental problems must be institutionalised and strictly enforced

IN 2018, some major policies and programmes were unveiled in India. At the international level also, two major agreements got underway—the Rulebook for the Paris Agreement was adopted and the Kigali Amendment to the Montreal Protocol came into effect on January 1, 2019. The agenda for 2019 is clear cut: we have to set up the institutional and regulatory framework to implement the major programmes and fulfil our international obligations. Here's my list of the top environmental priorities for 2019.

National Clear Air Programme: Our piecemeal approach to tackle air pollution must give way to the implementation of a comprehensive and integrated action plan. The National Clean Air Programme, under which more than 100 cities have to develop and implement clean air plans, must be institutionalised for effective enforcement. Without strict enforcement, all the other measures will fail.

Single-use plastics: The pledge to ban all single-use plastics by 2022 must be put into action. At present, different states have interpreted the term “single-use plastics” differently. A national definition backed up by a comprehensive plan, including the promotion of alternatives, should be put in place.

Swachh Bharat Mission: Governments come and governments go, but successful programmes must continue. The Swachh Bharat Mission is one such programme. This year, solid waste management must be strengthened to make it sustainable.

National and State Action Plan on Climate Change: In 2008, the National Action Plan on Climate Change (NAPCC) and the State Action Plan on Climate Change (SAPCC) were adopted. The outcome has been mixed. While the National Solar Mission and the National Mission for Enhanced Energy Efficiency has done very well, other

missions under NAPCC have not progressed as expected. The SAPCC too have not progressed beyond documentation. It is time we revisit NAPCC and SAPCC and develop a comprehensive framework to decarbonise our economy and adapt to the changing climate. One thing we must ensure is that the division of responsibilities between the Centre and states is well defined. Currently, only Central government is responsible for cutting emissions. This must change.

National Forest Policy and Act: The draft National Forest Policy, 2018, fails to join the dots. In addition, the environment ministry has also started the process of amending the Indian Forest Act, 1927. It is imperative we get both of them right. India needs forest regulations that recognise

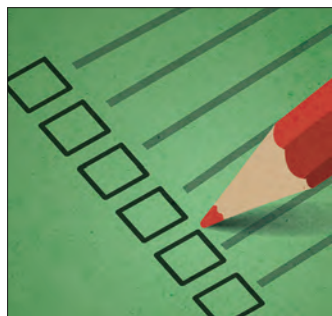
the role and the potential of people to grow, manage, protect and use forests sustainably. For this, the forest department must shed its colonial hangover and become facilitators in community-managed forests.

National River Revitalisation Plan: It is not just Ganga that is polluted; all major and minor rivers are in the grip of

pollution because of unsustainable withdrawal of water and untreated disposal of wastes. From the Cauvery to Godavari, and from the Sutlej to the Yamuna, all rivers need a revitalisation plan. Let 2019 be the year in which we unveil the National River Revitalisation Plan.

Pollution Control Boards: Pollution control boards (PCBs) are ineffective, corrupt and getting archaic with every passing year. They are not designed to regulate, monitor and enforce the pollution challenges of the 21st century. We cannot do without a frontline environment regulatory authority. It is time we reinvent PCBs and build their capacity for effective monitoring and enforcement. ■

[@BhChandra](#)



TARIQUE AZIZ / CSE

WATER SPEAKS

EFFECTIVE COMMUNICATION FOR ADVOCACY, INFLUENCE AND IMPACT



BACKGROUND

Communicating data precisely can be an excellent outreach tool, capable of making far-reaching influences. To build capacity on effective communication, CSE's School of Water and Waste at AAETI invites applications and nominations for this four-day residential training programme.

Key learnings:

- **Data sourcing and management** – using smart tools and techniques to find the right data to tell your stories
- Simple tools such as **MS Excel** for sorting and analysing data
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- **Data visualisation tools and techniques** – effective communication for news, reports, research papers, studies, proposals, etc.



DATE: February 05 to 08, 2019

VENUE: School of Water and Waste, Anil Agarwal Environment Training Institute (AAETI), Nimli, Tijara, Rajasthan

LANGUAGE OF INSTRUCTION: English

OPEN FOR: National and International participants

HOW TO APPLY?

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<https://tinyurl.com/ycspmnzr>

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Part scholarship includes boarding & lodging costs and training fees & kit.

Only short-listed candidates will be informed

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COURSE DURATION

February 18 to 22, 2019

COURSE VENUE

Anil Agarwal Environment Training Institute (AAETI), Nimli, Alwar (Rajasthan)

LAST DATE FOR APPLYING

February 11, 2019

OPEN FOR ALL

Functional Area Experts, Environment Consultants, NGOs, Regulatory Institutions (such as SPCB, State Environment Impact Assessment Authority), Students, Decision Makers and Industry Professionals

Environmental Impact Assessment (EIA) is an important tool to inform decision-makers, regulators and stakeholders, about the possible environmental, social and economic costs of the proposed project. To be effective, it requires the active involvement of all concerned stakeholders.

There is a genuine need to develop the capacity of all concerned stakeholders including regulators to screen and scope the EIA process, to conduct transparent public consultations and to evaluate the EIA reports. At the same time, there is a need among environmental managers and NGOs to review and interpret EIA report; and for consultants, institutions and academicians to conduct an effective EIA process.

Centre for Science and Environment recognises this need and has developed a hands-on five-day training programme aimed at giving exposure to the participants on EIA with specific reference to *mining, power sector and infrastructure projects (road and highway)*. After the programme, the participants shall have an understanding of:

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3. Data Collection, Evaluation, Interpretation and Validation
4. Tools and thumb rules for environmental impact
5. Development of Environmental Management Plan (EMP) and Sector Specific best practices for Mitigation
6. Risk and Biodiversity Assessment
7. Socio-Economic Impact and Gender Inclusion
8. Review and Evaluation of EIA Report

**Selection will
be done on first
come first
basis**

For registration: **Kindly email at: arjunvir.chak@cseindia.org**



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