

1-15 MARCH, 2023

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FORTNIGHTLY ON POLITICS OF DEVELOPMENT, ENVIRONMENT AND HEALTH

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UNTANGLE THE KNOT

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is only a half-baked strategy to fight
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Do not just single out coal

WHY IS dirty coal singled out when it comes to climate change? Why not natural gas, which is also a fossil fuel and emits gases that contribute to global warming? I know, I am asking an inconvenient question. But bear with me. I do so, knowing that we need to drastically cut greenhouse gas emissions, and fast. But we need clarity on what we are doing, and why.

As an environmentalist based in Delhi, I am clear that burning of coal is bad for our health; it generates emissions that we must *not* breathe. It is bad, also because it is burnt in thousands of small- and medium-sized industrial boilers, where pollution abatement is either expensive or impossible to regulate. Furthermore, thermal power plants that use coal to generate energy add to local pollution because many units are old and cannot be refurbished and refitted with technologies to control emissions of particulate matter (PM), sulphur dioxide (SO₂) or nitrogen oxides (NO_x).

It is for this reason, and as part of the effort to combat local air pollution, that my city of Delhi has banned the use of coal; it has shut down the last of its aged coal-based thermal plants. Now, it has stopped the use of coal within a radius of 100 km around the city. All industries using coal to fuel their furnaces have been told to move to natural gas or other clean fuels or will be forced to shut down. The ultimate objective is to increase the use of electricity as energy by industries and vehicles, which will come from clean sources, ideally renewables. But in the interim, the solution is to move to natural gas, which is cleaner than coal when it comes to local air toxins. The problem is that the price of natural gas has shot up—partly because of the war in Ukraine and the need of Europe for this energy source. Virtually every gas tanker is now headed to Europe and this is impinging on India's clean gas transition.

So, I am not an apologist for coal. But I am asking this “why-coal-and-not-gas” question because the science of pollution for local and global is not same. Coal emits carbon dioxide (CO₂). Natural gas emits half of what coal emits in terms of CO₂ as well as methane. These are not local pollutants, but add to warming because of their long-life in the atmosphere. The technology pathway for these pollutants is twofold: One, is to reduce the use of coal and gas by increasing efficiency or by switching to renewables. Two, is to continue to use the fuel but capture the CO₂ and then store it underground or utilise it (using carbon capture and storage or CCS and carbon capture, utilisation and storage or CCUS). In the case of natural gas, methane control means

detecting leakages and prevent the gas from escaping into the atmosphere.

I am explaining this to say that we need to understand the difference in local and global pollution strategies and not mix up the two. Coal is bad, and so is natural gas, when it comes to climate change. Both require strategies for switch, phase out and abatement. Then why is it that the western world, which has till date built its economy on dirty coal, is now wedded to gas as its dream fuel? The EU has baptised it as “green fuel”. The oil and gas companies are drilling more gas, terming it as the necessary energy source. In fact, it is now argued that the question is not the continued dependence on natural gas but the need for abatement of emissions. It is even said, within energy circles, that green hydrogen—manufactured using renewable or other green fuel—is not necessary for the green transition. Blue hydrogen, made from natural gas, is also green if the emissions are abated and CO₂ captured. The emphasis is on abatement and not on the phase out of fossil fuel, that is natural gas. So, I ask again, why not discuss abatement in the case of coal?

A recent paper published in *Nature Climate* by Greg Muttitt and others from the International Institute of Sustainable Development and University College, London, discusses how the Intergovernmental Panel on

Climate Change (IPCC) underestimates the need to cut down on gas and oil—gas usage needs to only fall down by 14 per cent by 2030, as compared to the complete and unrealistic phase out of coal, which it says must happen in the coming 10 years to stay below 1.5°C. They conclude that the 1.5°C pathway needs drastic emission reductions of coal, and of oil and gas; and that this underestimation puts a huge burden on coal-dependent countries of the South. In fact, they calculate that the speed of transition that is required from the developing world is 2x more than any country has done till date.

The question also is why should countries of the western world, which have already appropriated the giant share of the carbon budget—way beyond any definition of fair share—be given a free pass on the continued use of natural gas? I ask these questions, not to deny the need for a transition, but to provoke replies, which I hope will help us build a future that is both shared and clean. [DTE](#) [@sunitanar](#)

Why should the western world, which has appropriated the giant share of the carbon budget, be given a free pass on continued use of natural gas?



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Vol 31, No 20; Total No of Pages: 60

Editorial, subscriptions and advertisements:
Society for Environmental Communications,
41, Tughlakabad Institutional Area, New Delhi 110 062,
Phone: 91-11-4061 6000, 29955124,
29956110, 29956394, 29956399 | Fax: 91-11-29955879.
Email: editor@downtoearth.org.in

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FOR ADVERTISEMENTS Jyoti Ghosh
jghosh@cseindia.org

FOR SUBSCRIPTIONS
K C R Raja, raja@cseindia.org



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◀ Cover design: Ajit Bajaj Cover photo: Reuters

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Engage



India should develop a green economy

The notion of developing a “green” economy, which is low-carbon, resource-efficient and socially inclusive, is relatively new and has recently sparked debates among economists and environmentalists. Developing a green economy is necessary to foster inclusive environmental sustainability and global climate adaptation, while ensuring positive possibilities for people. It is based on the understanding that long-term economic growth and development are dependent on the effective and responsible use and conservation of natural ecosystems. Public and private investment in such a system focuses on activity, infrastructure and assets that reduce carbon emissions and pollution, enhance energy and resource efficiency and avoid loss of biodiversity and ecosystem services. A green economic plan should encourage innovation and the use of advanced technologies. India needs green investments to enable and support targeted public spending, policy reforms and tax and regulatory changes. The Union finance ministry should consider measures to enable a green economy.

VIJAYKUMAR H K
RAICHUR

Point of criticism

This refers to “Barely a contrast” (1-15 January, 2023). The book review stood out to me like a sore thumb. As a book reviewer, can a person harbour hate? One can disagree with a person as well as his views, and can be critical without being venomous.

KAILASNATH
VIA EMAIL

Conservation truths


This refers to “Of Van Riebeeck and the ‘Big Boss’: European colonisation decimated Cape Buffalo in South Africa, study finds” published online on February 9, 2023. The article put forward a rather strange idea. The period of colonisation brought many changes, and wildlife numbers decimated in non-colonised countries, too. Human land use and extraction of resources pose major problems for wildlife, rather than colonisation. Humans are, in a way, still cave people, whose habitats have evolved into complex caves that we now call civilisation. Everything we use is taken from nature; more people results in more use of land and resources. It is not colonisation that is killing off sub-Saharan wildlife—it is the roads, houses, steel, wood, farm products, electronics and everything else.

In South Africa, farmers have discovered that farming wildlife is more profitable than cattle, so they have re-wilded 16 million hectares of cattle farms to raise wildlife for hunting, meat and re-stocking. Large animals have increased 20 times over in the past 30 years. More than a million animals are shot annually, producing 50,000 tonnes of low carbon, water and meat.



But 3 million animals are also born each year, so the numbers are increasing, not decreasing. More importantly, perhaps, is that the 16 million hectares of "game farms" also support trillions of animals, birds, plants and trees that are not hunted.

PARMJEET SINGH
VIA EMAIL



Down To Earth welcomes comments and suggestions from readers in response to its articles and opinion pieces. We are introducing a "Pick of the Postbag" award, under which the letter adjudged the best will be highlighted and the winner will receive a free one-year digital subscription of the magazine. Letters may be e-mailed to editor@downtoearth.org.in or sent to:

The Society for Environmental Communications; 41, Tughlakabad Institutional Area; New Delhi-110 062. Letter writers should mention their full name, postal address and phone number.



Millets in your food plate

Jowar vegetable *upma* and *bajra khichdi* and *ragi laddoo* are just a few of the several new offerings in the Parliament canteen, which has recently launched a new



millet-based menu. Millets are nutritious and beneficial for human and environment health. India also has a rich history of millet cultivation and consumption. But how many people are aware of this and strive to reintroduce millet into their diet? Watch the video to learn more about the value of millets and why it should be a part of your daily diet.

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Digest

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A self-help group in Chhattisgarh ends stigma around leprosy **P10**

Imminent heatwave may raise wheat prices **P11**

Too early to celebrate Kashmir lithium reserves **P12**

1,000 WORDS VIKAS CHOUDHARY



A woman belonging to the Rabari tribal community with her sheep and goats near Rewari, Rajasthan. Like other nomadic, pastoralist communities in India, the Rabari tribe finds its occupation and ways of living under threat due to dwindling pasture lands, loss of traditional knowledge and lack of recognition in government schemes. Acknowledging these threats, the Union government has announced that it would collect data on the pastoral communities and include it in the Livestock Census 2024.

FOR MORE PHOTOS, SCAN



Support system

WHEN CHHAYA Namdev contracted leprosy in 2005, she knew the disease would have severe health and social implications. "I could not leave my house. There was a lot of stigma against the disease in our village, Amoda, and people would be afraid to share space with me," she recalls. However, nearly 20 years of work by Sahara, the first women self-help group (SHG) in Amoda village, located in Jajangir Champa district, Chhattisgarh, has turned things around. "People are now more aware about the disease and understand its implications and treatments," says Namdev, who is also a member of Sahara.

Hamida Begum, another member of Sahara and a former leprosy patient, adds that the SHG has also helped her earn a living. Begum owns a bangle shop in the village. During the COVID-19 lockdowns, the SHG helped her avail ₹10,000 in assistance from The Leprosy Mission Trust India, a non-profit that works for the welfare of people affected by the disease in India. Using the funds, Begum expanded her business and now earns ₹5,000-6,000 per month.

The Leprosy Mission had also played a role in the setting up of Sahara. "In 2006, we received reports of a large number of leprosy cases from Amoda. When we visited the village, we saw that people were not aware of the disease's reality and treatment options," says Kismat Nanda, The Leprosy Mission's coordinator for Chhattisgarh. "Further, discussions around health and welfare were dominated by men; women did not even participate in meetings. So we decided to reach out to women to spread

A self-help group in Chhattisgarh, which began to end stigma around leprosy, empowers women to improve their lives and livelihoods
VIVEK MISHRA

awareness," says Nanda.

The SHG grew slowly, and real change was seen only in 2012, says Saraswati Srivas, a member. "There was a liquor distillery in our village due to which most of the men used to consume alcohol and indulge in fights at home and outside. By then, there were a few other SHGs in the village, so all the groups approached state authorities and asked them to shut down the distillery. We were able to ensure a ban on liquor distilleries within a 5-km radius of the village. It instilled confidence within our group," says Srivas.

Next, Sahara focused on increasing women's representation in local governance. As per state policies, Amoda village is governed by 20 *panchs* and a *sarpanch*, elected by the residents. "In 2015, I contested as a *panch* and won. During my tenure, we were able to help women get ration cards and avail housing support," says Srivas.

During COVID-19, the members of Sahara decided to come together to improve livelihoods. As mushroom farming is prevalent in the region, the women began cultivation of the crop. In 2021, the SHG earned ₹19,000 in mushroom production, against an investment of ₹4,500, while in 2022 it earned ₹23,000 with an investment of ₹6,000. The combined income of SHG members' own work and mushroom production is ₹80,000-1 lakh a year.

Srivas says now, Amoda village has more than 20 SHGs, where women have also come together to spread health awareness, learn about their rights, and participate in local governance.



AGRICULTURE

Early heat likely to raise wheat prices

INDIA HAS started to see temperatures rising early this year, with northwestern states inching towards 40°C in February. If this trend continues, it is likely to have a major impact on wheat crops slated for harvest in mid-March.

India has already been reeling under high wheat prices since last March due to poor production in the wake of early heatwave events and raised global demand due to the Russia-Ukraine war.

The Centre's ban on wheat exports and other short-term fixes have not



helped. In a last-ditch attempt, in February this year, the Centre started e-auction of wheat reserves with the Food Corporation of India and lowered the reserve price to ₹21,500 per tonne till March 31. While this is a temporary solution,

the real fix would come from a bumper rabi crop. However, in the week of February 2-8, the maximum temperature in most wheat-growing states like Madhya Pradesh was higher than the average of the last seven years, says a report

by the Department of Agriculture and Farmers Welfare's National Crop Forecasting Centre.

The reason for this is "a strong upper level westerly jet that seems to be setting up lower-level winds that are sweeping in warm ocean and desert winds," says Raghu Murtugudde, a climate scientist at the University of Maryland and Indian Institute of Technology, Bombay.

He warns that the current heating trend might continue in the summer, when the country will likely see an El Niño event.

INFRASTRUCTURE

Green riders for highway projects in Himalayas

IN A MOVE that clearly appears to be triggered by the land subsidence in Uttarakhand's Joshimath town, the Union environment ministry has issued an office memorandum that requires all road and highway projects within 100 km from the national border to follow the standard operating procedure for environmental safeguards. The memorandum on February 6, 2023, is an update on the ministry's July 2022 notification that exempts such projects from environmental clearances. It says all projects must prepare risk assessment and landslide management plans. In hill regions, the projects must conduct vulnerability and seismic activity studies. Projects requiring tunneling or drilling will assess impact on surrounding areas. To ensure that soil and water are not contaminated, construction debris should be dumped securely. Projects should also not divert or disrupt water courses and highways must have green belts on both sides.

ENERGY

Türkiye quakes may impact oil, gas supply

THE SERIES of earthquakes that hit Türkiye and Syria on February 6-7 led to the loss of nearly 50,000 people and caused massive infrastructural damage across both countries. For two-three days after the earthquakes, oil terminals at the Ceyhan port in southern Türkiye—close to the epicentre—were closed, affecting supply and increasing global prices. Türkiye is an important hub for oil and gas transport, particularly for crude exporters in Central Asia such as Azerbaijan, and is expected to assume a more significant role as countries move away from Russian energy supplies in the wake of the Ukraine conflict. Countries plan to develop routes for oil and gas from Central Asia, circumventing Russia and Iran. These plans would require building pipelines across Türkiye, including the quake-hit regions. Delays or disruptions as Türkiye works to rebuild its basic infrastructure could put such projects at risk.

BITS GLOBAL

A tropical cyclone named Freddy formed over the southern Indian Ocean near Indonesia in the last week of February. The US National Oceanographic and Atmospheric Administration (NOAA) estimated that the cyclone could be one of the longest-track cyclones in this region, projected to hit Madagascar, Mauritius and Réunion and then move westwards to Mozambique. Earlier in February, parts of New Zealand, Vanuatu and Australia were hit by severe tropical cyclone Gabrielle. The cyclone killed over 10 people in New Zealand and displaced 10,000 others, prompting the country to declare a state of emergency.



Residents of East Palestine, Ohio, US staged demonstrations on February 15 demanding to know whether the town was safe from toxic chemicals released due to a train derailment. The derailment on February 3 had released substances like vinyl chloride, a carcinogen. While authorities claim to have burned off the chemicals, people in East Palestine reported symptoms such as headaches and reported poultry and fish deaths.

Equatorial Guinea announced its first every outbreak of Marburg virus disease, a haemorrhagic fever, on February 13. At least one human death is confirmed to have been caused by the highly contagious disease. Following the announcement, neighbouring Cameroon went on high alert and restricted movement along its border with Equatorial Guinea.

Gabon, Jamaica and Sri Lanka on February 14 launched a US \$14 million project to eliminate use of mercury in skin-lightening products. Excess exposure to mercury can harm the nervous, digestive and immune systems, lungs and kidneys. The Minamata Convention limits mercury use to 1 mg per kg, but reports note several products fail to adhere to this.

BITS INDIA

The Geological Survey of India established 5.9 million tonnes inferred resources of lithium during preliminary exploration in Jammu and Kashmir, the Union Ministry of Mines said on February 9. India currently imports all of its lithium, a critical mineral in clean energy. While the potential discovery could help the country's energy transition, the resources will need to be established after detailed exploration to begin mining.

Twelve cheetahs from South Africa arrived to the Kuno National Park in Madhya Pradesh on February 18, five months after eight cheetahs were brought in from Namibia. Activists have raised concerns that relocating the cheetahs so quickly and placing them in long periods of quarantine before letting them in the park could be detrimental to their health.



West Bengal noted a rise in respiratory infection due to adenovirus among children, with two deaths reported on February 19. On February 20, media reports said 32 per cent of the samples sent to the National Institute of Cholera and Enteric Diseases in Kolkata since January tested positive. Children below two years are more susceptible to adenoviruses, which cause flu-like illnesses.

Nine Indian states are among the top 50 regions in the world with the highest risk of damage due to climate change, according to a report released by Cross Dependency Initiative, which specialises in climate risk analysis. The report calculated physical risks to built-environment in more 2,600 states and provinces worldwide in 2050, of which China had the most at-risk regions, followed by India and the US.

IN COURT

NATIONAL GREEN TRIBUNAL

- The National Green Tribunal (NGT) directed West Bengal authorities to demolish a hotel constructed on the Sundarbans. The tribunal said the construction violated environmental norms and put ecologically sensitive mangrove ecosystems at risk.

- NGT directed the Tamil Nadu government to publish the state's new rules and guidelines for sewage management in newspapers to spread awareness. The tribunal also told the Chennai authorities to ensure compliance of the new rules that came into effect in January 2023.

HIGH COURTS

- The Delhi High Court ordered the Union government to release ₹5 crore to the All Indian Institute of Medical Sciences (AIIMS) for treatment of children with rare diseases. The court said this order was in view of several petitions it had received on availability of medicines.

- In a case on protecting rights of children forced to sell goods on roads, the Karnataka high court directed the state government to submit details of how police are implementing their duty to arrest or enquire about people indulging in begging.

So far...

Number of cases on environment and development tracked from January 1 to February 17, 2023

NATIONAL GREEN TRIBUNAL
63

SUPREME COURT
21

HIGH COURTS
14

FOR DETAILED VERDICTS, SCAN



By Snigdha Das, Rajit Sengupta, Raju Sajwan, Susan Chacko and Dakshiani Palicha



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Delayed beginnings

The world has taken first step to meet the stiff target of bringing 30 per cent of its land, inland and marine areas under protection by 2030

ROHINI KRISHNAMURTHY NEW DELHI

TWO MONTHS after 196 nations signed a pact to protect 30 per cent of the world's terrestrial, inland and marine areas by 2030 at the 15th Conference of the Parties to the UN Convention on Biological Diversity (CBD) in Montreal, Canada, scientists and ocean conservation experts returned to the country for the 5th International Marine Protected Areas Congress (IMPAC5). Their goal during this meet, held at Vancouver on February 3-9, was limited to planning the protection of 30 per cent of the world's oceans in the next seven years.

Roughly 10 million square km of oceans must be annually brought under protection over the next seven years to meet the 30 per cent target, experts said at the meet. There are mainly two tools to achieve the goal: (i) designating an area as a Marine Protected Area (MPA); and (ii) through Other Effective area-based Conservation Measures (OECMS).

An MPA is owned by the government, with the primary objective of long-term conservation by limiting human activities in the designated area. It also offers nature-based solutions to support global efforts towards climate change adaptation and mitigation, according to the International Union for the Conservation of Nature (IUCN).

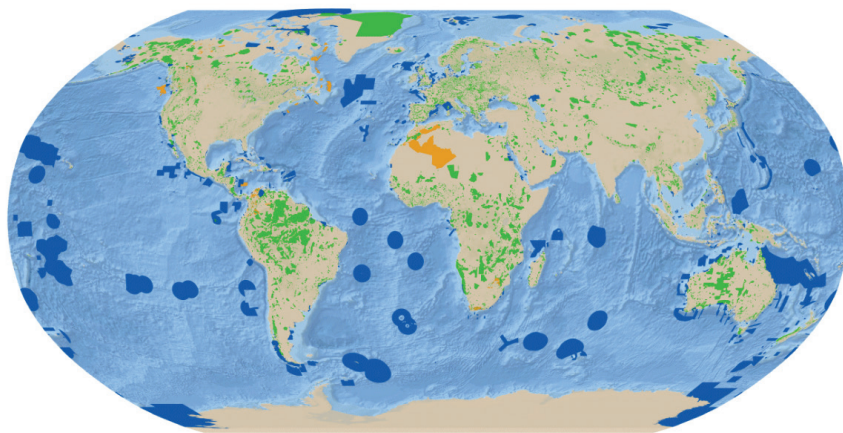
OECMs can be owned by communities, governments, and for-profit and non-profit organisations. The concept of OECM was introduced in the 2010 CBD, and the parties agreed on a definition in 2018. OECMs can achieve long-term conservation by enabling communities' social, economic, and cultural well-being.

Overall, 7.74 per cent of the world's coastal water and oceans are under MPAs and OECMs, compared to 16.64 per cent of land and inland water ecosystems, as per the "Protected Planet Report 2020" by the United Nations Environment Programme (UNEP) and IUCN (see 'Under protection'). However, MPAs are still by far the more commonly used of the two tools. Discussions at IMPAC5 were entirely focused on MPAs, while OECMs received little attention. "Stakeholders are unfamiliar with OECM," Jannica Haldin, deputy executive secretary at HELCOM, an inter-governmental organisation governing the Convention on the Protection of the Marine Environment of the Baltic Sea Area, said at IMPAC5.

However, World Database on Protected Areas, an online initiative run by UNEP and IUCN, shows that countries, both developed and developing, have been pursuing OECM as a conservation tool. North America and Africa have set up several OECMs since 2019. Some 829 land and marine OECMs, covering nine countries and territories, have been established as of February

Under protection

Only 7.74% of the world's coastal water and oceans are protected, compared to 16.64% of land and inland water ecosystems



■ Terrestrial protected areas ■ Marine and coastal protected areas
■ Other Effective area-based Conservation Measures (OECM*)

Note: *OECMs are a new tool to conserve land, inland and oceans. As per the 2022 Convention on Biological Diversity, 30% of the planet must be conserved by 2030; Source: Protected Planet, an online initiative of United Nations Environment Programme and the International Union for the Conservation of Nature

2023. This could be because studies show that MPAs limit human activities and negatively impact livelihood of land and coastal communities.

India has no OECM, but plans to use the tool to reach the 30 per cent target. It has conserved around 27 per cent of its geographic area, with about 22 per cent under terrestrial coverage and 5 per cent under coastal and marine coverage, Union environment minister Bhupender Yadav wrote in a 2022 government publication, "Other effective area-based conservation measures (OECMs): A Compendium of OECMs in India". These conserved areas include national parks, conservation reserves, reserve forests, wildlife sanctuaries, community reserves, and MPAs (see 'Proposed for conservation' on p16). The Ministry of Environment, Forest and Climate Change; the National Biodiversity Authority; and the United Nations Development Programme are identifying and mapping potential

OECMs in India. Fourteen potential sites have already been identified (see 'We have identified...' on p16).

OECMs are a better tool for India and other developing South Asian countries with a large human population, says Anant Pande, Marine Megafauna-Program Head at Wildlife Conservation Society-India, a Bengaluru-based non-profit. Coral reefs and seagrass meadows that provide habitat for fish and larger marine life are potential marine OECM sites, he says.

Though attractive, OECMs are not foolproof. They could become a re-labelling exercise, with no net gain or losses for biodiversity, Johnny Briggs, head of Pew Bertarelli Ocean Legacy, a project of US-based Pew Charitable Trusts, warned at IMPAC5. He also highlighted the role of non-profits to ensure that countries do not misuse OECMs to increase their protected areas for meeting the 30 per cent target. **DTE**

[@down2earthindia](https://twitter.com/down2earthindia)

'WE HAVE IDENTIFIED POTENTIAL OECM AREAS OWNED BY PRIVATE COMPANIES'

For conservation, you need to engage corporates and communities, says **Vinod Mathur**, vice-chair of Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services and former chair of National Biodiversity Authority of India

Why has India decided to focus on Other Effective area-based Conservation Measures (OECMs)?

OECMs will help us reach the 30 per cent target faster. Getting one inch of land for conservation is complex, making it challenging to designate new protected areas. Declaring an area a national park or a sanctuary could be unfair to the local communities.

OECMs are not strictly for wild animals and plants alone. Conservation should not only mean conserving leopards, tigers, and so on. We need to expand the definition. Corridor areas, corporate lands and waterbodies can become OECMs. We have identified areas owned by corporate companies that could be potential OECMs. These will be held by companies. In return, companies get reputational benefits. Also there is opportunity for responsible tourism.

Another potential OECM is the saffron cultivation sites in Kashmir. The practice also helps in conservation of soil, moisture and water. Canals around dams can also be an attractive category. They can be suitable for conservation as they become home to algae, fungi, fish, amphibians and birds. For conservation, you need to engage corporates and communities.

Corporates can finance their own OECMs. Once the government India formalises OECM areas, it might give funds. We are also looking at global funds, like the Green Climate Fund [a fund within the United Nations



Note: *Other Effective area-based Conservation Measures are a new tool to conserve land, inland and oceans. As per the 2022 Convention on Biological Diversity, 30% of the planet must be conserved by 2030. Source: Other effective area-based conservation measures (OECMs): A Compendium of OECMs in India; India State of Forests Report 2021

Framework Convention on Climate Change to assist developing countries counter climate change].

You have identified 14 terrestrial OECMs. What about marine OECMs?

We have a better understanding of the terrestrial world. Establishing OECMs in coastal and marine is more challenging; boundaries are not known. Marine mammals move larger areas than their terrestrial counterparts.



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India aims to attain 'net zero emissions' status by 2070 and reduce the emissions intensity of its GDP by 45 per cent by 2030. To achieve these targets, the nation needs a clear strategy – and tapping into the country's surplus biomass and organic waste to generate clean fuels such as Bio-CNG (Compressed Natural Gas) could certainly be explored as a key element of such a strategy.

According to the Ministry of New and Renewable Energy (MNRE), India's Bio-CNG production potential is estimated at around 62 million metric tonne (mmt). Of this, 15 mmt per annum will be tapped by the Sustainable Alternative Towards Affordable Transportation (SATAT) scheme by 2024.

Several other policies and initiatives have been developed to expedite the implementation of Bio-CNG projects in India: these include the MNRE's Waste to Energy programme, the Swachh Bharat Mission (SBM), and the Galvanizing Organic Bio-Agro Resources (GOBAR)-DHAN scheme.

Centre for Science and Environment (CSE) is offering a tailor-made three-day residential training programme on 'Bio-CNG: Potential, Technology, Policy, Operation and Economics'. The high-impact training has been conceived to provide an end-to-end solution to design and install a Bio-CNG plant that aligns with the principles of circular economy, energy transition and sustainable development.

The programme is open to government officials, regulators, renewable energy nodal agencies, urban development authorities, civil society organisations, start-ups, researchers, private sector consultants and individual practitioners.

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Residents of Chainpura village at a session organised by non-profit Jagrit Adivasi Dalit Sangathan on *MPVanMitra* web portal

Ease of rejection

Launched to facilitate a review of rejected forest rights claims, Madhya Pradesh' web portal has led to speedy dismissal of applications

SHUCHITA JHA
BURHANPUR, MADHYA
PRADESH

ANARSINGH TULSIYA, a 75-year-old member of Bhilala tribe in Madhya Pradesh's Sunod village, has applied for right to forestland under the Forest Rights Act (FRA), 2006, three times so far. The first two applications—in 2010 and 2013—were rejected without Tulsiya being given a reason—a violation of FRA. The result of his third application, filed online through the *MPVanMitra* portal in 2020, has been the same.

FRA gives members of Scheduled Tribes and Other Traditional Forest Dwellers, who have been living and tilling the land in the area since before December 13, 2005, the right to file Individual Forest Rights (IFR) over the land. While hearing a case on the constitution-

ality of FRA, the Supreme Court, on February 13, 2019, directed the states to evict those claimants whose IFR had been rejected. This meant eviction of 1,191,324, or 1.19 million people, across 16 states.

After a widespread outcry, the Union Ministry of Tribal Affairs (MOTA) filed an application before the Supreme Court for modification of the order, stating that there were instances where the states concerned had not strictly followed the rejection procedure. On February 28, 2019, the Supreme Court put the eviction order on hold. MOTA then discussed the order with the states concerned, which decided to review the rejected claims.

Madhya Pradesh, which has the country's highest tribal population, launched *MPVanMitra* web portal

in September 2019 to allow claimants whose IFR had been rejected, reapply for the same, and to ease the process of submission for new claimants as well. On the website, applicants can file claims by creating their own user login identification and passwords. Officials, too, have their own login identifications and passwords, and process the claims online after reviewing the documents uploaded by claimants. The portal, however, seems to have allowed officials to unilaterally reject claims.

From the enforcement of FRA in 2008 till January 2019, Madhya Pradesh had received 579,411 IFR claims, of which it approved 224,624 and rejected 354,787—a rejection rate of 61.2 per cent—as per the Supreme Court’s 2019 order. But after the Supreme Court’s 2019 order, the state received 174,525 IFR claims at the district level through the *MPVanMitra* portal. Of these, it has processed 151,929 by October 2022, rejecting 116,758 claims—a rejection rate of 76.9 per cent—shows data accessed by a Madhya Pradesh-based researcher, who does not wish to be identified, through the Right To Information Act, 2005. *Down To Earth* (DTE) has a copy of the data. “The portal has become basis for fraudulent means



My claim over 3.2 hectares (ha) has been rejected twice. Without the title we cannot sink wells, apply for power connection or get fertiliser subsidy

—Dholi Bai, a Bhil tribeswoman, Chainpura village



My claim over 4 ha was rejected the first time in 2014, without a reason being given to me. My 2020 application remains pending

—Asha Bai, a Varela tribeswoman, Kherkheda village

to reject IFR review claims,” says Nitin Varghese, an activist with Jagrit Adivasi Dalit Sangathan, an informal network working for tribal rights in Burhanpur. “Forest dwellers often cannot read or write, leave aside being versed with the online application format. For filing IFR claims, they go to registered internet kiosk operators, who upload improper documents, often mixing up documents of different individuals,” he says. Antaram Awase, secretary to the Forest Rights Committee (the first level of committee to physically check IFR claims) of Sivle village in Burhanpur, highlights another issue: “The panchayat secretary, who is a member of the forest right committee elected by the gram sabha, along with the talukdar and the forest department’s beat guard, are required to visit and verify the claimed area. They often reject the claim without a physical visit,” he says. “Primarily, there are two reasons for this: one, they do not want to let go of the forest department land; and, two, caste factor. They do not want to see tribal people gain social status by owning property worth lakhs or crores of rupees. They log onto the portal through their official user identifications and reject the claims, uploading

Threat of eviction

Over 0.5 million tribal people in 16 states face threat of eviction from their forestland due to rejection of their Individual forest rights

1 On February 13, 2019, the Supreme Court orders eviction of over 1 million tribal people, whose Individual Forest Rights had been rejected in 16 states

2 The Union Ministry of Tribal Affairs (MoTA) files an application at the Supreme

Court that many rejections had happened without the states strictly following processes under the Forest Rights Act, 2006. The Supreme Court puts the eviction order on hold on February 28, 2019

3 MoTA holds meetings

with states on the issue of review of rejected claim on March 6, 2019

4 Madhya Pradesh launches *MPVanMitra* web portal in September 2019 to ease filing of review claims and submission of new claims

5 Apart from Madhya Pradesh, 14 other states of the country reject over 543,432 review claims offline till February 24, 2020

6 The case is going on in the Supreme Court, with evictions on hold till the final order

fake gram sabha resolutions and old photos of gram sabha in sitting, without the knowledge of the gram sabha,” he explains.

In Burhanpur, only 10,173 cases had been filed before the government shut the portal for the district because the number of online applications was nearly twice the number of the offline rejected claims—5,944—as per data provided to DTE by Lakhan Agrawal, assistant commissioner, tribal welfare department, Burhanpur. “Since June 2020, the portal has been frozen for Burhanpur because new claimants also started filing their claims on the portal, creating confusion. We are now reviewing these claims filed on *MPVanMitra*, but since the number of claims have increased, it will take time,” says Agrawal. The portal also makes it mandatory for the claimants to have an Aadhaar card, which is not a requirement as per FRA.

PAN-INDIA SCENARIO

As per the minutes of a MOTA meeting dated February 24, 2020, a total of 14 states had rejected 543,432 IFR review claims (see ‘Denied again’). This means a rejection of almost 50 per cent of the review claims. And this rejection is final. The residents now can be evicted, pending state action. Chhattisgarh tops the list of the states in rejecting review claims. In 2019, the state had decided to review all the 0.45 million rejected IFR claims. As per MOTA website, 394,851 IFR review claims stood rejected by February 2020. Minutes of an October 2022 meeting attended by Union Minister of Tribal Affairs Arjun Munda, accessed by DTE, say that the state has reverted the decision of rejection of some 34,000 claims, meaning just 10 per cent of reviews have been approved.

Denied again

In the three years after Supreme Court ordered their eviction in 2019, Individual Forest Rights (IFR) of 0.5 million tribal people have been rejected by state governments a second time

STATES	IFR CLAIMS RECEIVED (TILL NOV 2022)	IFR TITLES DISTRIBUTED (TILL NOV 2022)	IFR CLAIMS REJECTED (TILL NOV 2022)	SECOND REJECTION (TILL FEB 2020)
Andhra Pradesh	281,431	217,981	53,871	2,355
Assam	148,965	57,325	NA/NR	NA/NR
Bihar	8,022	121	4215	1,481
Chhattisgarh	871,457	446,041	399,341	394,851
Goa	9,758	472	42	NA/NR
Gujarat	182,869	91,686	57,054	NA/NR
Himachal Pradesh	2,746	129	47	47
Jharkhand	107,032	59,866	26,370	NA/NR
Karnataka	285,874	14,783	240,794	58,002
Kerala	43,889	27,637	12,183	801
Madhya Pradesh	585,326	266,609	310,508	NA/NR
Maharashtra	362,679	165,032	45,188	9,213
Odisha	629,913	454,454	142,231	7,537
Rajasthan	110,670	48,460	60,520	5,906
Tamil Nadu	33,755	8,144	9,407	214
Telangana	204,176	97,434	92,744	5,312
Tripura	200,557	127,931	68,785	4
Uttar Pradesh	92,577	18,049	74,460	NA/NR
Uttarakhand	3,587	184	3,403	16
West Bengal	131,962	44,444	87,333	54,993
TOTAL	4,297,245	2,146,782	1,688,496	543,432

NA/NR: Data not applicable or not reported; Source: Monthly Progress Report of Union Ministry of Tribal Affairs, November 30, 2022; Minutes of a Union Tribal Affairs Meeting, dated February 24, 2020

Odisha, another state with a significant tribal population, has reviewed 148,870 rejected IFR claims at the level of District Level Committee (DLC)—the final district level authority to decide IFR claims—and rejected 140,504. This means a rejection of 94 per cent of review claims. Y Giri Rao, executive director of Vasundhara, an Odisha-based non-profit, says that before 2019, DLCs did not reject claims, because

its decision is binding and applicants mostly do not have resources to go to courts. But after the 2019 Supreme Court order, DLCs in Odisha started rejecting claims in huge numbers. “Those whose claims have been rejected can continue living. The department can file court cases. The claimants will then have another chance to prove that they have been occupying the land for generations,” says Rao. [DTE](#) [@Shu_cheetah](#)

Church's Auxiliary for Social Action (CASA) invites applications for the following leadership positions:

1. Deputy Director, CASA
2. Associate Head of Programme, CASA

About CASA

Church's Auxiliary for Social Action is a national, voluntary/non - profit organisation which is working in 25 states of the country in the field of sustainable development, humanitarian aid and advocacy.

CASA seeks to strengthen the efforts made by the underprivileged sections of the community and promote the efforts of marginalized groups of the Indian society, beyond any ethnic, religious or political barriers, towards sustainable development leading to social justice and self-sufficiency. CASA has been engaged in the above activities for the last 75 years in India. CASA is an ecumenical social arm of the 24 protestant and orthodox churches of India.

1. Designation - Deputy Director

- Location: CASA Headquarters, Delhi
- Required Qualification: Post Graduate Degree/ Diploma /MBA in any subject related to Social Service or Rural Management (Regular on-campus education). Candidates with Ph.D, M.Phil in related subjects will be preferred.
- Preferred Experience: 15 years including leadership positions held at senior management level
- Preferred Age: 45-55 years

About the Role

The position of Deputy Director is a senior management position and part of the top leadership of CASA. The person appointed at this position will be required to contribute in the following areas:

- Will join the Director of the organization in setting up the vision of the organization's journey for next 5-10 years.
- Will be required to strengthen CASA's relationship to its constituencies which involve the central and state governments, networks of non-profits organizations and the ecumenical fraternity within and outside of the country.
- Should have the knowledge and the ability to raise funds for the programmes of CASA from both within the country and overseas.
- Will be required to nurture and strengthen relationships with partner organizations both from within and outside India.
- Will be required to travel extensively both within the country and abroad to liaise with CASA partners to strengthen organizational relations and to attend program or networking meetings.
- Will assist the Director in strengthening the committees related to the governance of the organization at the national and zonal levels.
- Should have sound knowledge of financial management of non-profit organization and statutory requirements pertaining to laws of the land.

Compensation offered will be around 18 lakhs per annum plus other benefits.

2. Designation – Associate Head of Programme

- Location: CASA Headquarters, Delhi
- Required Qualification: Post Graduate Degree/ Diploma /MBA in any subjects related to Social Service or Rural Management (Regular on -campus education)
- Preferred Experience: 15 years in project/ programme management including working at senior leadership positions
- Preferred Age: 45-50 years

About the Role

The position of Associate Head of Programme is a senior management position and part of the top leadership of CASA. The person appointed at this position will be required to contribute in the following areas:

- Will have both internal and external management responsibilities for programmes and projects related to sustainable development, humanitarian aid and advocacy.
- Will assist the Head of Programme of CASA in the overall coordination and management of above programmes which are operational in different parts of the country.
- The person should have in depth experience of capacity building and demonstrated team building skills.
- Will be required to cross relate CASA's programmes with Sustainable Development Goals of the United Nations.
- Develop, promote and nurture relationships with Central and State Government officials at various levels to strengthen CASA's programmes.
- Should be actively engaged in leading the strategic development plan of the organization periodically.
- Will be required to travel extensively both within the country to undertake programme monitoring visits, to network with other civil society organizations and abroad to strengthen CASA's relationship building with partner organizations.
- Should make promotion of local resource mobilization at the grassroots level a top priority.

Compensation offered will be around INR 15 lakhs per annum plus other benefits.

* Interested candidates are invited to send their updated Curriculum Vitae along with 2 contact references to the Chairperson of the Search Committee, **Bishop Subodh Mondal** at, bishopsubodhmondal@yahoo.com

Last date to receive application is 15th March 2023. *Those who have resigned from the services of CASA in the past are discouraged to apply.

Log on to www.casa-india.org to know more about us or call +91 11 25730611 for further information.



For nearly a year, 40 Dalit families in Punjab's Koharka village have been staging the sit-in. Their demand is allocation of the *shamlat* land for housing as per a government order

A common battle

Despite legal entitlement, Dalit communities in Punjab are locked in a constant struggle to exercise their rights over village common land

**BHAGIRATH TARN TARAN
AND FEROZEPUR, PUNJAB**

IN PUNJAB'S Tarn Taran district, an air of anger and anguish hangs over a patch of 8 hectares (ha). Every day for the past year, members of the 40-odd Dalit families in Koharka village have been taking turns to stage a sit-in protest on this patch, which the state government classifies as *shamlat* or village common land. Their demand is to implement the September 2021 state government order and allot each needy Dalit family 5 *marla* (or 0.012 ha) of *shamlat* land for housing. "But on October 29, 2022, the unthinkable happened," recalls Pinder Kaur, a resident. "I and 15 other women were sitting in protest. Following an announcement on the *gurudwara* speaker, several residents rushed to the site. Some poured petrol around the protest site and set it on fire. We all

fled for our lives,” says Pinder, adding that those who attacked the protestors were from upper caste households.

Residents *Down To Earth* (DTE) spoke with allege that the police have not taken action against the culprits despite complaints. On November 9, 2022, the National Commission for Scheduled Castes sought explanation from Tarn Taran district deputy commissioner and senior superintendent of police. It is not known whether they have responded. The incident, however, has not deterred the Dalit families from continuing with their protest.

The order to allocate 5-marla *shamlat* plots to rural Dalit families in need was part of former Punjab chief minister Charanjit Singh Channi's pro-poor reform initiative. Ranjit Singh, Tarn Taran district president for Dalit Dasta Virodhi Andolan (DDVA), which works to end caste-based discrimination, says the order was well-intentioned as Dalit population in the state own very little land for housing. The size of their houses is the same as it was 50 years ago, while that of the family has increased. Government response to a Right To Information application filed in 2019 by Pampa Mukherjee, professor of political science at Panjab University, shows that the state has nearly 69,000 ha of *shamlat* land. An analysis of data from Census 2011 and Agriculture Census 2015-16 shows while Dalit communities comprise 31.94 per cent of Punjab's population, they own 3.5 per cent of the total land.

This is despite the fact that the state reserves 33 per cent of cultivable *shamlat* land for Dalit households, who can lease it for a year through competitive bidding. Non-cultivable *shamlat* land can also be

leased out for housing to families in need and allotted for common benefits, such as setting up schools, dispensaries or ponds (see 'Laws on the land').

Ranjit says, following the September 2021 order, several panchayats had passed resolutions to allot 5-marla *shamlat* plots to Dalit families. The allocation process, however, stalled after the 2022 Punjab Assembly elections. In Chabba village, Ferozepur district, residents allege that the gram panchayat issued allotment certificates to 70 Dalit families in January 2022. “After the formation of the new state government in March, the block development and panchayat office took the certificates back on the pretext of getting them signed and stamped. They have not been returned yet,” says Gurdas Singh, a resident.

While the current Aam Aadmi Party (AAP) government has not issued any instructions on this order, rural development and panchayat minister Kuldeep Singh Dhaliwal tells DTE that the government will give land to poor labourers to build houses. “But in villages where there is no land, this will be difficult,” he says (see 'We will give land...', p24).

In November 2022, when DTE visited Tarn Taran and Ferozepur, residents shared the reasons Dalit communities have failed to exercise their rights over *shamlat* land despite laws in place for 50 years.

INDUSTRIAL BID

“In last 10-15 years, industrialisation has accelerated in Punjab, and *shamlat* lands have seen the most change in land-use,” says Pooja Chandran, an environment lawyer at non-profit Foundation for Ecological Security. There have also been attempts by governments to divert

LAWS ON THE LAND

Proposed amendments in state law risk changing Punjab's policy of village common land

In Punjab, *shamlat* land is the village common land used for public utility. The land is leased and auctioned as per The Punjab Village Common Land (Regulation) Act, 1961, and the Punjab Village Common Land (Regulation) Rules, 1964. Some of the important provisions in the Rules are:

Rule 3 (xvi): Village common land may be leased out for purpose of housing to family having insufficient accommodation.

Rule-6: One-third of the cultivable land proposed to be leased, shall be reserved for members of the Scheduled Caste only. Rule-6 (10) (1) says auction of *shamlat* land shall be advertised at least 15 days prior.

Rule 13-A: A Panchayat may, with the previous approval of the government, give land in *shamlat deh*, free of cost, to a landless worker residing in the sabha area for construction of a house for his residence.

Amendments that risk change in Punjab's policy of *shamlat* land:

Rule 12-B: A special provision under the 1964 rules for transfer of *shamlat* lands for development of industrial infrastructure projects. It was approved in December 2019, but yet to be notified.

Section 2 (g): The 1961 Act was amended in September 2022 to insert this section that allows inclusion of *jumla musharkat malkan* land, acquired by the government during land consolidation, within the definition of *shamlat* land. Labour unions demand that the *jumla musharkat malkan* land must now be auctioned like *shamlat* land, not diverted for industrialisation.

'WE WILL GIVE LAND FOR HOUSING'

Punjab has freed 4,000 hectares of *shamlat* or village common land from encroachment, says the state's rural development and panchayats minister **Kuldeep Singh Dhaliwal**

Dalit communities in several villages say that there are irregularities in the auction of *shamlat* land reserved for them. What steps will the government take to ensure this process gains more transparency?

We have rectified problems in many villages. Last year, 90 per cent of the auctions in Punjab were conducted correctly, with photography and videography. This year, 100 per cent of the auctions in Punjab will be accurate. The government does not decide the bid price, rather, the people do. However, we will ensure that the Dalit communities will not have to pay the entire bid amount at once. The government is giving Dalits time from the when the auction is conducted to the sowing of the crop. In many cases, the government has taken ₹50,000 at the time of bidding and provided people a month to pay the balance.

The previous Congress government initiated allocation of 5-*marla* plots (0.012 ha) to landless Dalit people and in some cases, certificates were issued but withdrawn later. Will the current government continue this process?

The Charanjit Singh Channi-led Congress government made this announcement to

garner votes, but did not give lands to people. After voting concluded, Congress workers withdrew most of the certificates, even before our government was formed. Our government will provide land to poor labourers who need a plot to build a house. While this can be done in villages where land is available, it will prove difficult in areas with no land.



The Punjab Aam Aadmi Party government launched a *shamlat* cell in 2022 to address encroachment in village common land. What has the cell achieved so far?

The campaign began by identifying where and how much land is under encroachment. Initially we thought about 20,234 hectares (ha) was encroached upon, but after launching the *shamlat* cell, we found that the figure is 52,609 ha. Many of these areas are under litigation in courts, but we have

shamlat land to industries.

In 2013, the Union government passed the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement (LARR) Act that mandates the consent of 70 per cent of affected families in public-private partnership projects and 80 per cent for private projects. Dilraj Singh, a lawyer with the High Court of Punjab and Haryana, says, "Feeling hand-tied by LARR Act, big private players are now eyeing the village common lands, with government support. To this effect, in December 2019, the Congress regime in Punjab led by Amarinder Singh cleared a proposal from the Rural Develop-

ment and Panchayats Department to insert Rule 12-B in the Punjab Village Common Land Rules, 1964, to provide special provision for transfer of *shamlat* lands for development of industrial infrastructure projects." This amendment has not yet been added to the state gazette.

In September 2022, the AAP government amended the Punjab Village Common Land Act, 1961, to include *jumla mushtarka malkan* land, acquired by the government in the 1970s during consolidation of landholdings to be used for collective purposes in villages, in *shamlat* category. Most of the *jumla mushtarka malkan* land is still possessed by farmers who originally

owned it. Fearing dispossession, farmer unions are protesting the 2022 amendment. They also allege that the government may use the land for industrialisation. Labour unions, on the other hand, say there is opportunity for greater land allotment if *jumla mushtarka malkan* land is added to cultivable *shamlat* land. "We will protest if this land is diverted to industries," says Mukeesh Malaudh, president of Zameen Prapti Sangharsh Committee that works for Dalits' land rights.

GRABBING BY POWER

The 33 per cent of cultivable *shamlat* land, reserved for Dalit communities, is also seen as a soft target

freed about 4,046 ha which was not under legal proceedings. It may take time to do the same for the rest.

What does the government plan to do with the land freed from encroachment?

We have three types of land; first is village land, which will be useful for agriculture. This land will be returned to the panchayats and will be included in auctions. Then there is land that falls on roads near cities. This will be used commercially. The third kind is barren land, which will be used for environmental measures.

The government has brought *jumla mushtarka malkan* land (acquired by the government during post-Independence land consolidation) under *shamlat* land. What are the objectives of this amendment?

There is 80,000-110,000 ha of *jumla mushtarka malkan* in Punjab. Until now, the panchayat has been managing such land and auctioning it, but it could not be transferred. The government

needs land to build stadiums, hospitals and schools in the villages. *Jumla mushtarka malkan* will be used to meet all such needs. After passing panchayat resolution, these lands will be given for village development.

There is suspicion among people that the land the government is acquiring may be given to industries.

This is all propaganda. There is no industry that can be set up on such small areas; all require at least 40-60 ha.

In December 2021, the Amarinder Singh government gave in-principle approval to insert Rule 12 (b) to the Punjab Village Common Land (Regulation) Rules, 1964, to allow *shamlat* land to be sold to industries. What is your view on such measures?

People's participation is necessary in making laws. The Bhagwant Mann government will ensure their participation in any law, and whenever there is a need to give land to industries, we will not do so without the consent of the farmers.



The upper caste population often employs Dalit labourers to bid for reserved *shamlat* land on their behalf

—**Balkar Singh** resident, Sherpur Takhtuwala village in Ferozepur



Punjab's Dalit population own very little land for housing. Size of houses is same as it was 50 years ago

—**Ranjit Singh** Tarn Taran district president, Dalit Dasta Virodhi Andolan



The Dalits' struggle for land is not only for survival but also for their collective identity

—**Pampa Mukherjee** Professor of political science at Panjab University

for upper caste households in the villages. Balkar Singh, a resident of Sherpur Takhtuwala village in Ferozepur, says the upper caste population often employs Dalit labourers to bid for reserved *shamlat* land on its behalf. Second, says Sukhwinder Kaur, an activist with DDVA, while the 1964 Rules say auctions need to be advertised 15 days prior, announcements are usually made a day before. Financially weak Dalit residents cannot arrange hefty sums overnight to bid, she says.

In its 2022 manifesto for Punjab Assembly elections, AAP acknowledged proxy bidding in *shamlat* land auction. Post the election, the government launched a *shamlat*

cell to free the land from encroachment. To ensure transparency in the auction process, Chief Minister Bhagwant Mann reiterated a 2014 order that mandates videographing the auction. However, residents in Tarn Taran and Ferozepur tell DTE that they have almost never seen an auction being videographed.

“The Dalits’ struggle for land is not only for survival but also for their collective identity,” says Mukherjee. To safeguard their land rights, says Dilraj, steps could be taken to set up a tribunal to address *shamlat* land disputes and utilise the land to empower rural Dalit communities. **DTE**

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TIME FOR A COMMON LANDS REFORMS COMMISSION

Village common land should be utilised to its best capacity to boost rural economic growth

DILRAJ SINGH

THERE IS a wide range of challenges and grounds of conflict centred around Punjab's village common land or *shamlat* land. If addressed with appropriate expertise and requisite political will, these challenges can be turned into golden opportunities of progress.

Statements from rural Dalit residents suggest numerous irregularities and violations in the allotment and auction of *shamlat* land. The first step in addressing this should be the establishment of a Punjab *shamlat* tribunal that deals exclusively with matters pertaining to Dalit communities' rights over village common land.

The rationale behind constituting this tribunal lies in the fact that the annual auction of *shamlat* lands is held in April and May, just before the paddy-sowing season in June. People who are allotted cultivable common land through illegal means during the auction usually waste no time in sowing paddy. Once the crop is sowed, it is difficult for a genuine claimant to obtain an interim stay order on the allotment through the court.

Coincidentally, the state high court also begins its summer vacation in June and functions with reduced capacity during the month. Already, there is a huge number of cases pending with the state high court due to the COVID-19 pandemic and lockdowns. The requisite time for summoning and receiving replies of respondents before final arguments is usually two-four months on average. This means that if a petitioner claiming to have been wronged during the *shamlat* land auction fails to obtain an interim stay on the very first hearing in the court, the allottee would easily be able to sow paddy much before the petition reaches the stage of final arguments.

Even if it is assumed that the high court is able to grant interim stays in most of the petitions filed in April and May, it would not be a desirable scenario for state's total production of paddy, as hundreds of hectares



would go without sowing.

To avoid such a situation, the state government should constitute a tribunal headed by a retired high court judge and assisted by two other presiding members who may have a thorough experience of land and revenue matters in the state.

Meanwhile, immediate reforms are needed in payment methods in the annual auctions. Currently, successful bidders are required to pay the entire amount on the day of the auction

itself, which creates difficulties for poorer sections of society. Therefore, the state government can introduce an easy instalment system. This step can go a long way in curbing the practice of affluent residents fielding dummy candidates during auction.

Third, videographic records of each auction should be readily available with the village panchayat and the block development and panchayat office. Any resident should be able to review this video without having to apply under the Right to Information Act, 2005, which is a time-consuming process.

Finally, the Punjab government should constitute a common land reforms commission with a mandate to utilise the state's common land to its best capacity. The non-cultivable areas of common land hold the key to boost agrarian entrepreneurship among village residents and eventually eliminate rural poverty. Such areas should be extensively allotted to landless labourers or Scheduled Caste residents to set up small-scale businesses such as dairy farming, horticulture and pig rearing among other activities. Rule-3 of The Punjab Village Common Land (Regulation) Rules, 1964 already has a provision empowering panchayats to set up a wide range of small-scale businesses. However, this provision continues to be incredibly underutilised.

(Dilraj Singh is a lawyer practising with the High Court of Punjab and Haryana)

A **Down To Earth** ANNUAL

STATE OF INDIA'S ENVIRONMENT 2023

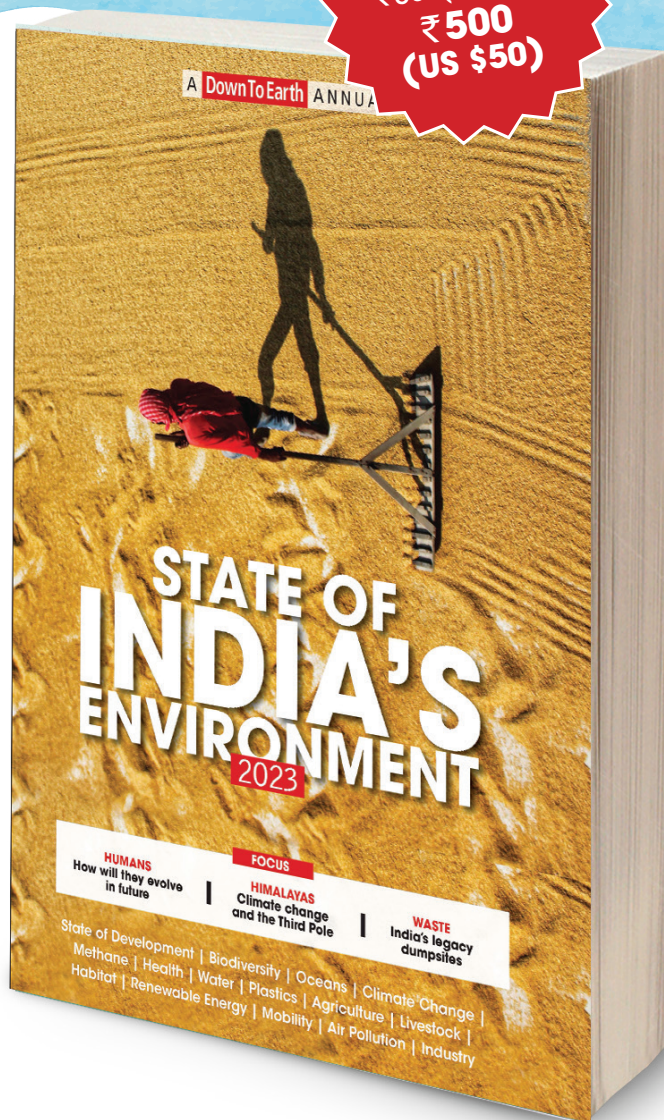
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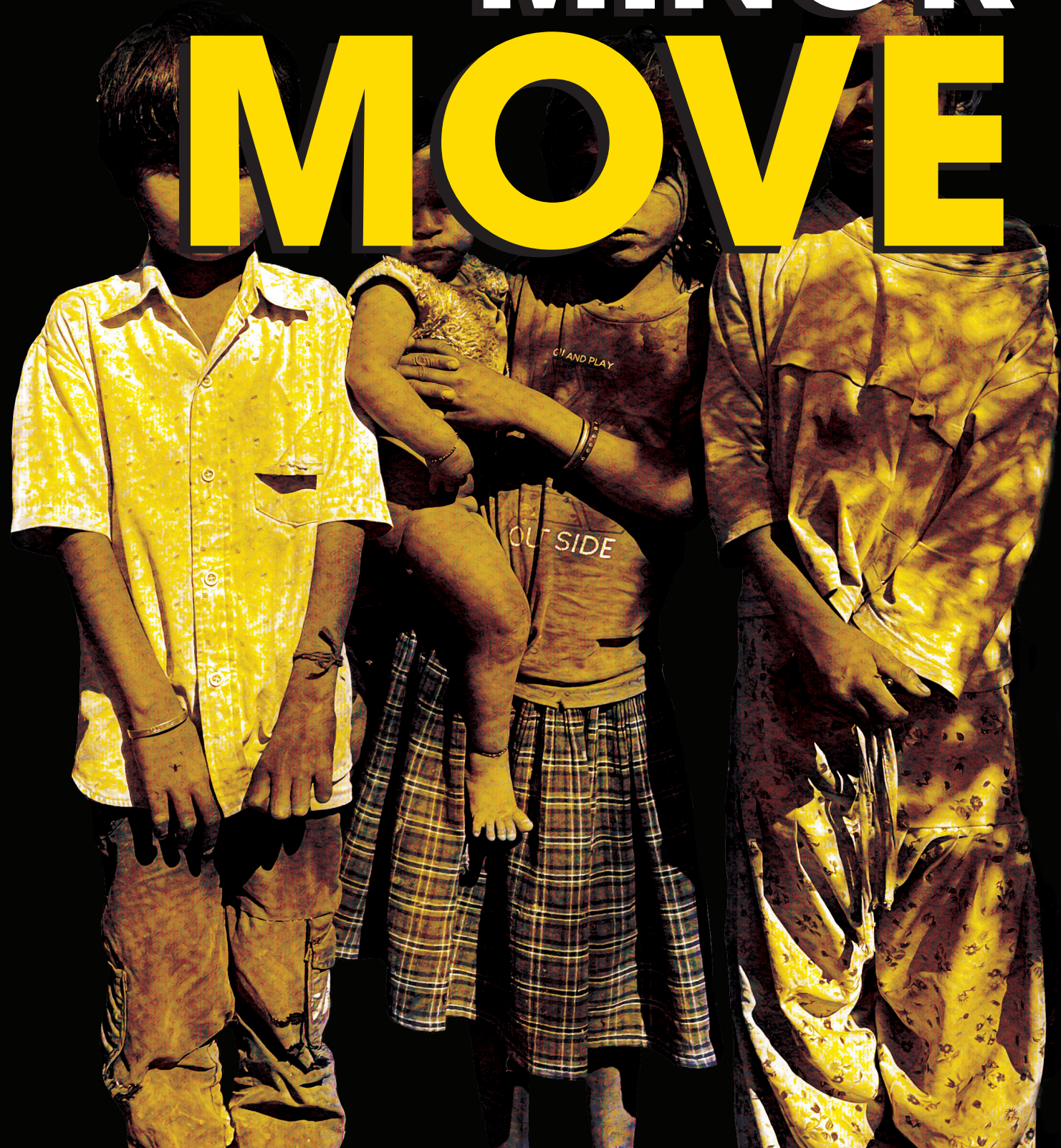
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COVER STORY / CHILD MARRIAGE

MINOR MOVE



Assam's evangelical crackdown on child marriage to curb high maternal mortality is an imperfect solution to a problem with multiple triggers

MONOJ GOGOI from Dhemaji, Assam,
TARAN DEOL from New Delhi and
HIMANSHU NITNAWARE from Barmer, Jaisalmer,
Tonk and Bhilwara, Rajasthan

THE JOY of being pregnant with her first child lasted just a few hours for Menaka Doley Patir (*name changed*), a 17-year-old resident of a remote village (*all the village names in the article have been withheld to protect identities*) in Assam's Dhemaji district. The news of her pregnancy came after the state government launched a crackdown on child marriage on January 23, 2023, using the Prohibition of Child Marriage Act, 2006 (PCMA) along with the Protection of Children from Sexual Offences Act, 2012 (POCSO). In just a month, the Assam police had arrested over 3,000 people, mostly husbands and male family members of underage brides, from across the state. Menaka is a year younger than the official marriageable age of 18 years. If caught, her husband would face imminent arrest and imprisonment of up to 20 years under POCSO for committing sexual assault. Her family has taken the painful decision to undergo an abortion.

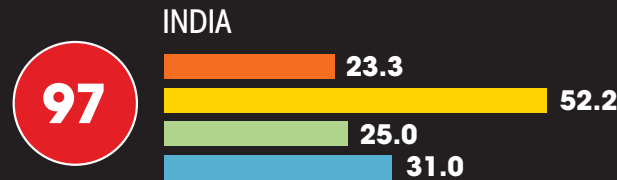
They are too terrified to go ahead with the pregnancy, as they know they will not be able to hide Menaka's age. As part of the crackdown, the government has directed hospitals and local health workers to record age-related details for each pregnancy and childbirth. Officials are using the document to identify underage marriages.

Fear grips the state as the crackdown widens. Families are sending underage brides to their parents' homes or to other places to give the raiding officials a slip. Many expectant mothers are opting for home deliveries to evade the authorities. Underage mothers have also stopped taking their children to hospitals over fears of getting identified. Pranita Phukan (*name changed*) from another village in Dhemaji district waited for four long days before taking her ailing infant to the nearby healthcare centre. By then, the infant had become so weak that he had to be referred to the district civil hospital.

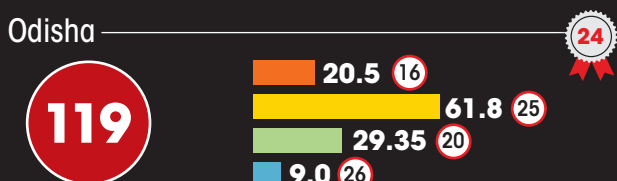
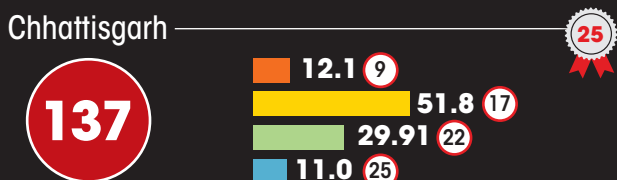
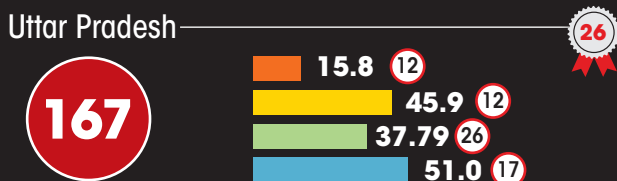
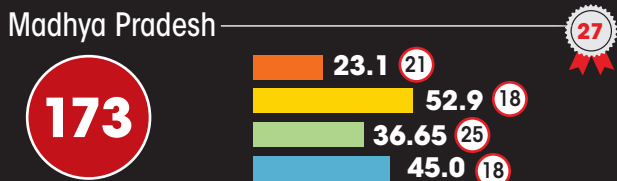
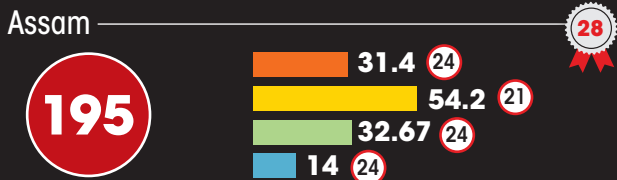
◀ A family in a village on the outskirts of Barmer town in Rajasthan married off their two daughters, aged 10 and 12, in October 2022 because of poverty

MANY REASONS FOR MATERNAL MORTALITY

States with high maternal mortality are struggling with a mix of poverty, lack of health centres, anaemia and child marriage



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- % Multidimensionally poor population
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- MMR ranking
- Indicator-wise ranking



“More than four married girls from the village have returned to their families. They are all underage. Panic is prevalent in all the families,” says Japan Doley (*name changed*) of another village in Dhemaji. His wife is an *anganwadi* worker responsible for monitoring women’s health and childbirth in the village. “My daughters-in-law are now adults. But they were underage at the time of marriage. So, I and my sons might still be arrested,” Doley says.

EXTREME MEASURE

Child marriage remains a chronic problem throughout India, even though it has been banned since 1929. In 2019-21, almost one out of every four—23.3 per cent—women between the age of 20 and 24 years was married before turning 18, suggests the latest fifth round of the National Family and Health Survey (NFHS-5), released by the Union Ministry of Health and Family Welfare. Child marriage is most prevalent in West Bengal (41.6 per cent), followed by Bihar (40.8 per cent), Tripura (40.1 per cent) and Jharkhand (32.2 per cent). In Assam, the share is 31.8 per cent.

Despite the high incidence, the current crackdown in Assam, the most audacious attempt to arrest child marriage, has come as a rude surprise. For the first time in the country, the state government is arresting people involved in child marriage under POCSO, a law to check sexual harassment, prostitution, trafficking and pornography against underage girls, along with PCMA.

“The content and the spirit of PCMA have not been about policing and cracking down, but rescuing the victims and punishing the offenders only through the laid-down procedures. The actions by the police, therefore, violate the provisions of the Act,” says Akhil Ranjan Dutta, former head of the political science department at the Gauhati University in Assam (see ‘Misguided treatment’, p33).

PCMA draws a fine distinction between different kinds of child marriages. It says that in cases where the child was “forced, compelled” into marriage through “deceitful

means” or “sold” for the purpose of marriage, such marriages are void by default. In all other cases, the marriage is voidable only if the child moves court within two years of becoming an adult. The law also has several mechanisms to avoid child marriages and provisions to ensure the well-being of the underage bride and any children born out of such marriages. Besides purpose, the other major difference between the two laws is in the quantum of punishment. Under PCMA, a person can be imprisoned for up to two years and fined ₹1 lakh. Under POCSO, a person can be imprisoned for up to 20 years for “penetrative sexual assault”.

Assam Chief Minister Himanta Biswa Sarma has justified the move to use the two laws in tandem by saying that all child marriages are illegal. But this has not gone down well even with the Gauhati High Court. “What is the POCSO (charge) here? Merely because POCSO is added, does it mean judges will not see what is there?” said Justice Suman Shyam of the Gauhati High Court on February 14, while granting pre-arrest bails to nine petitioners booked under the crackdown. “This is causing havoc in the private life of people. There are children, family members and old people. Obviously it (child marriage) is (a) bad idea. We will give our views but at the moment the issue is whether they should be all arrested and put in jail,” the court observed in a related case.

The crackdown, though, continues. As of February 22, the state police had registered 4,249 cases of child marriage. In contrast, only 155 cases were registered under PCMA in 2021, as per National Crime Records Bureau. The national figure in 2021 was 1,050. That year, the state had filed 1,926 cases under POCSO, but they were for sexual assaults committed on minors, not for child marriage.

MISPLACED LOGIC

Sarma has told the media that through the crackdown, his government plans to arrest maternal and infant deaths in the state. Assam has the highest maternal mortality

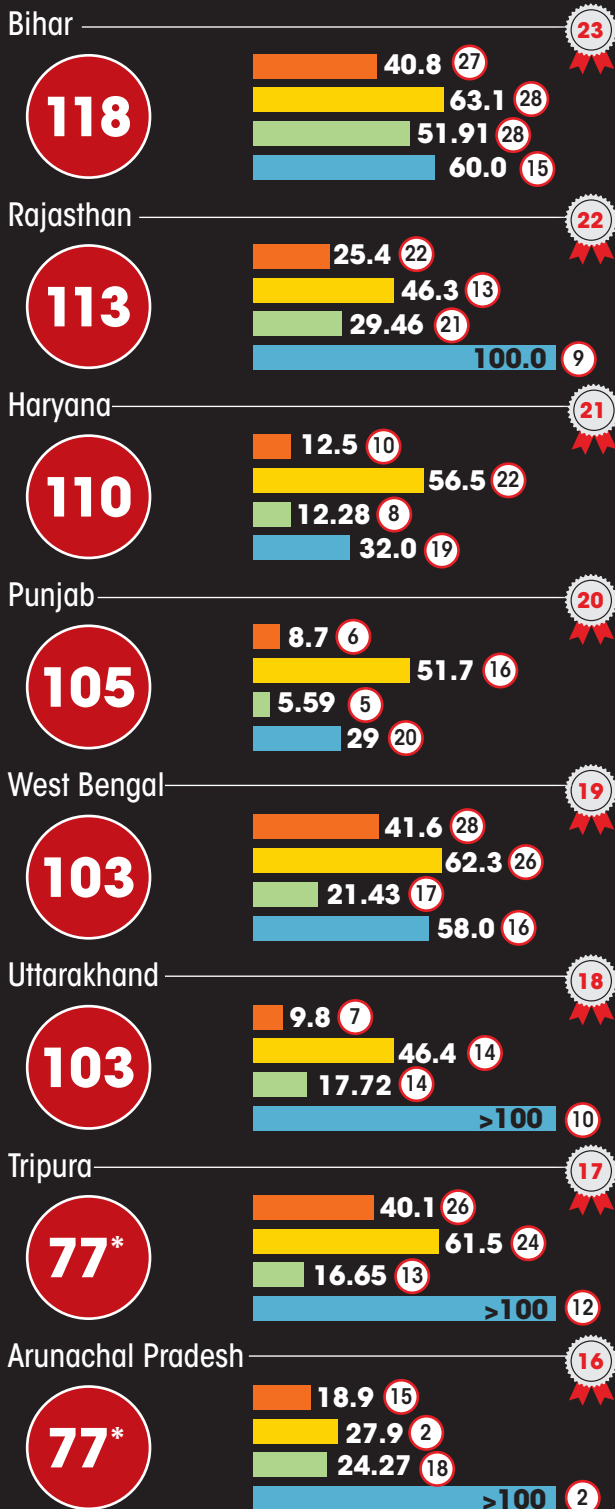


▲ The underage mother in Assam’s Dhemaji district waited for four long days before taking her ailing infant to a healthcare centre. By then, the infant had become so weak that he had to be referred to the district civil hospital

rate (MMR) in the country, at 195 deaths per 100,000 live births, as per the 2018-20 Sample Registration System report by the Registrar General of India. The national average is 97. India has the second highest burden of maternal deaths, only after Nigeria, as per the UN’s “Trends in Maternal Mortality” report released on February 23, 2023.

Child marriage increases the risk of maternal mortality as minors are not mentally or physically prepared for childbirth. A research paper published in *ScienceDirect* in December 2019 finds that 23.3 per cent of maternal deaths in Assam were among adolescents. The paper, “Epidemiological study of maternal death

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* Tripura, Arunachal Pradesh, Meghalaya, Manipur, Sikkim, Mizoram and Nagaland have been classified as "others" with maternal mortality rate of 77

in Assam", also establishes that adolescent pregnancy is higher in districts with high MMR, compared to those with low MMR.

Experts, however, warn that the idea that Assam can arrest MMR by cracking down on child marriage alone is too simplistic and farfetched. The triggers for it go much beyond child marriage.

"High blood pressure and anaemia are the main causes of maternal mortality in India," says Hiranmoyee Gogoi, gynaecologist and in-vitro fertilisation expert with the Aditya Hospital in Dibrugarh, Assam. More than half of the pregnant women in India are anaemic, suggests NFHS-5.

Lack of awareness and poor access to health infrastructure aggravate the problem. "Women should regularly visit the healthcare centre during their pregnancy. But hospital visits take place only when there are complications," says Jayanta Bor Gohain, a paediatrician in Dhemaji district. Expectant mothers should, as per the World Health Organization, make at least four antenatal visits to healthcare centres to monitor their pregnancy. In reality, only 58.1 per cent women in India undertake the four visits, as per NFHS-5. At the same time, 74 per cent of expectant mothers do not consume iron-folic acid medicines for at least 180 days, which can substantially reduce the chances of anaemia in mothers, as per NFHS-5. In Assam, the share of expectant mothers who do not consume iron-folic acid medicines for at least 180 days is alarmingly high at 82 per cent.

Assam also has another challenge. "The state has a low population density of 398 people per square km. As a result, people have to travel long distances, over difficult terrain, to access health centres," says Sunil Kaul, doctor and co-founder of the Action Northeast Trust, a rural development organisation.

In India, a sub-centre, the point of most peripheral contact between residents and government health institutions, should cater to a population of 3,000-5,000. In Assam, each sub-centre caters to 5,000-7,000 people, suggests the "Rural Health

MISGUIDED TREATMENT

Maternal and infant mortality cannot be sole grounds for waging a war on child marriage

AKHIL RANJAN DUTTA

ASSAM HAS alarming maternal and infant mortality rates. The rising incidence of child marriage worsens the situation. Against this background, the Assam government carried out a state-wide crackdown on child marriage, booking thousands of people under the Protection of Children from Sexual Offences Act, 2012 (POCSO) and the Prohibition of Child Marriage Act, 2016 (PCMA).

However, two larger questions need to be addressed to cross-examine the assertions made by the government in dealing with the issues of maternal mortality rate (MMR) and infant mortality rate (IMR).

The first is the assertion that MMR and IMR are legitimate grounds to wage war on people associated with child marriage. Besides child marriage, it is poor healthcare, nutrition deficit and a failure to temper scientific knowledge about birth control that have led to high MMR and IMR rates. The Population and Women Empowerment Policy of Assam, 2017, took note of the entirety of the challenges confronted by the population—from poverty and illiteracy to flood, erosion and climate change, which contribute towards the declining quality of human life in Assam, apart from contributing to the recent population explosion. The prevalence of higher IMR and MMR was attributed to demographic and development complications, highlighting issues like constraints on livelihood sources, unemployment and illiteracy, along with child marriage. A series of reports published by different government agencies, including the NITI Aayog, has exposed the poor state of human security and sustainable development in Assam. The state has also performed poorly in health and wellbeing.

The second is the misinterpretation of the provisions of PCMA and POCSO in cracking down on child marriage. Neither of the Acts empowers the police to engage in a mass crackdown or punish those who have supposedly indulged in

child sexual abuse. POCSO is almost non-applicable in the present cases. PCMA lays down legal-juridical procedures, both for annulling such marriages through petitions by the contracting parties within the stipulated timeframe and also assigns definite responsibilities to the authorities constituted under the Act to create awareness and undertake measures so as to prevent the practice of child marriage. The content and spirit of the Act have not been about policing and cracking down, but rescuing the victims and punishing the offenders only through the procedures. The actions of the police, therefore, violate the provisions and the spirit of the Act.

The Act has three important dimensions: (a) procedure and stipulated timeframe for filing petitions by contracting parties against child marriage; (b) provision for maintenance and residence to female contracting party to child marriage; custody and maintenance of children of child marriages, and legitimacy of children born of child marriages; and (c) role and responsibilities of Child Marriage Prohibition Officers towards creating awareness, collecting evidences and undertaking initiatives against the child marriages in collaboration with the stakeholders in the society. Interestingly, Assam's Chief Minister emphasised creating an ecosystem against child marriage only after the strong observations by the Gauhati High Court against the police crackdown. In a review meeting with state officials on February 17, the Chief Minister said "the Government functionaries, law enforcement agencies, *gaon burhas*, *gaon panchayat* secretaries, self-help groups, village defence parties will be the stakeholder of the ecosystem."

(Akhil Ranjan Dutta is the former head of the political science department at the Gauhati University in Assam. He is the author of Hindutva Regime in Assam: Saffron in the Rainbow 2021)

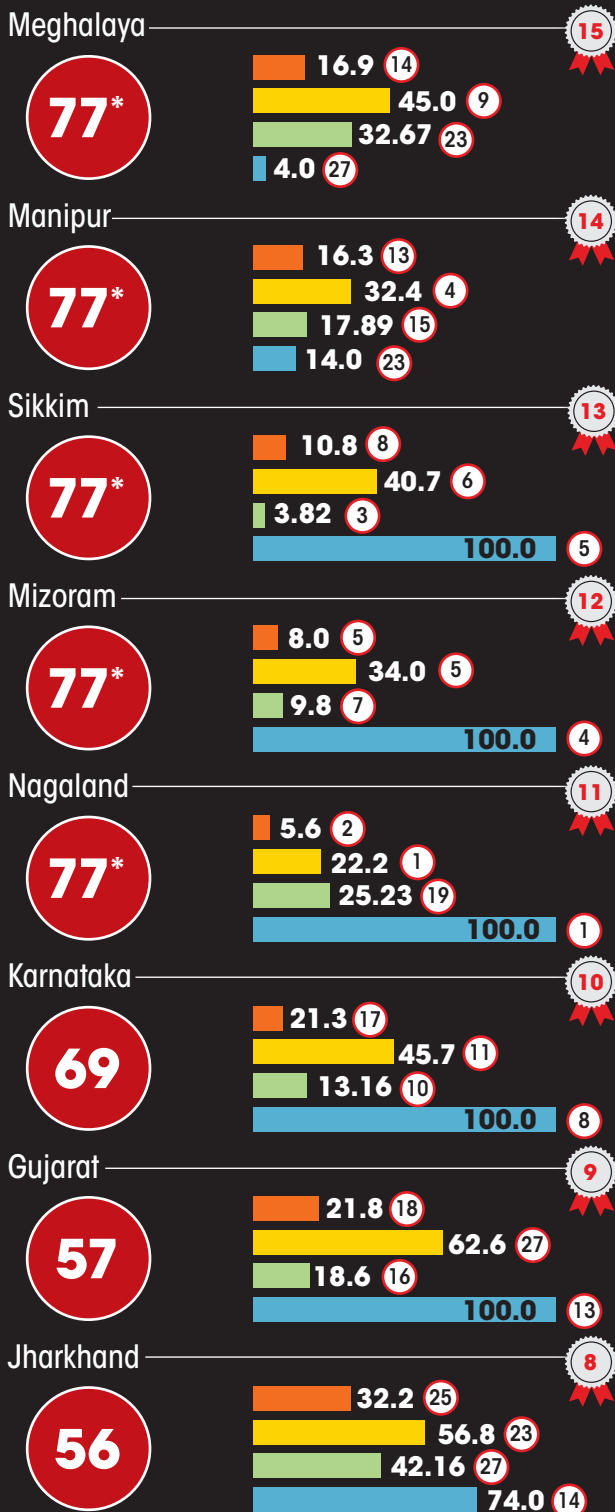
Statistics 2021-2022", released by the Union Ministry of Health and Family Welfare. A sub-centre is usually managed by a female and a male health worker.

A similar gap exists in access to primary health centres, which are usually the referral units for six sub-centres and have four to six beds that are managed by a medical officer and allied staff. A primary health centre should ideally cater to a population of 20,000-30,000, but in Assam,

each one caters to 30,000-40,000 people. Community health centres, which have specialist doctors such as gynaecologists, are also overburdened in Assam, as they cater to 100,000-200,000 people, as opposed to the recommended population of 80,000-120,000 people.

Poor infrastructure at health centres makes matters worse. Of the 4,667 functioning sub-centres in Assam, 37.6 per cent do not have electricity. Of the 920 functio-

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ning primary health centres, 17 per cent do not have electricity and 59 per cent lack all-weather motorable approach roads, says Rural Health Statistics 2021-22.

“The issue extends beyond infrastructure to the availability of well-trained personnel to handle emergencies,” says Kaul, adding that in most rural areas, emergency services are not available after dark. Postpartum haemorrhage—a condition of excessive blood loss within 24 hours of delivery—is a common reason for maternal deaths in the state. “In my experience, half of the doctors in government hospitals are generalists and not trained to handle the situation,” says Kaul. According to him, a common mistake that untrained doctors commit is putting haemorrhaging patients on a drip, which causes heart failure. “Assam is in desperate need of good emergency care at the peripheral level,” he says.

Based on the interactions with doctors and women rights experts, *Down To Earth* (DTE) identified four parameters—child marriage, multidimensional poverty (that looks at poverty across health, education and standard of living), shortfalls in primary health centres, and the prevalence of anaemia among expectant mothers—to understand their correlation with maternal mortality. The analysis was done for all the 28 states in the country. The findings show that the states that perform the worst in terms of MMR also perform poorly in all or most of the other four parameters. In contrast, the states with the lowest MMR levels are performing poorly in one or two parameters (see ‘Many reasons for maternal mortality’, p30).

Assam, for instance, ranks 24th among the 28 Indian states in child marriage, poverty and shortfalls in primary health centres. It ranks 21st in the share of pregnant women with anaemia.

Madhya Pradesh, which has the second highest MMR in the country, also fares poorly in child marriage (rank 20), poverty (25), anaemia and primary health centre shortfalls (18). The next three states—

Uttar Pradesh, Chhattisgarh and Odisha—have a lower prevalence of child marriage than the India average, but are struggling in the other three indicators.

In contrast, the five states with the lowest MMR perform better than the rest of India in most of the parameters. Kerala, which has the lowest MMR, ranks among the top three in all four indicators. Maharashtra, despite a high prevalence of child marriage and lack of primary health centres, has the country's second-lowest MMR rate. In terms of anaemia and poverty, Maharashtra is better placed than the majority of Indian states. West Bengal, which has the highest child marriage numbers in the country, ranks 11 in MMR levels. The state ranks poorly in multidimensional poverty (17) and shortage of primary healthcare centres (16).

In addition to the four factors, state-specific difficulties also contribute to maternal mortality. Assam has a diverse population and some of the communities, particularly tribal, do not have access to healthcare facilities. According to the 2011 Census, tribal communities comprise 12.45 per cent of the state's population. "Assam has been a conflict zone with a long history of insurgency. This directly impacts the health of the people," says Nandita Saikia, professor of public health and mortality studies at the Mumbai-based International Institute for Population Studies.

"To reduce maternal mortality and morbidity, the main thrust should be on implementing basic and comprehensive emergency obstetrics care. Analysis of every maternal death through a maternal death audit, either at the community level (verbal autopsy) or at the institutional level, should be carried out. It will help in identifying the actual cause of maternal deaths and deficiencies in (the) healthcare delivery system that might contribute to formulating preventive measures to reduce pregnancy-related deaths," reads a study published in 2013 by the doctors at the Department of Obstetrics & Gynaecology at Fakhruddin Ali Ahmed Medical College in Barpeta, Assam.

DIVORCED FROM REALITY

Assam's crackdown will not bring sustainable change as child marriage is rooted in culture, social norms

GHASIRAM PANDA

THE PROHIBITION of Child Marriages Act, 2006, rolled out in 2007, fixes the minimum age for marriage to 18 years for girls and 21 years for boys. Under it, male adults who contract, perform, conduct, direct or abet child marriages shall be punished and even imprisoned. The emphasis of the law is on prevention and protection. Prosecution is an option only when necessary, particularly if the child is taken away from their lawful guardian by enticement, force or use of deceitful means or, is sold or trafficked for the purpose of marriage.

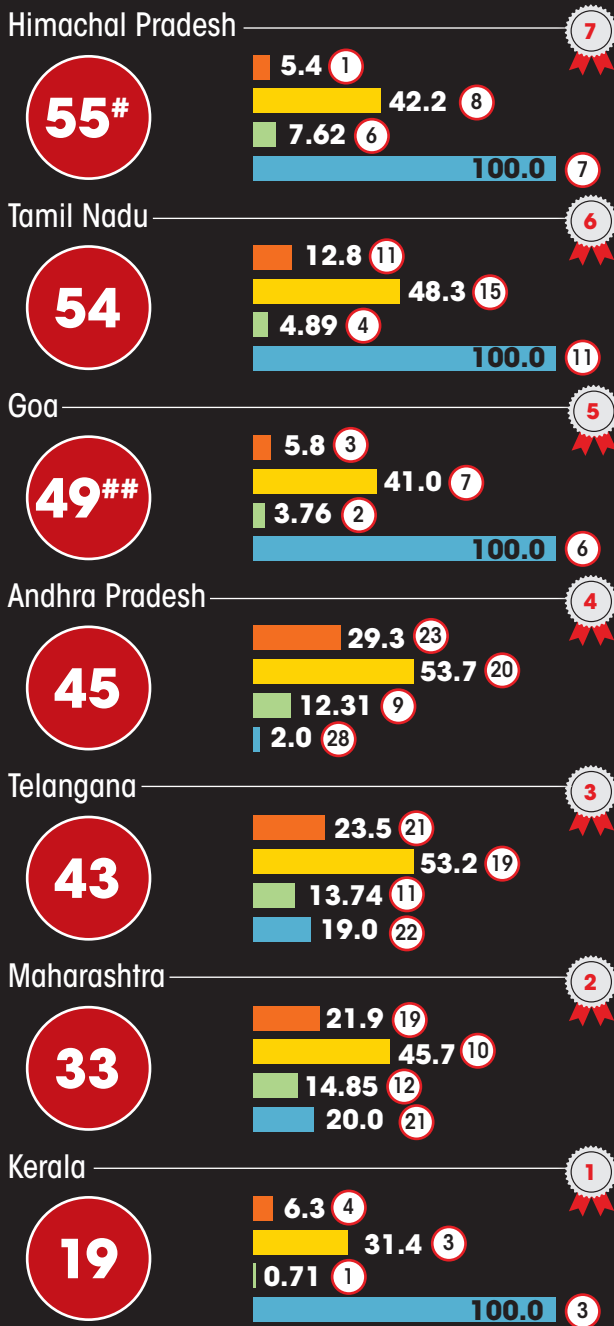
This makes sense as child marriage takes place for a variety of reasons such as poverty, traditions and values based on patriarchal norms. It is an established fact that economics related to raising girl children have often pushed poor families to consider child marriage as a viable solution.

The law calls for the appointment of child marriage prohibition officers (CMPOs) in every state for sensitisation and awareness creation in the community, prevent child marriages and to protect the victims. It makes child marriages voidable by giving choice to the children in the marriage to seek annulment of marriage. It provides for the maintenance and residence of the underage bride. It gives a legal status to all children born from child marriages and makes provisions for their custody and maintenance. The law provides all support and aid including medical aid, legal aid, counselling and rehabilitation support to children once they are rescued. The child marriage prohibition officer has been empowered to provide necessary aid to victims of child marriage and to produce children in need of care and protection before the Child Welfare Committee.

Under the law, the state should appoint a chief CMPO who is responsible for developing a state strategy to end child marriage, producing an annual report on child marriage and monitoring the effective implementation of the law. Ensuring prevention and protection makes the state accountable to establish a responsive system, build collective consensus and increase public investment. Whereas prosecution shifts the burden onto the public. Assam has adopted the shortcut by focusing on prosecution.

(Ghasiram Panda is the programme manager of the Ending Child Marriage Programme of non-profit Action Aid India)

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Sources: National Family Health Survey 5 (2019-21), the Union Ministry of Health and Family Welfare; National Multidimensional Poverty Index 2021, Niti Aayog and Sample Registration System report 2018-20 by the Registrar General of India; *Comptroller and Auditor General Report as on March 31, 2020, tabled in the Goa Assembly on July 22 2022; **Himachal Pradesh government website, April 2021

NOT A MINOR PROBLEM

The triggers that impact MMR also influence child marriage. The age-old practice is closely linked to social customs, poverty and illiteracy. “We are still living in a patriarchal society where girls are thought to be a burden on the family. For poor families, the priority is to get the girl child married,” says Hema Das, women and child activist working in Assam’s Sonitpur and Morigaon districts.

In tribal communities, child marriage is socially accepted and has been in practice since time immemorial, says Jibakanta Kutum, president of Dhunaguri-Bahgarha panchayat in Lakhimpur district of Assam.

“Many tribal areas are without schools. Under the Right of Children to Free and Compulsory Education Act, 2009, children should be taught in their native language up to class 8, which is not happening. This results in high dropout rates and underage marriage,” says Wilfred Topno, president of the Adivasi Sahitya Sabha, a non-profit that works with tribal communities in the state’s tea gardens. The problem can only be solved through sensitisation and awareness, he says.

“Over the decade of 2001-2011, girls, especially in their early adolescence, have become much more vulnerable to child marriage,” as per the “Status and Decadal Trends of Child Marriage in India” report released by non-profit Child Rights and You (CRY) in 2020. Recognising child marriage as a “complex socio-cultural phenomenon” with multiple interlinked drivers, the study says half of the underage marriages in India involve girls who are in the age group of 15 and 19 years and are living in rural areas. It adds that the practice is on the rise in urban areas.

DTE travelled to four Rajasthan districts—Barmer, Jaisalmer, Tonk and Bhilwara—that are among the poorest regions in the country and found that child marriage is rampant. In a village on the outskirts of Barmer city, a family has married off their daughters, who were 10 and 12 years old, together in October 2022



due to poverty. Their mother told DTE that relatives were visiting the family after her mother-in-law passed away. “So we thought marrying off the girls around the occasion would save us money,” she says. Anuprerna Kuntal, commissioner and principal secretary, commissionerate, child rights department in Jaipur, says that farm losses in recent years has also spiked child marriage in the state. “There is an old tradition called *chari* among certain communities, where the girl’s father receives money during marriage, which they use to pay off their debt,” Kuntal says.

The COVID-19 pandemic has added to the problem. According to the UN Children’s Fund (UNICEF), 10 million girls worldwide are at risk of becoming brides over the next decade, as the pandemic has caused poverty and forced children to drop out of school. These reasons also exist in India and have led to forced child marriages in the country, says Kriti Bharti, an activist who works on children’s and women’s rights in Rajasthan. “I have no official or documented data to prove it. I am making the claim from direct field observations and experiences,” she says. Many poor families were concerned about the safety

▲
A 16-year-old girl from a village about 13 km from Barmer, Rajasthan, married when she was 14 and is now a mother

and security of their daughters. As a result, they married a large number of adolescents aged 14 and up.

On February 17, Assam Chief Minister Sarma wrote on a microblogging site, “Reports are coming from various parts of Assam that several families have cancelled pre-scheduled marriages between underage children after our drive against such illegal practices. This is definitely a positive impact of our two-week long crackdown against child marriage.”

During a visit to a village in Dhemaji district, DTE came across a group of mothers returning home with their children. Life is difficult in the village inhabited by the Mishing community, which battles floods almost every year. Still, the people are thriving. The women admit that child marriage happens in the community, but they quickly add that the change has already started. Many girls and boys from the village now study in private colleges and are positively influencing the community. “What we require is improved access to opportunities. Instead, the government is conducting police raids,” says one of the mothers. **DTE**

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COASTAL CRISIS

Odisha is fast losing its shoreline to rising sea levels. Its adaptation plans must not only be immediate but also foolproof

AKSHIT SANGOMLA GANJAM, PURI, KENDRAPARA, ODISHA

IT'S A race against time, and tide, for those living in Odisha's coastal villages. Data with the National Centre for Sustainable Coastal Management, Chennai, shows that 74 villages in the state are severely affected by shoreline erosion—the highest in the country. A study paper published in the journal *Spatial Information Research* in June 2018 finds that almost half of Odisha's coast—196 km

of shoreline—has undergone erosion between 1990 and 2015. A major reason for this is rising sea level, which is surging along the Odisha coast at a rate faster than the rest of the country. A July 2022 paper published in *Applied Ecology and Environmental Research* finds that sea level along Odisha has risen by 9.5 cm in the 50 years between 1966 and 2015. The average sea level rise along the Indian



Just in 15 years, Podampeta village of Odisha's Ganjam district has lost 200 houses to the sea and now resembles a ghost village. (Below) In Penthavillage of Kendrapara district, the geosynthetic tubes installed to check coastal erosion now resemble a seawall

coast during the period is 8.5 cm, shows the response to a query in Rajya Sabha in November 2019. Odisha has also been battered by the maximum number of cyclones in the country.

The government is well aware of the crisis, and has been implementing measures to stabilise select areas of the state's coastline since 2012. In 2010, the Union environment ministry prepared an Integrated Coastal Zone Management Plan (ICZM) to be implemented on a pilot basis in Odisha, along with two other states prone to shoreline erosion—Gujarat and West Bengal. The plan was to be implemented with ₹896.37 crore financial assistance from the World Bank. But a 2022 report by the Comptroller and Auditor General of India states that "Inordinate delay in the preparation of this plan resulted in the implementation of pilot investment activities which did not emerge from the ICZM plan and thus, these activities could not complement the plan to this extent." In January

2023, *Down To Earth* travelled across some of the coastal areas of Odisha, only to find that the measures are barely able to check shoreline erosion of the state, leaving local communities and biodiversity exposed to rising sea levels and extreme sea level events, triggered by a combination of sea tides, waves and storm surges during cyclones. Most erosion control measures are either not suitable for the state's highly dynamic shoreline or have implementation flaws.

ENGULFED BY SEA

The extent and severity of the erosion can be gauged at Podampeta and Ramayapatnam villages of Ganjam district. Located close to the Rishikulya river's mouth (where the river enters the ocean), Podampeta is a site of extreme sea level events. "Just six months ago, following a storm surge, a large patch of land, a metre from my house, was suddenly swept into the sea. Now, my house is on the line," says C H Paindi, sitting on the doorstep of her worn down house. Paindi, in her 40s, recalls that the sea started moving closer to the village around 2007-09. But since 2015, its tides are getting more aggressive by the day. So far, the sea has engulfed 200 houses. The remaining 100 houses stand in a dilapidated condition, giving Podampeta an eerie look of a ghost village. All the residents, except for two families, including that of Paindi's, have shifted to a rehabilitation colony, New Podampeta, 2 km away.

The situation is worse in Ramayapatnam village, some 50 km south of Podampeta. Ramayapatnam is located near the mouth of Bahuda river. P Ganapathi, a 70-year-old resident, says the river mouth has been shifting towards





Residents of Ramayapatnam village in Odisha's Ganjam district say the mouth of the Bahuda river is fast shifting towards the village

the village in the past 14-15 years. "Due to this, we are experiencing flooding triggered by tidal events and storm surges in last five to six years. Sometimes, seawater reaches our village," says P Mohan Rao, another resident. Ramayapatnam has so far lost 47 houses to the sea.

R N Samal, scientific officer of Odisha government's Chilika Development Authority, tells DTE that to tackle coastal erosion, the state government plans to deploy geo-synthetic tubes—a large tube shaped bag made of porous, weather resistant synthetic material filled with sand to withstand sea waves—along the coast of Podampeta and Ramayapatnam in the second phase of ICZM project. While there is no clarity when this phase will be implemented, residents and

analysts caution against mindless implementation of the technique.

FAULTY IMPLEMENTATION

Odisha deployed its first set of geo-synthetic tubes in Kendrapara district after the super cyclone in 1999 triggered erosion along the coast of Pentha village and initiated submergence of nearby Agarnasi island, an active nesting site for Olive Ridley sea turtles. Sarat Tripathi, sarpanch of Pentha, tells DTE that the village shoreline has since remained protected from sea waves. "But beaches on the north and south of Pentha are eroding rapidly. An island is also being formed 3 km inside the sea which is visible during low tides," he says. With a little prodding, Tripathi elaborates how the structure was set up: "After the

geo-synthetic tubes were installed between 2012 and 2015, officials used small rocks in between and above the geo-tube to further strengthen it, and in 2017 placed bigger rocks on top of it for better support." When DTE visited the site, it resembled a seawall made of rocks.

Hard-engineered structures like seawalls and dykes have often been criticised for their impact on the environment. Studies confirm that in several cases, when used as a stand-alone measure, seawalls have resulted in active or passive forms of coastal erosion. In May 2022, the National Green Tribunal also directed all states and Union Territories not to raise or construct hard structures for erosion control. Yet in Arjyapalli gram panchayat in Ganjam, seawalls have been

built along Gopalpur port.

Residents allege that the sea-walls are responsible for the erosion of a 5-km coast along the village. K Alleya, vice president of National Fishworkers Forum and president of the Gopalpur Port Mazdoor Union, says the erosion is a direct result of backwater construction for Gopalpur port with sea dykes, which started in 2009 and got completed in 2023. "Earlier the fisherfolk would have their boats and nets on the beach, right next to the village. Now that the beach is no longer there, they dock the boats near the port, 1-2 km away from the village," says S Namasai, a resident.

PLAN WITH CAUTION

The combined impacts of a dynamic mouth, extreme sea level events, and cyclones play out along the Chilika, the largest brackish water lake in Asia whose rich biodiversity is created and nurtured by the delicate salinity gradient. This gradient is maintained by the seawater flowing into the lake through the mouth and freshwater from 52 rivers and rivulets gushing into it from the opposite side. Intense storm surges during cyclone Fani in 2019 have opened four new mouths in Chilika lake. While two of the mouths closed in April 2022, two others are still open. Such a sustained opening of new mouths has never happened before, say fisherfolk in adjoining villages. Besides this, says Samal of the Chilika Development Authority, a 80-m-long mouth that opened in 2001 has moved 7.2 km towards the north due to erosion.

This has altered the salinity gradient of the lake and affected its biodiversity and livelihoods of people who depend on it. In Arakhakuda village, located near the new

DEDICATED RELIEF

India prepares its first national policy for mitigation and rehabilitation of people affected by river, coastal erosion

SEEMA PRASAD

On February 17, 2023, the National Disaster Management Authority (NDMA) received final inputs on the draft of India's first national policy for mitigation and rehabilitation of the people affected by river and coastal erosion. The agency aimed to then finish rewriting the draft, tentatively by the last week of February, and send it to the Union Ministry of Home Affairs for final approval, a senior consultant with NDMA tells *Down to Earth* (DTE). The ministry had directed NDMA to draft the policy based on 15th Finance Commission's report for 2021, in which it had for the first time emphasised on rehabilitation and resettlement of people displaced by river and coastal erosion. Until now, most policies in the country only address displacement after rapid-onset disasters like monsoons and cyclones.

The Commission's report introduced a Recovery and Reconstruction window, dedicated specifically for rehabilitation and long-term support for housing and better public infrastructure, under the National Disaster Relief Fund (NDRF). Under this window, the Commission allocated ₹1,000 crore for 2021-26 for resettlement of people displaced by coastal and river erosion. Further, under the National Disaster Mitigation Fund (NDMF), it allocated ₹1,500 crore for mitigation measures to prevent coastal and river erosion. "The total allocation of ₹2,500 crore is not just for structural solutions such as the construction of sea walls and embankments, but also for non-structural solutions such as the rehabilitation of displaced persons while providing them livelihood opportunities," says the senior NDMA official. Both fundings will function on a cost-sharing basis, with states contributing 25 per cent to the costs; northeastern states, however, will bear 10 per cent of the cost. "NDMA will coordinate the allocations and expenses under NDRF and NDMF at the national level for mitigation and rehabilitation," says a summary of the draft policy, accessed by DTE.

The measures will be implemented by the district disaster management authorities (DDMAs), aided by other district agencies and a specific panchayat-level committee. DDMAs will prepare mitigation and rehabilitation plans and submit it to SDMAs, from where the proposed measures will be appraised by NDMA and finally submitted to the Union home ministry. A high-level committee of the ministry will then approve the disbursement of funds. "While appraising the plan, the provisions of NDMF Guidelines and Recovery & Reconstruction Guidelines will be applicable," the draft summary states. These guidelines are referred to during post-disaster recovery and followed for holistic assessment and long-term rehabilitation strategies. DDMAs will also be responsible for monitoring and evaluation once the plans are implemented, under the supervision of state and national disaster authorities.

NDMA's draft policy also emphasises mapping coastal and river erosion impacts as well as fallow areas and building a database of challenges confronted by affected and vulnerable people. It says affected and vulnerable communities must be involved in rehabilitation discussions and that it will provide people ownership of land and houses to which they are relocated.



Seawalls along Gopalpur port in Odisha's Ganjam district. Residents of Arjapalli village claim the seawalls have led to erosion of their beach

mouths, Litusam Behera, a resident says, "Our fish catch has gone down by 70-80 per cent after cyclone Fani." Mayadhar Jena, sarpanch of Mirjapura village, located along Chilika, says the fish catch has reduced by 30-40 per cent. Families that depended on fishing for a living now plan to migrate to other states in search of livelihood.

Before Fani hit the state, a massive mangrove plantation was carried out under ICZM on the islets near Arakhakuda village between 2014 and 2019. Since roots of the mangroves act as tide breakers and its foliage a buffer for the swift winds of cyclones, mangrove restoration and regeneration is being used globally as an ecosystem-based solution to protect the coast from the impacts of climate change such as storm surges. But since the 60 ha where Bhubaneswar-based non-profit Pallishree undertook plantation is not suitable for mangroves, it was carried out on a trial and error method. During cyclone

Fani the mangroves were not mature enough and many of them were lost to the storm surge.

There is a difference between mangrove restoration and regeneration (done in areas that are conducive for mangrove growth but have lost them over the years to deforestation or other land use changes) and mangrove plantation (done in areas where mangroves have not existed before). "Mangrove restoration and regeneration, if done in a scientific manner, can be a good climate change adaptation measure for coastal Odisha. But mangrove plantation should be generally discouraged as it may lead to disturbances in the local ecosystems and aggravate the impacts instead of mitigating them," says Sadhwi Sindura, programme coordinator at non-profit WWF-India, who works for marine conservation in Odisha.

As the state government prepares to implement the second phase of the ICZM project and also take up coastal adaptation meas-

ures under the Enhancing Climate Resilience of India's Coastal Communities (ECRICC), a national project being funded and facilitated by the UN Development Programme, experts suggest that it must not repeat the mistakes. Anvita Dulluri, analyst, climate change frameworks, Carbon Disclosure Project, Europe, who has extensively studied the impact of rising sea on Odisha coast, says: "Whatever measures are taken by the government along the coast have to keep the local communities involved in the decision making and implementation, otherwise the maladaptation such as in Pentha could occur. Their livelihoods also have to be taken into account before these measures are planned."

The fact is coastal Odisha and its communities are fast losing their existence due to climate change, any action to mitigate the impacts or adapt to it should be immediate and foolproof. **DTE**

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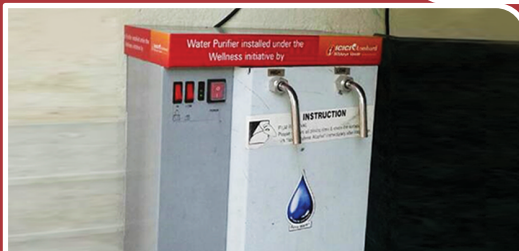
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One drug, 166 patents and \$208-billion sales

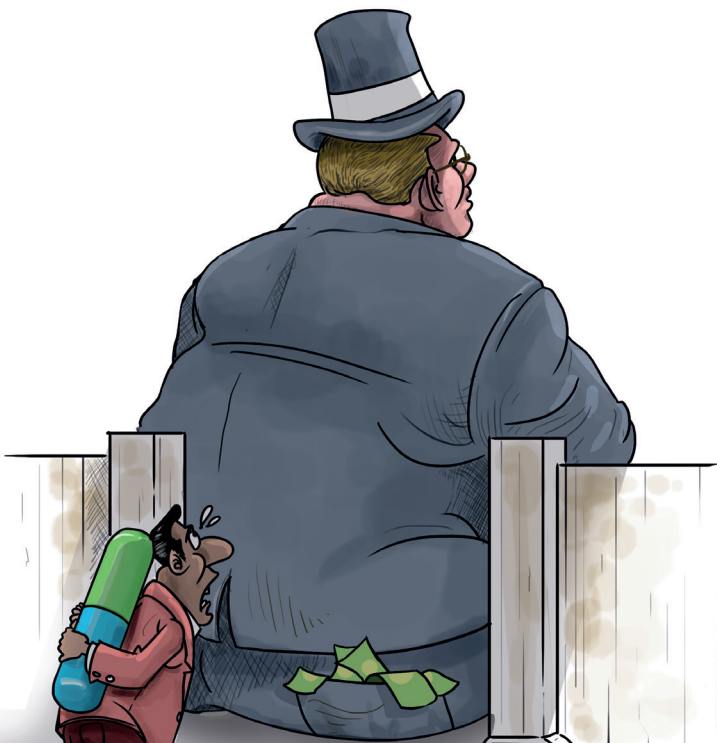
Arthritis drug Humira is a stark example of how the US patent regime allows drug firms to drain patients and the health system

ONE'S HEART bleeds for American patients. They pay the most for prescription drugs compared to all other jurisdictions despite many ironies: a very large number of life-saving drugs are discovered by public-funded research in US universities and institutions; these pharmaceuticals are made in the US and by leading US-based manufacturers. Why is this so? It is because of a clutch of related reasons—starting with the fact that there is no regulation of drug prices by the government—but most of all, from exploiting a patent system that allows pharma companies to keep out competition and keep prices sky high. That's the root of the problem.

A case study of how drug companies manipulate the patent regime is AbbVie with its blockbuster anti-inflammation and arthritis drug Humira. The pharma giant has created a patent thicket around this top-selling biological medicine, by applying for an incredible 312 patents on this single drug and obtaining 166! And most of these patents (94 per cent) were sought after the drug was approved by the authorities. This has allowed AbbVie to garner revenues of US \$208 billion since the patent was first granted in 2002. But here's the most disturbing aspect of Humira: two-thirds of this revenue was earned after its primary patents expired in 2016.

That was when patients and health insurance companies that pick up the tab for the drug were hoping to benefit from the less expensive biosimilar versions of the drug that were all set to launch in the US. But it did not happen. By shrewdly exploiting the US patent system, AbbVie blocked competitors from entering the market by using lawsuits against potential competitors and forcing them to accept settlements to delay their entry till 2023. The first of the biosimilar versions of Humira has only now been launched in the US, in February 2023—almost seven years after patent expiry.

AbbVie is not the only company to do this. In its 2022 report, "Overpatented, Overpriced", I-MAK, a non-profit that keeps tabs on drug patents, provides a chilling exposé of how America's top 10 drugs use various stratagems to extend patent life. One of these is the accumulation by innovator companies of a vast number of patents on a single drug through dense patent thickets or an overlapping set of patent rights that are difficult for follow-on companies to cut through. As the patent thickets



pose a significant legal and financial risk to generic and biosimilar companies wanting to enter the market for high-cost drugs, these “are more likely to enter into settlements with the branded company rather than wait for a final ruling, regardless of the strength of their case,” says the report.

Most of these later patents relate to the medication’s formulation or manufacturing process, a type of patent evergreening that India’s law specifically excludes. Only a handful of countries have followed India’s example in specifically listing those claims that are not patentable, since Washington employs relentless pressure to export its patent system at the global, regional and individual level. Ironically, as the I-MAK report points out, it is an unsustainable system in which the public is paying the price. “Astronomical prescription drug costs are straining the healthcare system and the budgets of American families and employers.

Prescription drug spending has tripled in the last two decades to over \$500 billion today, and is poised to reach nearly a trillion dollars in the next ten years.”

I-MAK co-founder Tahir Amin says “abuse of the patent system is at the heart of America’s drug pricing crisis”. Since the law permits drug makers to build anti-competitive patent thickets and deploy other abusive methods to milk the system, recourse to the courts does not help. In August last year, a US Court of Appeals ruled that there cannot be a cap as long as the owner does not use the patent estate in a way that violates the antitrust law. That is a debatable point, since monopolies of this nature do not allow fair and free competition. The point is that health insurers who challenged the Humira patent thicket lost the case.

Their argument was that 312 patents (claims filed) are so daunting that no generic manufacturer has dared to enter the market. Even if some of patents could be declared invalid, no pharma company had the financial resources to hack through the thicket. But the court was

clear. “As long as the patents are valid, asserting them in litigation can’t be a violation of antitrust laws. If AbbVie has 312 inventions (on a single drug?) why can’t it hold that many patents?”

I-MAK, however, contends that granted patents allow drug makers to block competition. “The 744 granted patents on America’s ten top selling drugs give pharma companies substantial power in litigation and negotiations to keep lower cost generic and biosimilar alternatives off the market for longer, and out of the hands of the American public.” Some lawmakers subscribe to this view. A bipartisan group of senators wrote to the US Patent Office director that “the patent act envisions a single patent per invention, not a large portfolio based on one creation.”

As countless patients even on healthcare are forced to go without critical medicines because of the high costs, many senators from both parties have moved five bills to boost competition in the industry and improve access to more affordable prescription drugs. In early February, all five bills were passed by the Senate Judiciary Committee. Among these is the Preserving Access to Affordable Generics and Biosimilars Act to limit anticompetitive “pay-for-delay

deals” that prevent or delay the introduction of affordable follow-on or generic versions of branded drugs. Biosimilar and interchangeable biologics are also covered. Another is the Stop STALLING Act, as amended, to enable the Federal Trade Commission to deter filing of sham citizen petitions that interfere with approval of a competing generic drug or biosimilar.

But the most significant is the Interagency Patent Coordination and Improvement Act, which would establish a task force between the US Patent Office and the Federal Drug Administration for better communication and coordination. Currently, there is limited collaboration between these agencies, although both play a critical role in matters related to patents and competition. Perhaps we are seeing the beginning of a change that will impact lives everywhere. [DTE](#) [@ljshnu](#)

Patent thickets give pharma companies substantial power in litigation and negotiations to keep lower cost generic and biosimilar alternatives off the market for longer periods



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Palette

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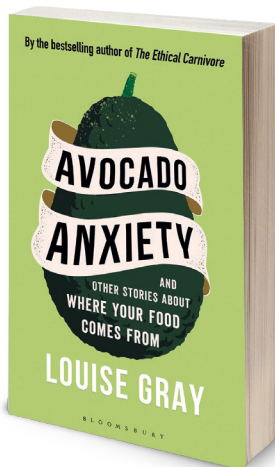
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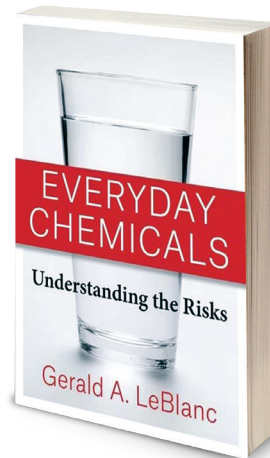


Artificial intelligence (AI) is making inroads into several fields, from finance to journalism to art. To gauge how this new-age technology interprets and portrays the global climate emergency, Bengaluru-based "techart" platform BeFantastic and UK arts organisation FutureEverything are set to launch *Future Fantastic*, a first-of-its-kind AI art and media festival. The festival will take place on March 11-12 and later on March 25-26 in Bengaluru, featuring AI-generated art installations and exhibits, expert discussions and workshops centred around the various aspects of the climate crisis. To know more about the festival, visit <https://futurefantastic.in/>.

BOOKS



The growing culinary trend of "farm to fork" is based on the appeal to understanding the origin of the food we love to eat, particularly if it is "exotic" in nature. But is it possible to expand the concept to understand where our daily fruits and vegetables come from, how they are grown, and the impact of their production on the planet? Scottish environmental writer Louise Gray attempts to trace some of these paths in *Avocado Anxiety: and Other Stories About Where Your Food Comes From*.



Everything we touch, feel and consume these days is laden with chemicals. This includes the plastic bottles of water we buy at the supermarket, the insect repellent we spray on our windows or the sunscreen we apply on hot summer days. With *Everyday Chemicals: Understanding the Risks* US-based toxicologist Gerald A LeBlanc provides a layperson's guide on more such elements we encounter each day and whether they have the potential to cause real harm to human health and well-being.



Women rising

Self-help groups bring about socio-economic empowerment of women by providing access to income-generating opportunities. Focus should now be on improving their political representation

SWASTI PACHAURI

WOMEN HAVE been at the forefront of politics and governance in India in recent years. Schemes, slogans and women-centric themes in important policies are increasingly becoming tools to encourage and woo this fast-growing electoral group.

In the 2019 general elections, women and men voted in almost equal numbers. And since then, the number of women voters has seen an increase of 5.1 per cent, while that of men has risen 3.6 per cent, according to a January 2022 address by the country's chief election commissioner. Over the years, women have emerged as the most critical constituencies for political parties, who have been including their concerns in electoral announcements. Governments have also introduced women-centric policies; for instance, through the provision of gender parity in wages under the Mahatma Gandhi National



The potential of self-help groups was evident during the pandemic, when they were making COVID-19 equipment, masks and running community kitchens

Rural Employment Guarantee Act; through the building of toilets or *izzat ghars* under the Swachh Bharat mission; through the Pradhan Mantri Ujjwala Yojana that provides LPG (liquefied petroleum gas) connections in the name of women of the households; through the provision of tapped water supply under the Jal Jeevan Mission, which gives women and young girls a respite from the the

age-old practice of carrying buckets of water to meet their daily household needs; and through several measures by state governments to provide free public transport and cycles to women.

Along with these commitments, self-help groups (SHGs) led by women, particularly rural women, are also emerging as a point of focus for politics and policy and finding a place in election campaigns. An SHG is a community-led and -run initiative, whose basic tenet is to ensure economic opportunities for its members, which in turn can lead to their social and political upliftment. India has around 12 million SHGs, 88 per cent of which have only women members, according to the *Economic Survey 2022-23*. Highlighting their immense human capital, in 2022 Prime Minister Narendra Modi said during an address in Karahal, Madhya Pradesh (one of the states that will go to polls later this year) that SHGs would transform into “nation-help groups”. The recently announced Union Budget for 2023-24 also focuses on advancing SHGs and helping them grow into large producer enterprises for economic empowerment.

The potential of these groups was evident during the COVID-19 pandemic-induced lockdowns, when news reports mentioned how SHG members were making COVID-19 protective equipment, masks and sanitisers; educating communities and people about the importance of vaccination; spreading awareness around social distancing and spearheading community kitchens. According to the *Economic Survey*

2022-23, as on January 4 this year, more than 169 million masks have been produced by SHGs mobilised across the country under the Deendayal Antyodaya Yojana National Rural Livelihoods Mission (DAY-NRLM). The mission was launched by the Union Ministry of Rural Development in 2011 with the mandate that at least one woman from each poor rural household is associated with an SHG.

Women-led SHGs are not just important for their own economic empowerment, but also for the overall economic growth of rural areas. Let’s see how.

EMPOWERMENT BID

From making unique handicrafts and handlooms to pickles, *papads*, and other products, women members of SHGs, often known as SHG *didis* and *sakhis*, have been silently contributing to rural economic growth, despite facing challenges in market access, marketing and quality checks. At the same time, SHGs have empowered them by providing access to property or by mobilising finance. Since women who engage in SHGs draw closely from agricultural occupations and forest-based livelihoods, these groups are emerging as small microfinance institutions where women can bank on each other for lending and saving.

SHGs are also providing women with opportunities to diversify the livelihoods for improved incomes and socio-economic growth. The *rani mistris* (women masons) of Jharkhand, who built toilets to help the state become open defecation free under the Swachh Bharat mission, are a case study of how occupational stereotypes have been broken through SHGs.

Recognising this, in 2021, the Union rural development ministry envisaged a target of creating

IN RECENT YEARS, WOMEN MEMBERS OF SELF-HELP GROUPS ARE DIVERSIFYING THEIR INCOME-GENERATING OPPORTUNITIES FROM MAKING TRADITIONAL PRODUCTS TO ENTERING THE CONSTRUCTION AND FINANCIAL SECTORS

“*lakhpati* SHGs” to enable rural women members of the SHGs earn at least ₹1 lakh per year. The ministry is providing livelihood support to rural SHG women and diversifying their income generating opportunities, by introducing them to higher-order economic activities and appointing and training members to take up roles of community resource persons and act as grassroots mobilisers. *Economic Survey 2022-23* points to the empowerment of nearly 0.4 million SHG members through training programmes to transform them into community resource persons such as bank *sakhis*, *pashu sakhis*, *poshan sakhis* and take up other such roles.

For instance, bank *sakhis* are women in-charge of an SHG's banking and bookkeeping activities. In September 2021, the ministry announced a target of appointing one bank *sakhi* per gram panchayat by 2023-24, and said that 50,000 SHG members have been trained under DAY-NRLM for this goal.

Since livestock, animal husbandry and dairy activities are closely linked to agricultural livelihoods, SHG members are trained on best practices for livestock rearing and advising other farmers on the same. They are then appointed as *pashu sakhis* under joint convergence programmes of DAY-NRLM and the Centre's Department of Animal Husbandry and Dairying. These resource persons are integral to the sustenance of the farming and allied sectors.

Similarly, to facilitate food and nutrition security and seed sovereignty, rural areas have *poshan sakhis* that are critical in implementing the Union Ministry of Women and Child Development's Saksham Anganwadi and Poshan

2.0 Mission, which aims to address problems of malnutrition among girls and women.

With the country increasingly promoting millets for food and nutritional security, many SHGs actively participate in millet production and running outlets selling millet-based products.

Such income-augmenting measures and livelihood diversification inspire and encourage more women to join SHGs and provides them opportunities to move outside the house and work towards their own social and upward mobility. Over and above their economic empowerment, SHG members also contribute to strong social networks and stronger local institutions, thus contributing to social capital.

SELF-HELP GROUPS HAVE BECOME INSTITUTIONS WITH BARGAINING POWER. HOWEVER, THERE IS MUCH THAT NEEDS TO BE DONE FOR THEIR POLITICAL PARTICIPATION

SHG workspaces provide important community spaces for women to interact, work together and provide each other support, thus building a spirit of trust, a stronger sense of identity, organic solidarity, reciprocity and mutual learning. Overall socio-economic empowerment also facilitates SHGs to help meet national targets, such as those under the UN's 17 Sustainable Development Goals (SDGs). SDG 5 (gender equality), SDG 16 (peace, justice and strong institutions) and SDG 17 (partnerships for the goals) are just some of the goals to which the women-led SHGs contribute.

POLITICAL PUSH

While the substantial efforts for socio-economic empowerment of

rural women are bearing fruit, it is time that their leadership skills and social capital were utilised effectively through political empowerment. SHGs are no longer just meagre beneficiaries of government schemes, but rather institutions with bargaining power, and political parties have understood this. Many SHGs have started to advocate for their rights and, through pressure groups, have forayed into activism while sustaining livelihoods. Their strong social networks make them essential to political parties because of the multiplier and demonstration effects that help further consolidate the woman vote bank. However, there is much that needs to be done towards their political representation. The 33 per cent reservation for women in panchayati raj institutions—in some states, the reservation for women is 50 per cent—is a step in the right direction, albeit marred by the problem of sarpanch *patis* or proxy sarpanches.

One welcome step is encouraging woman candidates to file for nominations. Post the 2019 general elections, the 17th Lok Sabha inducted 78 women as members of parliament—the most in the country's history. In the 2022 Uttar Pradesh state assembly elections, the Congress reserved 40 per cent of its tickets for women. That same year, during the Dhamnagar assembly bypoll in Odisha, the Biju Janta Dal nominated a woman SHG member. All of this should guide the way forward for holistic empowerment of women. **DTE**

 down2earthindia

(Swasti Pachauri is an assistant professor at Dr B R Ambedkar University Delhi and specialises in gender and rural livelihoods)



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Living with mercury

IN 1984, GLOBAL CONSUMER GOODS CONGLOMERATE UNILEVER ESTABLISHED A MERCURY THERMOMETER FACTORY IN THE IDYLIC SOUTH INDIAN HILL TOWN OF KODAIKANAL, TAMIL NADU. AFTER THE COMPANY HAD RUN ITS OPERATIONS FOR 17 YEARS, LOCAL COMMUNITY MEMBERS AND ACTIVISTS, AIDED BY GLOBAL NON-PROFIT GREENPEACE, DISCOVERED A MASSIVE MERCURY DUMP IN A NEARBY SCRAPYARD IN 2001. A YEAR LATER, THE TAMIL NADU POLLUTION CONTROL BOARD ORDERED A SHUTDOWN OF THE FACTORY AND THE MATTER REACHED MADRAS HIGH COURT. THE MULTINATIONAL COMPANY INITIALLY DENIED WRONGDOING. BUT AS EVIDENCE OF MERCURY CONTAMINATION BECAME HARD TO REFUTE, UNILEVER SETTLED THE ISSUE OUT OF COURT, PROVIDING AN UNDISCLOSED AMOUNT TO ABOUT 600 OF ITS EMPLOYEES IN 2016. AMEER SHAHUL, WHO WAS WITH THE FRENCH NEWS AGENCY AFP AT THE TIME, REPORTED ON THE CASE. HIS RECENTLY RELEASED BOOK, *HEAVY METAL: HOW A GLOBAL CORPORATION POISONED KODAIKANAL*, IS A RESULT OF HIS REPORTAGE AND HIS LATER INVOLVEMENT WITH GREENPEACE AS A CAMPAIGNER. EXCERPTS FROM THE BOOK:

BASED ON a few visits to Kodaikanal from my new base in Bangalore and multiple meetings with the local community and campaign leaders, including Mody, Selvi Meenakshi and leaders of the ex-workers' front, Raja Mohamed, K Gopala Krishnan and Mahendra Babu, it became clear HLL [Hindustan Lever Limited] had been handed an undue advantage because of the lack of scientific evidence. The community required scientific evidence demonstrating that the atmosphere had been contaminated with high levels of mercury, as well as medical evidence indicating that workers' health had been harmed as a result of continuous exposure to mercury.

Some work had started, documenting and studying the epidemiology of the workers through the Community Health Cell (CHC) initiative by Dr Mohan Isaac. But

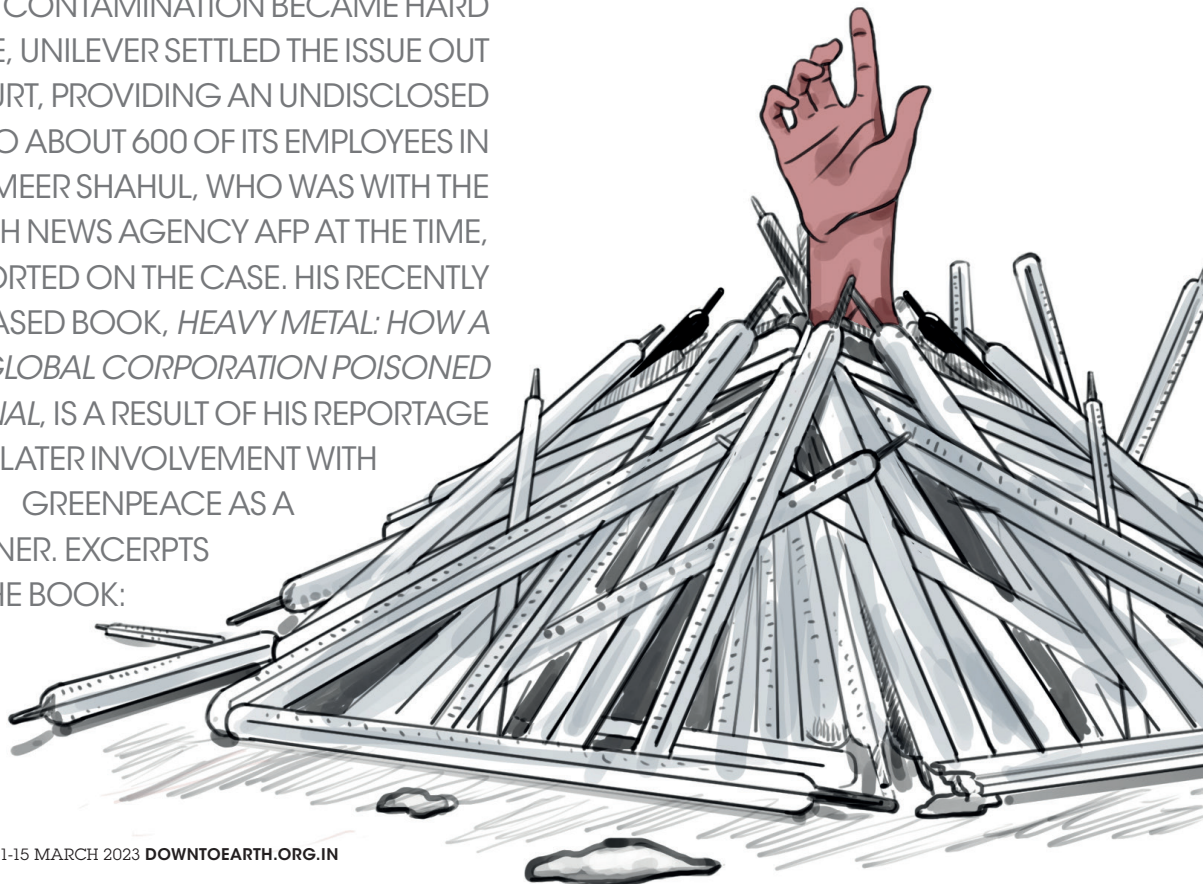


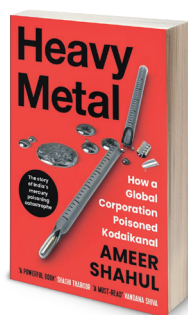
ILLUSTRATION: YOGENDRA ANAND / CSE

there hadn't been any serious efforts on two counts: there were no scientific studies to understand the extent of environmental pollution; and no progress had been made to retire the mercury waste lying at the factory. I focused my energies on these two areas alongside Mody, Meenakshi and the ex-workers, in addition to the pursuit to strengthen the medical evidence.

After studying more about how Greenpeace used science to verify the claims made by corporations, my first touchpoint was the Greenpeace Research Laboratory at the University of Exeter in southwestern England. I exchanged a few emails with David Santillo, the head of the laboratory, and with Kevin Bridgen, who was studying the environmental impact of toxic heavy metals. It was apparent a strong case could be built on science in this case.

David Santillo had already assigned senior scientist Ruth Stringer, who had previously surveyed waste stockpiles at the Union Carbide site in Bhopal and designed the clean-up strategies. Having worked on the Basel Convention and the Barcelona Convention, and ably supplemented by her biochemistry and chemistry education from the University of London, Stringer was on top of issues related to heavy metal contamination. By the time I joined Greenpeace, Stringer had visited Kodaikanal and collected a dozen samples of

Lobaria discolor and
*Parmotrema
reticulatum*, two



Heavy Metal Ameer Shahul

Publisher: Pan Macmillan
India

MRP: ₹699 | Pages: 416

different lichen species commonly found in and around the location.



Our efforts were finally on track, though they were taking place at a snail's pace. While carrying out literature review for her analysis and study towards the end of 2003, Stringer stumbled upon an interesting paper that had just been published in *Environmental Pollution*. It was noteworthy because it had conducted a similar lichen sampling as her study, in addition to collecting samples of another possible biomonitor candidate, a 'moss' from around the Kodaikanal factory. Even more interestingly, the study involved charcoal trapping, which had been used to find out the mercury levels in the surrounding air.

Stringer alerted Bridgen and Santillo at once. On a winter evening in 2003, I received an email from Santillo, with an attachment of a study on the pollution in Kodaikanal. Going through the article, aware that it had been published in a respected science journal, I was thunderstruck upon learning the

extent of environmental devastation from its quantitative results. What simultaneously intrigued me was that this crucial evidence had caught the attention of a reputed Indian governmental agency like the Department of Atomic Energy [DAE]. Having seen the draft results of the study conducted by Greenpeace and discussed it in detail, the DAE study intrigued me.

While the Greenpeace samples were limited to two species of lichen, the DAE had used both lichen and moss samples—two different bio-monitors. While our sampling area was limited to a distance of one and a half kilometres around the factory site, the DAE sampling had covered up to twenty kilometres away from the factory. In yet another stark difference, the Greenpeace study was restricted to bio-monitoring, while the DAE study had additionally carried out air monitoring by using a charcoal trapping method.

And, finally, their study report had just been published in the most respected European environmental journal. It checked every single box required to refute the claims and defences of HLL, and outpaced Greenpeace's study in every respect.

It was more than we could have hoped for. The first step was to establish a relationship with the DAE team, confirm the veracity of the study and explore all information beyond what had been reported in the journal. This was done within forty-eight hours through a few phone calls. My next move was to leverage this information for the next step. It was an easy task from here on, following the Greenpeace media strategy to instrumentalize the evidence."   @down2earthindia

‘THE REGULATOR SHOULD MONITOR MERCURY IN THE AIR IN KODAIKANAL’

We still do not know how far the atmospheric mercury levels have come down in the last two decades, **Ameer Shahul** tells **Nandita Banerji**. Edited excerpts:

What drew your attention to the events in Kodaikanal in 2002?

It was a press release issued by Greenpeace that drew my attention while working with AFX (business wire of French press agency AFP) in New Delhi. Being a post graduate in marine biology who dealt with heavy metals as part of my studies and research, I thought that the situation could be very serious. I did not discern the seriousness of the impacts until I reached there and spoke to a cross section of the local people in 2002.



What would you say to those who argue that the case is closed because the employees have been compensated?

There are two parts to the issue of Kodaikanal mercury poisoning. The first is about the factory workers and the factory campus. Having completed compensation for the ex-workers and having been undertaking remediation of the 25 acre (about 10 hectares) factory site, the first part can be considered to be over once the ongoing cleanup is completed. The second and the larger part is the devastation done by the company because of the operations of the factory through dispersal of gaseous mercury into the atmospheres and by dumping mercury waste in the river streams and the surroundings. This is an area unaddressed and requires studies, regulatory actions and public outrage.

You talk of mercury contamination in the Kodai lake, as demonstrated by the Department of Atomic Energy (DAE) study, a decade after the factory closed. What does this mean for the town’s ecology in the long run?

We still do not know how far the atmospheric mercury levels have come down in the last two decades since the closure of the factory. At least since the time of the DAE study, there should have been annual or quarterly monitoring of the heavy metal in the air to assess whether the mercury levels have been coming down or not. The regulator would have commissioned this long ago which could have generated a reliable data set. At least now, the regulator should start monitoring mercury in the air in Kodaikanal. The conse-

quence of mercury on the ecology of Kodaikanal is at catastrophic levels.

You also explain in great detail the meaning of having the poisonous heavy metal pervade every corner of the country, and perhaps the world, by now. And yet this case seems to have disappeared from public memory.

First and foremost is that mercury is all pervasive. It is there in the air we breathe if we are in the vicinity of a coal powered power plant. It is there in the fish we eat as most of the mercury ends

up in waterbodies and oceans and enters the body systems of fishes. It is there in most electronic gadgets in use, and we often throw around the end-of-use gadgets. Proper disposal, if possible return to the seller, should be a must for all electronic gadgets—batteries, computers, measurement devices—with heavy metals.

What are some of the governance changes that must be implemented to prevent such disasters?

Factories dealing with hazardous raw materials or generating hazardous bye-products require close monitoring by the regulators, assisted by the local voluntary groups. Periodic audit of raw materials and hazardous waste should be made fool proof and should be done with the participation of the local community to ensure erring officials are not taken for a ride by factory management. Countries that are selling raw materials to other countries have a responsibility to take back the waste generated out of the raw materials.

As you describe in the epilogue, some of the flora and fauna are vanishing from their endemic habitat.

Human beings are just one organism facing the brunt. Every other organism, plant and animal, must be facing the heat. So are the waterbodies and air in the area. Many of the sub-sholas of Pambar Shola like Bear Shola, Tiger Shola which were named after animals that used to abound in the area are now devoid of these signature animals; so many plants disappeared from these regions in the recent past.

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Dal vadas made from tamarind kernel flour are crispier than those made from lentils like black gram

KERNEL POWER

The small, brown seeds of tamarind are not just a rich source of protein but also versatile in use beyond food items

VIBHA VARSHNEY

EVERY TIME I buy tamarind, my mother reminisces about how this sour pod-like fruit was a rare commodity in her village in western Uttar Pradesh. As a child, after eating the sweet pulp of the ripe pod, she would even consume the seeds—after roasting them overnight on the hot ashes of a *chulha* (stove).

The flat, glossy brown seeds of tamarind (*Tamarindus indica*) have a somewhat almond-like taste, with a tinge of bitterness. Raw seeds are slightly more bitter and difficult to chew because of a

hard coating that encases the kernel. Hence roasting on the stove, like my mother did, has been the traditional method of preparing the seeds, after which they are gently pounded on in a mortar and pestle so that the broken coat can be removed. Modern households, however, avoid the cumbersome process of preparing the seeds and opt for kernel flour that is easily available in the market.

Tamarind seeds are a part of many popular recipes, especially in southern India. In Karnataka,

where the fruit is called *hunase*, the roasted kernels are soaked in buttermilk and salt for a day to soften them, so that they can be easily consumed as a snack. In Maharashtra, tamarind or *chinch* seed flour is used to prepare *dal vada*, a fritter typically made from lentils (see recipe). I have found that *vadas* made with this seed flour are crispier than those made just from *urad* or black gram. The versatile flour can be also used in baking or be simply added to *roti* dough to enrich it.

I also find the leaves of tamarind seedlings tasty. Instead of roasting the seeds, I plant them and wait for the young, sour leaves to add to *dal* and vegetable dishes.

SMALL BUT POWERFUL

Tamarind seeds are a rich source of protein and amino acids. In a May 2010 study published in the *International Journal of Current Microbiology and Applied Sciences*, researchers from Bihar and Rajasthan analyse kernel flour prepared by roasting the seeds at 150°C for 15 minutes, and estimate that as much as 62.13 per cent is carbohydrate, 19.46 per cent of the kernel is protein and 2.32 per cent is fiber. The flour is rich in minerals such as calcium, magnesium, iron and potassium.

Also, in 2018, researchers with the Indian Institute of Technology, Roorkee, said a protein found in the seeds, called tamarind chitinase-like lectin, has antiviral properties and can potentially be used to develop a drug against chikungunya. Their study was

TAMARIND SEEDS ARE PART OF MANY POPULAR RECIPES, ESPECIALLY IN SOUTH INDIA. IN KARNATAKA, ROASTED KERNELS, SOAKED IN BUTTERMILK AND SALT, ARE CONSUMED AS A SNACK. IN MAHARASHTRA, THE SEED FLOUR IS USED TO PREPARE DAL VADA

RECIPE **DAL VADAS**

INGREDIENTS

Tamarind seed flour: 2 tablespoons
Split *urad* dal (black gram): 1 cup
(Add other lentils like green gram and chickpeas to improve texture)
Drumstick leaves: A handful
Ginger: About 5 cm
Garlic: 10 cloves
Green chillies: 5
Salt to taste
Oil for frying

METHOD

Soak *urad* dal in water for 30 minutes, then grind in a mixer with ginger, garlic and chillies to make a paste. Add tamarind seed flour, drumstick leaves and salt to the paste; mix well. Preheat the oil for frying. Take a small amount of the batter, shape it like a doughnut so that it cooks evenly, and fry it. Serve with chutney and other condiments.

published in the journal *Virology*.

Further, a 2019 study published in the *International Journal of Medical Sciences* by researchers from India, the US and Norway says an extract of tamarind seeds and turmeric (*Curcuma longa*) rhizome could reduce knee pain and improve the musculoskeletal function in patients. This combination also helps reduce inflammation and inflammation-induced cartilage degeneration, says the study.

Apart from finding application in food, the seeds are also traditionally used for tanning leather. The Saura tribe in Odisha uses the brown colour of the seeds as a

natural dye in paintings. In 2022, researchers from India, South Korea and Saudi Arabia used the seeds to treat wastewater from a cheese factory. The team reported in the journal *Chemosphere* in October 2022 that polysaccharides in the seeds work as coagulants to remove the waste from the water.

WIDE PRESENCE

Tamarind grows well in dry and water-stressed regions and is drought-resistant. Being part of the Fabaceae family, it has the ability to grow in poorly developed soils through nitrogen fixation. The plant can also grow well in coastal areas because of its ability to endure sea-salt aerosols. Though genetic studies suggest that the tree may be native to Africa, it is found across Asia and Latin America. The widespread presence of the tamarind may be due to the likelihood that centuries ago, it was transported around the world in ships, as a part of sailors' diets. A 2017 article published on the website of US-based non-profit Science History Institute mentions an experiment where sailors were given barley water treated with tamarind to cure scurvy.

The fruit also has a rich history in India, present in the country at least since 1300 BCE, according to wood charcoal analysis. It also finds special place in the country's heritage—the 23.06-hectare Nallur tamarind grove near Bengaluru, planted during the 12th century, has 278 tamarind trees—the oldest being around 410 years old. In 2007, the National Biodiversity Authority declared this grove as India's first heritage site, representing a unique gene pool that needs to be conserved. **DTI**

 @vibhavarshney

Hope as the last crop

THE MORE Indian farmers hope for situations to improve, the deeper is the distress they feel. The last two years, specifically, did not see a single “normal” season that did not have any adverse impact on farms and farmers. The southwest monsoon of 2021 was statistically normal, going from deficit to near normal due to excess rainfall in September. The previous month, August 2021, was the sixth driest since 1901. While some farmers had normal crops that year, others lost their produce. Still, all were hopeful, as the late withdrawal of the monsoon and heavy rain in September and October meant good soil moisture and reservoir levels, indicating a bumper harvest in rabi crops. But this hope was dashed in the beginning of 2022, with extreme rainfall and cold events damaging the standing crops.

While the world was entering a severe food crisis with the start of the Russia-Ukraine war, Indian farmers had their own battles to fight. The late withdrawal and excess rain events spurred rabi acreage. But in April-May 2022, during harvest time, the severe heatwave led to widespread loss of crop, particularly wheat. This led to a downward trend in overall grain production. The government stopped export of wheat in May, anticipating a shortfall.

In a repeat of the dire situation in 2021, the monsoon of 2022 was also “normal”, but its uneven temporal and spatial distribution—long dry spells and heavy rains towards the end of the season in September—led to widespread crop loss. Excess rain in September has been an unmissable trend, at least in the last three years. The 2022 monsoon extended up to the end of October; 52 per cent of the 36 meteorological subdivisions received above normal rainfall. This brought down rice harvest and delayed the rabi crop for nearly two months. So, for three consecutive crop seasons, there was no occasion in which a farmer could even recover cost, instead, more losses were being added. Expectedly, all hopes

were pinned to the rabi crop of 2023. Rabi crops have been sown in 15 per cent more farms than last year. But what has come is another severe blow—winter has effectively vanished by the end of January and the country is experiencing temperatures observed in mid-March. This unusual heat is not just felt in wheat-growing states of North India, but also in the eastern parts of the country. Like last year, this heat will severely stunt wheat, but on a wider scale. Losses this time will be more severe, more widespread. Hopes that the rabi crop harvest will reach even last year’s level are already on the wane. This means for the past two years, a farmer has not experienced a normal crop season or effectively earned anything.

Will the next kharif crop season be normal? The weather forecast has rung the alarm bell—the three-year La Niña is waning, and the dreaded El Niño will set in by July. El Niño

For the last two years, Indian farmers have not experienced a single normal crop season or earned anything effectively

usually means a subdued monsoon and extreme heat for India. So, after losing this year's rabi crop, farmers cannot even hope for a decent harvest

during kharif. People say hope is not a strategy or plan. But, what if it is the only commodity that farmers own?

The country’s overall foodgrain situation is also going to be hit, adding to food inflation and making the poor more vulnerable to food insecurity. On the other hand, the government’s food stock has been depleting, first due to the need to meet the food security scheme’s commitment, and second, due to the release of some 3 million tonnes of grain into the market to keep inflation under control. Without a bumper harvest in the next two months, we will face scarcity. Notwithstanding the free foodgrains under the food security scheme, people will have to fork out more for food. This adversely impacts the overall income level, particularly for the farmers whose earnings have already been hit. [DTE](#) [@richiemaha](#)

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