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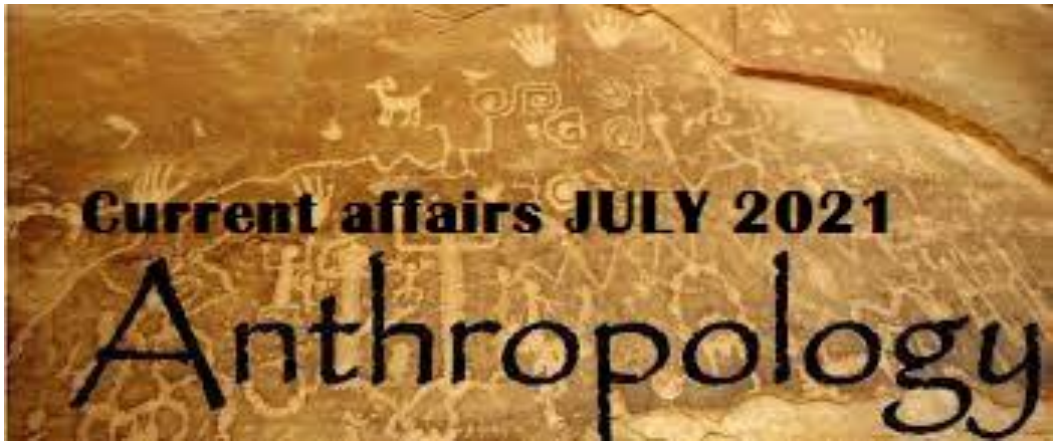

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PHYSICAL & ARCHAEOLOGICAL ANTHROPOLOGY

1. Researcher adds to timeline of human evolution by studying an island fox

Nearly two decades ago, a small-bodied "human-like" fossil, Homo floresiensis, was discovered on an island in Indonesia. Some scientists have credited the find, now nicknamed "Hobbit," as representative of a human ancestor who developed dwarfed features after living on the island, while others suggest it represents a modern human suffering from some type of disease because of its distinct human-like face and small brain.

Colleen B. Young, a graduate student in the Department of Anthropology at the University of Missouri, has always been naturally curious about the nature of the human "footprint," or how humans impact their environments and vice versa. She believes the Hobbit adjusted from a longer-legged version of itself to meet the demands of an isolated, island environment.

"Homo erectus, considered our recent ancestor, likely developed its long legs over time in order to increase its ability to walk long distances as its environment expanded," Young said. "So, when humans arrived on that island in Indonesia and became isolated, their bodies—once built for efficiency over long distances—were probably no longer beneficial for their new environment. Instead, a smaller body size probably improved their lifestyle."

Young, who is working on her doctorate in biological anthropology in the College of Arts and Science, tested several popular assumptions about the characteristics of Homo floresiensis by comparing an island fox from California's Channel Islands with its mainland U.S. relative, the gray fox. Young said upon arrival, the island fox underwent a 30% reduction in body size and developed smaller body features that are different than the mainland gray fox. She believes this change in body size was likely due to adjustments the island fox made to survive in its new, isolated environment.

"The gray fox is a migratory, omnivorous animal, similar to our recent ancestors," Young said. "This study indicates that animals living on islands that become smaller in size may also have distinct limbs and body features just because of their new island environment. Therefore, the distinctive body features on the

small-bodied Homo floresiensis are probably products of evolving in an island environment, and not resulting from suffering from diseases."

Young said this animal model, which includes taking into account the surrounding ecosystem, can help scientists better understand the body size and limbs of Homo floresiensis, and how they relate to human ancestors. She thinks this model can also help open new doors in the field of anthropology.

"The popular idea that every little difference in a fossil means the discovery of a new species is probably not as accurate as we once thought," Young said. "There was probably a lot more variation going on throughout human evolution than we first thought, and these findings exemplify that variation can occur just by migrating to and living on an island. We're just starting to scratch the surface."

"Static allometry of a small-bodied omnivore: body size and limb scaling of an island fox and inferences for Homo floresiensis" was published in the Journal of Human Evolution.

2. Warm oceans helped first human migration from Asia to North America

New research reveals significant changes to the circulation of the North Pacific and its impact on the initial migration of humans from Asia to North America.

The new international study led by the School of Earth and Environmental Sciences at the University of St Andrews and published Dec. 9 in Science Advances provides a new picture of the circulation and climate of the North Pacific at the end of the last ice age with implications for early human migration.

The Pacific Ocean contains around half the water in Earth's oceans and is a vast reservoir of heat and CO_2. However, at present, the sluggish circulation of North Pacific restricts this heat and CO_2's movement, limiting its impact on climate.

The international team of scientists used sediment cores from the deep sea to reconstruct the circulation and climate of the North Pacific during the peak of the last ice age. Their results reveal a dramatically different circulation in the ice age Pacific, with vigorous ocean currents creating a relatively warm region around the modern Bering Sea.

"Our data shows that the Pacific had a warm current system during the last ice age, similar to the modern Atlantic Ocean currents that help to support a mild

climate in Northern Europe", said Dr. James Rae, from the University of St Andrews who led the study.

The warming from these ocean currents created conditions more favorable for early human habitation, helping address a long-standing mystery about the earliest inhabitants of North America.

"According to genetic studies, the first people to populate the Americas lived in an isolated population for several thousand years during the peak of the last ice age, before spreading out into the American continents", said co-author Ben Fitzhugh, a professor of anthropology at the University of Washington.

This has been termed the "Beringian Standstill" hypothesis and a significant question is where this population lived after separation from their Asian relatives before deglaciation allowed them to reach and spread throughout North and South America. The new research suggests that these early Americans may have lived in a relatively warm refugium in southern Beringia, on the now submerged land beneath the Bering Sea. Due to the extremely cold climate that dominated other parts of this region during the ice age, it has been unclear, until now, how habitable conditions could have been maintained.

"The warm currents revealed by our data would have created a much more pleasant climate in this region than we might have previously thought", said co-author Will Gray, a research scientist at the Laboratory for Sciences of Climate and Environment institute in France.

"This would have created milder climates in the coastal regions of the North Pacific, that would have supported more temperate terrestrial and marine ecosystems and made it possible for humans to survive the ice age in an otherwise harsh climatic period."

"Our work shows how dynamic Earth's climate system is. Changes in the circulation of the ocean and atmosphere can have major impacts on how effectively humans may inhabit different environments, which is also relevant for understanding how different regions will be affected by future climate change", added co-author Robert Jnglin Wills, a postdoctoral researcher in atmospheric sciences at the University of Washington.

3. A study analyzes the ergonomic relationship between hand and Lower Paleolithic tools

Emiliano Bruner, a paleoneurologist at the Centro Nacional de Investigación sobre la Evolución Humana (CENIEH), has coordinated a study published recently in the journal Archaeological and Anthropological Sciences, on the ergonomic relationship between hand and Lower Paleolithic stone tools, in particular for choppers and handaxes.

The results of this work, carried out by Annapaola Fedato, a Ph.D. candidate at the Universidad de Burgos, in collaboration with the Museo de la Evolución Humana and the Universidad Isabel I, suggest that the two tool types stimulate very different ergonomic relationships with the hand. They also show that the fingers most involved are the last three (little, ring and middle fingers), and not the thumb or index finger, as one might expect.

The connection between hand and tool prompts a response in the brain which leads to the inclusion of the tool in the body scheme. The different finger combinations used for grasping these two types of implement thus suggest that these might be associated with different cognitive responses when integrating the brain-body-environment system.

The study involved 82 volunteer participants of both sexes who were invited to handle 40 implements, both pebble tools and handaxes, using a digital glove that records the position and flexion of each phalanx to quantify their finger flexion patterns during tactile exploration. The exploration was not associated with the function of the tool, but rather the sensation of comfort in the hand-object relationship, assessing the sensory response of the body to the interaction with the implement.

4. Fatty residues on ancient pottery reveal meat-heavy diets of Indus Civilization

Summary:

New lipid residue analyses have revealed a dominance of animal products, such as the meat of animals like pigs, cattle, buffalo, sheep and goat as well as dairy products, used in ancient ceramic vessels from rural and urban settlements of the Indus Civilisation in north-west India, the present-day states of Haryana and Uttar Pradesh.

The study, published in *Journal of Archaeological Science*, was led by Dr Akshyeta Suryanarayan, former PhD student at the Department of Archaeology, University of Cambridge and current postdoctoral researcher at CEPAM, UMR7264-CNRS, France.

Dr Suryanarayan said: "The study of lipid residues involves the extraction and identification of fats and oils that have been absorbed into ancient ceramic vessels during their use in the past. Lipids are relatively less prone to degradation and have been discovered in pottery from archaeological contexts around the world. However, they have seen very limited investigation in ancient ceramics from South Asia."

"This study is the first to investigate absorbed lipid residues in pottery from multiple Indus sites, including the Indus city of Rakhigarhi, as well as other Indus settlements of Farmana and Masudpur I and VII, allowing comparisons to be made across settlements and across time."

The identification of specific compounds in the lipid extracts enables the detection of different plant or animal products, such as fatty acids, previously used in the vessels. Additionally, isotopic analysis of fatty acids enables the differentiation of different types of animal meat and milk. These analyses enable an understanding of vessel use and what was being cooked in them.

Suryanarayan said: "Our study of lipid residues in Indus pottery shows a dominance of animal products in vessels, such as the meat of non-ruminant animals like pigs, ruminant animals like cattle or buffalo and sheep or goat, as well as dairy products. However, as one of the first studies in the region there are interpretative challenges. Some of the results were quite unexpected, for example, we found a predominance of non-ruminant animal fats, even though the remains of animals like pigs are not found in large quantities in the Indus

settlements. It is possible that plant products or mixtures of plant and animal products were also used in vessels, creating ambiguous results."

"Additionally, despite the high percentages of the remains of domestic ruminant animals found at these sites, there is very limited direct evidence of the use of dairy products in vessels, including in perforated vessels that have been previously suggested to be linked to dairy processing. A recent Scientific Reports study has reported more evidence of dairy products, primarily in bowls in Gujarat. Our results suggest that there may have been regional differences. The analysis of more vessels from different sites would help us explore these potential patterns."

Senior author Dr Cameron Petrie, University of Cambridge, said: "The products used in vessels across rural and urban Indus sites in northwest India are similar during the Mature Harappan period (c.2600/2500-1900 BC). This suggests that even though urban and rural settlements were distinctive and people living in them used different types of material culture and pottery, they may have shared cooking practices and ways of preparing foodstuffs."

"There is also evidence that rural settlements in northwest India exhibited a continuity in the ways they cooked or prepared foodstuff from the urban (Mature Harappan) to post-urban (Late Harappan) periods, particularly during a phase of climatic instability after 4.2 ka BP (c.2100 BC), which suggests that daily practices continued at small rural sites over cultural and climatic changes," Petrie said.

This study adds to existing research in the region which suggests the resilience of rural settlements in northwest India during the transformation of the Indus Civilisation, and during a period of increasing aridity.

The results also have major implications for broadening our understanding of the foodways of South Asia, as well as the relationship between pottery and foodstuffs.

Dr Suryanarayan concluded: "Our understanding of the culinary history of South Asia is still very limited but these results demonstrate that the use of lipid residues, combined with other techniques in bioarchaeology, have the potential to open exciting new avenues for understanding the relationship between the environment, foodstuffs, material culture, and ancient society in protohistoric South Asia."

5. Analysis of ancient teeth reveal clues about how sociopolitical systems grow

Scientific analysis of the distinct eating habits of two societies in northern Peru 6,000 years ago has allowed a team of Vanderbilt researchers to draw new conclusions about how complex sociopolitical structures took shape in ancient Andean societies.

The article, "Early specialized maritime and maize economies on the north coast of Peru" was published in the journal Proceedings of the National Academy of Sciences on Dec. 7.

The researchers investigated food consumption of the Huaca Prieta and Paredones peoples, two neighboring groups who lived less than half a mile apart. Participating were Tiffiny Tung, associate professor of anthropology, Larisa DeSantis, associate professor of biological sciences and earth and environmental sciences and Tom Dillehay, senior research professor and University Distinguished Professor of anthropology and religion and culture emeritus and Rebeca Webb Wilson University Chair Emeritus.

Using carbon and nitrogen isotope ratios from dentin collagen—calcified tissue that is one of the four major components of teeth—and stable carbon isotope ratios from enamel carbonates of 21 individuals at Huaca Prieta and nine individuals from Paredones, the team concluded that the groups had distinct diets despite their proximity.

People at Huaca Prieta, less than 100 meters from the shoreline, consumed a marine-based diet. Living 400 meters inland, individuals at Paredones ate a more agricultural diet that consisted mostly of meat and maize. The differences in diet confirm that they engaged in distinct subsistence practices, and that there was cooperation and exchange between these groups.

"The stable isotope data from teeth, which tell us about childhood diet and weaning practices, clarify that there were distinct foodways at these neighboring sites. These differences result from and reflect social and political distinctions of these two different groups," Tung said. "Differences in food production, distribution and consumption generated opportunities for exchange, an interaction that bound them together in mutual benefit."

The combined data from the researchers' dental microwear and stable isotope analyses further reveals that there were economic and occupational specialties between and among communities. "There are clear differences in diet between individuals at Huaca Prieta and Paredones, both between adults and children. Stable isotopes clarify what individuals ate as children, clearly demonstrating marine and maize consumption, respectively," DeSantis said. "Similarly, as adults, Paredones individuals ate foods with more abrasives than individuals from Huaca Prieta, likely due to increased abrasives from the processing of maize on grinding stones. These data definitely document foods consumed by ancient Peruvians, with important and broad implications for understanding sociopolitical systems."

The researchers posit that over hundreds of years, each society grew its expertise in the seasonal availability and patterns of their food sources. With this expertise, people honed the technologies they worked with, like fishhooks and blades, to process their food. This economic specialization and solidification of communal roles worked hand in hand with maturing sociopolitical structures and complexity between the Pardeones and Huaca Prieta, Dillehay explained. "We know that communities matured and operated with distinct structures by looking to community identity markers," he added. "Symbols, carvings and weaving techniques are the telltale signs of social differentiation that we know of. Scientific confirmation through dental microwear texture data further clarifies our understanding of these early societies."

This collaborative work would not have been possible without each researcher's efforts and contributions, DeSantis explained. Dillehay's groundwork and excavations at sites in Peru laid the crucial foundation for this research. DeSantis contributed her expert analysis of isotope and microwear data. Tung's expertise as a bioarchaeologist analyzing human skeletons from diverse regions in Peru, and her lab's focus on stable isotope analysis, provided essential theoretical and thematic context. In addition to illuminating how society formed in this region, the researchers are keen to see more isotopic and dental microwear texture data analysis that reveals actual food consumption of a people in the exploration of ancient political economies.

6. Oldest hominins of Olduvai Gorge persisted across changing environments

Olduvai (now Oldupai) Gorge, known as the Cradle of Humankind, is a UNESCO World Heritage site in Tanzania, made famous by Louis and Mary Leakey. New interdisciplinary field work has led to the discovery of the oldest archaeological site in Oldupai Gorge as reported in *Nature Communications*, which shows that early human used a wide diversity of habitats amidst environmental changes across a 200,000 year-long period.

Located in the heart of eastern Africa, the Rift System is a prime region for human origins research, boasting extraordinary records of extinct human species and environmental records spanning several million years. For more than a century, archaeologists and human palaeontologists have been exploring the East African Rift outcrops and unearthing hominin fossils in surveys and excavations. However, understanding of the environmental contexts in which these hominins lived has remained elusive due to a dearth of ecological studies in direct association with the cultural remains.

In the new study, published in *Nature Communications,* researchers from the Max Planck Institute for for the Science of Human History teamed up with lead partners from the University of Calgary, Canada, and the University of Dar es Salaam, Tanzania, to excavate the site of 'Ewass Oldupa' (meaning on 'the way to the Gorge' in the local Maa language, as the site straddles the path that links the canyon's rim with its bottom). The excavations uncovered the oldest Oldowan stone tools ever found at Oldupai Gorge, dating to ~2 million years ago. Excavations in long sequences of stratified sediments and dated volcanic horizons indicated hominin presence at Ewass Oldupai from 2.0 to 1.8 million years ago.

Fossils of mammals (wild cattle and pigs, hippos, panthers, lions, hyena, primates), reptiles and birds, together with a range of multidisciplinary scientific studies, revealed habitat changes over 200,000 years in riverine and lake systems, including fern meadows, woodland mosaics, naturally burned landscapes, lakeside palm groves and dry steppe habitats. The uncovered evidence shows periodic but recurrent land use across a subset of environments, punctuated with times when there is an absence of hominin activity.

Dr. Pastory Bushozi of Dar es Salaam University, Tanzania, notes, "the occupation of varied and unstable environments, including after volcanic activity, is one of the earliest examples of adaptation to major ecological transformations."

Hominin occupation of fluctuating and disturbed environments is unique for this early time period and shows complex behavioural adaptations among early human groups. In the face of changing habitats, early humans did not substantially alter their toolkits, but instead their technology remained stable over time. Indicative of their versatility, typical Oldowan stone tools, consisting of pebble and cobble cores and sharp-edged flakes and polyhedral cobbles, continued to be used even as habitats changed. The implication is that by two million years ago, early humans had the behavioural capacity to continually and consistently exploit a multitude of habitats, using reliable stone toolkits, to likely process plants and butcher animals over the long term.

Though no hominin fossils have yet been recovered from Ewass Oldupa, hominin fossils of Homo habilis were found just 350 metres away, in deposits dating to 1.82 million years ago. While it is difficult to know if Homo habilis was present at Ewass Oldupa, Professor Julio Mercader of the University of Calgary asserts that "these early humans were surely ranging widely over the landscape and along shores of the ancient lake." Mercader further notes that this does not discount the possibility that other hominin species, such as the australopithecines, were also using and making stone tools at Ewass Oldupa, as we know that the genus Paranthropus was present in Oldupai Gorge at this time.

7. Evolutionary Foodprints

New approaches to the dental remains of early hominins and the diets of living primates are changing our understanding of what our ancestors ate and why.

Shortly after Mary and Louis Leakey unearthed the first hominin skull found in East Africa, they brought it to Leopoldville (now Kinshasa) for the Pan-African Congress on Prehistory. It was August 1959. The cranium had a thick, heavily buttressed upper jaw and face, a large, bony crest to attach massive chewing muscles, and huge, flat cheek teeth. Phillip Tobias, a young paleoanthropologist from South Africa, was there and on seeing it said, “I have never seen a more

remarkable set of nutcrackers" (quoted in Meredith 2011). "Nutcracker man," as Paranthropus boisei became known, must have had a powerful jaw. It certainly had the biggest, flattest teeth of any hominin known at the time. The story took shape over the years that followed: as grasslands began to overtake primeval forests in Eastern Africa, surely hard, dry foods like acacia seeds and tubers would have replaced fleshy fruits in the diet.

The idea of the "nutcracker man" as a species with highly specialized anatomy evolved to crush hard, dry foods on the open savanna can still be found in anthropology textbooks today. But new methods and theories are beginning to challenge this traditional view. We've developed new tools to wring details from the dental remains of our ancestors, and new interpretations have followed from new understandings of relationships between teeth, diet, and environment in living primates.

Where grassland meets forest

The seeds of today's hominin dietary hypotheses were sown in South Africa in the early 1960s. Three genera of Plio-Pleistocene hominins were recognized at the time, Australopithecus, Paranthropus, and Homo. South African paleoanthropologist John Robinson (1963), noted that compared with Australopithecus, Paranthropus evinced bigger, flatter teeth and thicker enamel whereas Homo had the opposite—smaller, more crested molars. He reasoned, based on these differences, that Australopithecus likely had a fairly broad, omnivorous diet, while in contrast, Paranthropus was a dedicated vegetarian with big, flat teeth for grinding and crushing savanna plants. Homo, Robinson argued, would have eaten more meat as our ancestors took over the spreading grasslands.

Once the order of appearance of these hominins was worked out and more fossils were discovered, the view emerged of an evolutionary fork in the road. Australopithecus came first. Our Paranthropus "nutcracker" cousins and early Homo ancestors followed. Paranthropus had bigger, flatter, thicker teeth, and more robust, powerful jaws and chewing muscles to crush hard, dry foods in the open settings. The teeth and jaws of our early Homo ancestors were smaller but their brains were larger, and tool use became increasingly important as they began to include more meat in their diet. It's a compelling story that fit well both with cut-marked bones found at early archaeological sites, and with the "Man the Hunter" model for human evolution that had become deeply entrenched in the collective psyche of anthropologists at the time.

But subsequent attention to dental ecology, which relates diet to teeth in living primates suggests that jaw and tooth size and shape alone may not give us the detail needed to tell the tale. This marks a fundamental and profound shift in focus from how teeth work (e.g., flat ones are for crushing, sharp ones are for slicing) to how they are actually used. Tooth form can teach us something about what a species is capable of eating, perhaps even what it evolved to eat; but this need not be what individuals preferred or ate on a daily basis. We need a more complete view to understand the role of diet in human evolution, particularly if our goal is to understand that role in light of environmental change and resource fluctuation. We can find examples today in studies of mangabey monkeys and gorillas.

Mangabeys have served as a model for hominins given their flat teeth with thick enamel and heavy jaws well suited for crushing hard foods. Indeed, sooty mangabeys in the Taï National Park, Côte d'Ivoire, specialize in eating Sacoglottis nuts, which are about the size and shape of a walnut. These are rot-resistant and can be found littering the forest floor year round (McGraw et al., 2014). Other monkeys at Taï don't usually eat them for lack of the necessary masticatory apparatus.

In this way, the teeth and jaws of sooty mangabeys give them an advantage in access to food. Grey-cheeked mangabeys at Kibale National Park in Uganda prefer and eat soft, fleshy fruits and young leaves most of the time—like the guenon monkeys that live alongside them. It is only at times of extreme resource stress when fleshy fruits are unavailable that Kibale mangabeys "fall back" on bark and hard nuts (Lambert et al. 2004). Again, though, their teeth and jaws give the mangabeys an edge. These mangabey species have similar dental adaptations, but different diets.

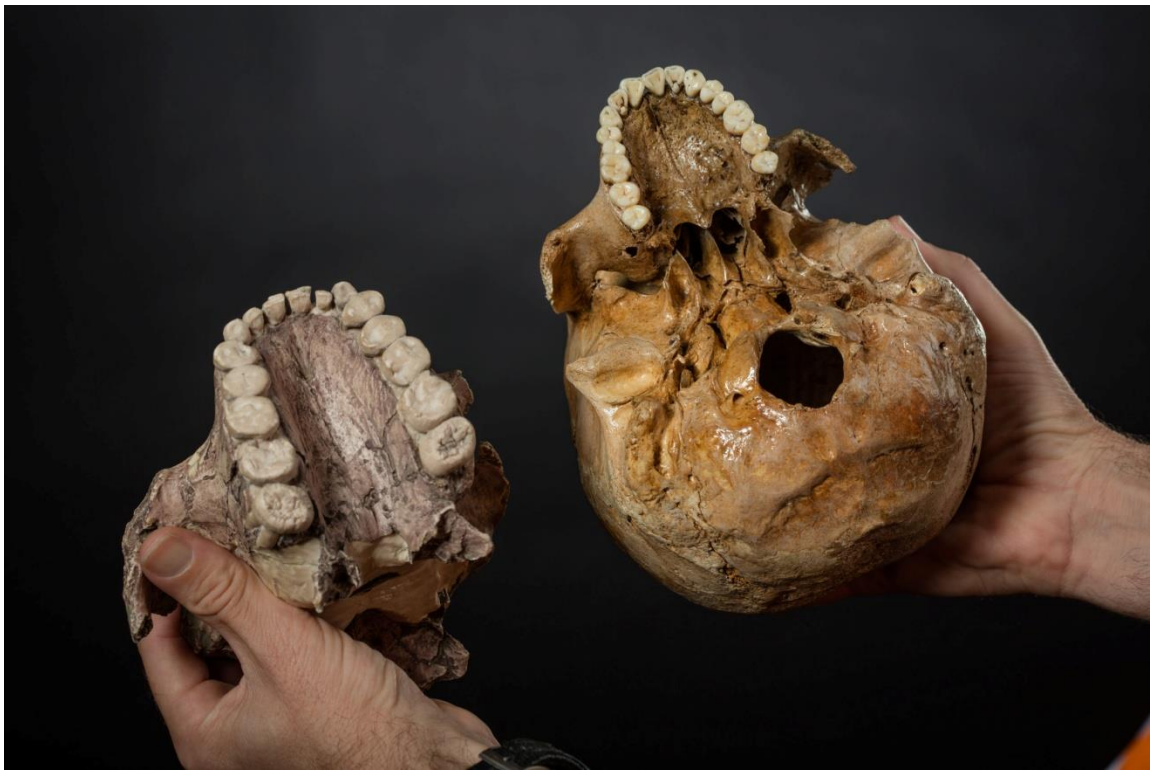


Image description: To the left a hand holds a fragment of skull and jaw with the surface of the upper set of large, flat teeth facing the viewer. To the right of the image a hand holds a second skull with the surface of the upper set of smaller teeth facing the viewer.
Caption: The upper jaw of a replica of the "nutcracker man" skull, *Paranthropus boisei* (left) with huge, flat teeth, compared with that of a modern human (right). ©University of Arkansas/Russell Cothren 2016

Gorillas offer another example. They have sharp, crested molars and massive chewing muscles with deep jaws, seemingly evolved for heavy mastication of tough, fibrous plant parts. And indeed, the diets of mountain gorillas in the Virungas of East Africa are dominated by terrestrial herbaceous vegetation: the stems, leaves, and pith of nonwoody plants. In contrast, lowland gorillas consume more soft, fleshy fruit. They only eat tough, fibrous foods when favored fruits are unavailable. In fact, when presented with an option, lowland gorillas in zoos choose mango and cantaloupe over cabbage and celery (Remis 2002). Why the difference between gorillas? There are more fruit to eat at lower elevations. Again, we have similar species with similar dental adaptations but different diets, in this case because of differing food availabilities.

Foodprints for thought

If two species can have similar teeth but different diets, how can we use dental remains to reconstruct feeding behaviors of fossil hominins? While tooth form provides insights into potential diets for a species, we also need a record of what individual animals ate at moments in time in the past. We need "foodprints": telltale traces of actual behavior such as dental microwear and stable isotopes.

Dental microwear analysis is the study of scratches and pits in teeth that form during feeding. We can use microwear patterns on molars to infer diet because different foods require different chewing actions. The basic idea is that hard nuts (or bones) crushed between opposing surfaces should cause pitting, whereas tough leaves (or animal soft tissues) sheared between crests that slide past one another (think about scissor blades) should result in parallel scratches. In microwear texture analysis parlance, hard and brittle foods cause complex but isotropic microwear surface textures. Softer but tougher items cause simple but anisotropic ones. So while the teeth of mangabeys from Taï and Kibale both have flat molars with thick enamel and powerful jaws, the former have higher microwear texture complexity averages because of regular Sacoglottis nut consumption (see Ungar 2018). While tooth shape tells us little about diet differences between these mangabeys, microwear seems to pick them up clearly

Paleoanthropologists have applied this approach to the molar teeth of several early hominin species. Paranthropus robustus from South Africa has a broad range of microwear complexity values, suggesting that some individuals consumed hard foods in the days or weeks before death whereas others did not. The Paranthropus boisei sample from Eastern Africa has uniformly simple microwear textures consistent with softer, perhaps tougher foods. These microwear differences are surprising given similarities between the two presumed "nutcracker" species in tooth and jaw form. But the differences between these hominins can be understood in light of another foodprint. Carbon stable isotope analyses of Paranthropus teeth indicate that the P. boisei diet was dominated by tropical grasses or sedges, or both, and that P. robustus ate more tree and bush plant parts (Sponheimer et al. 2013). Microwear and isotope foodprints align to suggest that diets of the two Paranthropus species differed despite similar occlusal morphology, much like mangabeys today.

Microwear texture patterning in other fossil species gives further insight into hominin dietary evolution. Australopithecus afarensis and A. africanus have simpler microwear surface textures, whereas Homo habilis has a broader range of texture complexity values. Homo erectus and H. neanderthalensis have even more dispersion in texture complexity (El Zaatari and Ungar 2017). This is

seemingly consistent with a broadening of the diet from Australopithecus to early Homo to later Homo species—something that would be difficult to pick up from tooth form alone.

So what are the lessons learned from combining dental ecology with early hominin microwear? How does our story of the evolution of hominin diet change? First, the Paranthropus example gives us an important cautionary tale. It teaches us that tooth size, shape, and structure may reflect what a fossil species was capable of eating, but that may not be enough if we want to understand food choice. Perhaps the differences in diet between species in Eastern and South Africa result from differing food availabilities—like we see with gorillas. Microwear leads us to new hypotheses and new research directions.

Tooth form can teach us something about what a species is capable of eating, perhaps even what it evolved to eat; but this need not be what individuals preferred or ate on a daily basis.

Microwear of Australopithecus and early Homo might help us contextualize models of human evolution tied to climate change as a principal driver. Consider the savanna hypothesis. A broadening diet, at least as far as microwear texture attributes can be interpreted, might be consistent with changing food availabilities associated with the spread of grasslands. The appearance of an archaeological record with stone tools increasing access to a broad variety of foods and cut-marked bones is certainly consistent with a shift from a more ape-like diet dominated by forest or woodland plants toward more human-like hunting and gathering of savanna resources.

The microwear data also fit another popular model though. Rick Potts of the Smithsonian Institution has proposed that human evolution was driven in part by variability selection (Potts and Faith 2015). We can associate two overarching and superimposed patterns with climate change over the course of human evolution. Paleoclimatologists note a general trend toward cooling and drying conditions over time; but the amplitude of oscillations between warm-wet and cool-dry conditions has also increased. Potts and colleagues suggest that our ancestors evolved for behavioral versatility given uncertain, fluctuating environmental conditions. Assuming that ever changing habitats meant ever changing foods to choose from, we might expect our ancestors to have developed broader diets over time in response. And the microwear evidence is certainly more consistent with a broadening of the diet than a simple shift from plants to meat.

Interpreting foodprints through the lens of dental ecology opens new possibilities to frame early hominin diets in terms of climate change over the course of evolution. We begin to consider a broadening menu driven by increasing flexibility rather than a simple shift to meat or savanna plants as grassland overtook forest. Perhaps this brings a new perspective to the spread of later hominins across the globe, facilitated by the ability to find something to eat wherever they roamed.

8. Anthropologists condemn the use of terms of "stone age" and "primitive"

British anthropologists take part in public debates. The ASA (Association of Social Anthropologists) issued a statement where they "condemn the use of terms like 'stone age' and 'primitive' to describe tribal and indigenous peoples alive today".

We anthropology bloggers have often criticized the use of these terms.

The official condemnation comes in the wake of controversial comments made on the BBC (not online!) by Baroness Jenny Tonge, the Liberal Democrat peer, who called the Bushmen of the Kalahari Desert 'stone age' and 'primitive.'

The ASA statement reads:

'All anthropologists would agree that the negative use of the terms 'primitive' and 'Stone Age' to describe [tribal peoples] has serious implications for their welfare. Governments and other social groups. . . have long used these ideas as a pretext for depriving such peoples of land and other resources.'

The ASA has become the latest supporter of Survival International's campaign against racism in the media which challenges the use of terms like 'stone age', 'primitive' and 'savage' to describe tribal and indigenous peoples.

Survival International writes:

Terms like 'stone age' and 'primitive' have been used to describe tribal people since the colonial era, reinforcing the idea that they have not changed over time and that they are backward. This idea is both incorrect and very dangerous. It is incorrect because all societies adapt and change, and it is dangerous because it is often used to justify the persecution or forced 'development' of tribal peoples. The results are almost always catastrophic: poverty, alcoholism, prostitution, disease and death.

Other supporters of this campaign include prominent journalists such as John Simpson, John Pilger and George Monbiot.

According the Washington Times, the American Anthropological Association did not return calls for comment.

But why do they still use the term tribe in their campaign? Why not use society or community? Doesn't the term tribe imply something similar as "primitive"?

As I've mentioned earlier, several African scholars argue that the idea of tribe promotes misleading stereotypes and that "anyone concerned with truth and accuracy should avoid the term "tribe" in characterizing African ethnic groups or cultures".

In their paper Talking about "Tribe" Moving from Stereotypes to Analysis, they argue that:

- Tribe has no coherent meaning.
- Tribe promotes a myth of primitive African timelessness, obscuring history and change.
- In the modern West, tribe often implies primitive savagery.
- Images of timelessness and savagery hide the modern character of African ethnicity, including ethnic conflict.
- Tribe reflects once widespread but outdated 19th century social theory
- Tribe became a cornerstone idea for European colonial rule in Africa.

Black Britain sheds more light on the use of this term. Several scholars, among others sociologist and cultural historian Lez Henry say that Survival and the ASA should also examine their use of the terms ‘tribe’ and ‘tribal.’ Henry says, people in Africa who live simple agrarian lifestyles are often seen as ‘primitive.’ Such notions served as justification for the colonisation of countries designated as ‘third world’. For Ekwe Ekwe, the term ‘tribe’ conjures up images of being unsophisticated and away from technological advancement.

9. Modeling study of ancient thumbs traces the history of hominin thumb dexterity

Despite long-standing ideas about the importance of thumb evolution in tool use and development, questions remain about exactly when human-like manual dexterity and efficient thumb use arose--and which hominin species was the first to have this ability. Now, researchers who've analyzed the biomechanics and efficiency of the thumb across different fossil human species using virtual muscle modeling have new insight into when these abilities first arose and what they've meant for the development of more complex human culture. The findings, appearing January 28 in the journal Current Biology, suggest that a fundamental aspect of human thumb opposition first appeared approximately 2 million years ago and was not found in the earliest proposed stone tool makers.

"Increased manual dexterity in the form of efficient thumb opposition was among the early defining characteristics of our lineage, providing a formidable adaptive advantage to our ancestors," said Katerina Harvati of the Eberhard Karls University of Tübingen. "It is likely a crucial element underlying the development of complex culture over the last 2 million years, shaping our biocultural evolution."

Earlier attempts to study thumb dexterity evolution had relied on comparisons between the skeletal anatomy of modern humans and earlier hominin species. The assumption was that similarities in skeletal remains to the human form could be taken as evidence of dexterity. In the new study, the team led by Harvati took a new and more comprehensive approach.

"Our methodology integrates cutting-edge virtual muscle modeling with three-dimensional analysis of bone shape and size," first author and hand biomechanics expert Alexandros Karakostis, explains. "This process includes the precise 3D study of the areas of the bones where muscles attach in life. Importantly, we were able to validate the predictions of our models by confirming that the differences observed between living taxa--chimpanzees and modern humans--reflect those reported from past experimental studies."

By applying this new approach to answer the question, the researchers showed that thumb efficiency and dexterity had increased to a significant extent in hominins that lived 2 million years ago in South Africa. At the same time, they

found that the degree of this dexterity was consistently lower in the earliest proposed tool-making species, the Australopithecines. That includes the species Australopithecus sediba, which is also dated to approximately 2 million years ago. That's notable because researchers had previously suggested that the human-like thumb proportions of A. sediba reflected tool-making capabilities.

"One of the greatest surprises was to find that hominin hand fossils from the Swartkrans site in South Africa, which date to ca. 2 million years ago and are attributed to either early Homo or to the extinct hominin side branch Paranthropus robustus, could achieve a thumb-using dexterity similar to that of modern humans," Karakostis said.

The new findings further show that later-arising species, belonging to our own genus Homo-- including Neanderthals as well as early and recent Homo sapiens--share similarly high degrees of manual dexterity. Those findings applied also to the small-brained species Homo naledi, despite the fact that this species has not yet been found in association with stone tools.

"These consistently high dexterity levels in species of Homo are indicative of the great adaptive value of thumb opposition for human biocultural evolution," Harvati says.

The researchers note that the most important implication of their new findings is that an early increase of thumb dexterity about 2 million years ago may have been a foundation for the gradual development of complex culture. They highlight that this timeframe includes important biocultural developments such as the appearance of the large-brained Homo erectus lineage and its dispersal out of Africa. Around the same time, humans gradually began to exploit animal resources and to rely more heavily on stone tool technologies.

The researchers now plan to look even more closely at specific groups, such as Neanderthals, so as to further elucidate the details of their manual dexterity and how they may have differed from that of modern humans. They'll also more closely investigate the habitual manual activities of early hominins to further shed light on the behaviors that marked the transition to systematic tool production and use among our distant ancestors.

10. First human culture lasted 20,000 years longer than thought

Fieldwork led by Dr Eleanor Scerri, head of the Pan-African Evolution Research Group at the Max Planck Institute for the Science of Human History in Germany and Dr Khady Niang of the University of Cheikh Anta Diop in Senegal, has documented the youngest known occurrence of the Middle Stone Age. This repertoire of stone flaking methods and the resulting tools includes distinctive ways of producing sharp flakes by carefully preparing nodules of rock, some of which were sometimes further shaped into tool forms known as 'scrapers' and 'points.' Middle Stone Age finds most commonly occur in the African record between around 300 thousand and 30 thousand years ago, after which point they largely vanish.

It was long thought that these tool types were replaced after 30 thousand years ago by a radically different, miniaturized toolkit better suited to diversified subsistence strategies and patterns of mobility across Africa. In a paper published in *Scientific Reports* this week, Scerri and colleagues show that groups of hunter-gatherers in what is today Senegal continued to use Middle Stone Age technologies associated with our species' earliest prehistory as late as 11 thousand years ago. This contrasts with the long-held view that humanity's major prehistoric cultural phases occurred in a neat and universal sequence.

The 'Last Eden'?

"West Africa is a real frontier for human evolutionary studies -- we know almost nothing about what happened here in deep prehistory. Almost everything we know about human origins is extrapolated from discoveries in small parts of eastern and southern Africa," says Dr Eleanor Scerri, the lead author of the study.

To redress this gap in the data, Scerri and Niang put together a research program to explore different regions of Senegal. The program ranges from Senegal's desert edges to its forests and along different stretches of its major river systems: the Senegal and the Gambia, where they found multiple Middle Stone Age sites, all with surprisingly young dates.

"These discoveries demonstrate the importance of investigating the whole of the African continent, if we are to really get a handle on the deep human past." says Dr Khady Niang. "Prior to our work, the story from the rest of Africa suggested

that well before 11 thousand years ago, the last traces of the Middle Stone Age -- and the lifeways it reflects -- were long gone."

Explaining why this region of West Africa was home to such a late persistence of Middle Stone Age culture is not straightforward.

"To the north, the region meets the Sahara Desert," explains Dr Jimbob Blinkhorn, one of the paper's authors. "To the east, there are the Central African rainforests, which were often cut off from the West African rainforests during periods of drought and fragmentation. Even the river systems in West Africa form a self-contained and isolated group."

"It is also possible that this region of Africa was less affected by the extremes of repeated cycles of climate change," adds Scerri. "If this was the case, the relative isolation and habitat stability may simply have resulted in little need for radical changes in subsistence, as reflected in the successful use of these traditional toolkits."

"All we can be sure about is that this persistence is not simply about a lack of capacity to invest in the development of new technologies. These people were intelligent, they knew how to select good stone for their tool making and exploit the landscape they lived in," says Niang.

An ecological, biological and cultural patchwork

The results fit in with a wider, emerging view that for most of humanity's deep prehistory, populations were relatively isolated from each other, living in subdivided groups in different regions.

Accompanying this striking finding is the fact that in West Africa, the major cultural shift to more miniaturized toolkits also occurs extremely late compared to the rest of the continent. For a relatively short time, Middle Stone Age using populations lived alongside others using the more recently developed miniaturized tool kits, referred to as the 'Later Stone Age'.

"This matches genetic studies suggesting that African people living in the last ten thousand years lived in very subdivided populations," says Dr Niang. "We aren't sure why, but apart from physical distance, it may be the case that some cultural boundaries also existed. Perhaps the populations using these different material cultures also lived in slightly different ecological niches."

Around 15 thousand years ago, there was a major increase in humidity and forest growth in central and western Africa, that perhaps linked different areas and provided corridors for dispersal. This may have spelled the final end for humanity's first and earliest cultural repertoire and initiated a new period of genetic and cultural mixing.

"These findings do not fit a simple unilinear model of cultural change towards 'modernity'," explains Scerri. " Groups of hunter-gatherers embedded in radically different technological traditions occupied neighbouring regions of Africa for thousands of years, and sometimes shared the same regions. Long isolated regions, on the other hand, may have been important reservoirs of cultural and genetic diversity," she adds. "This may have been a defining factor in the success of our species."

11. Mapping Human and Neanderthal Genomes

The Human Genome Project first published the modern human genome 20 years ago, and the Neanderthal genome was sequenced a little more than a decade ago. What do these maps mean for our understanding of humanity?

Back in 1990, researchers embarked on an epic project to map out all of human DNA: the Human Genome Project. Their first draft of the human genome was published 20 years ago today.

I find myself thinking: *Wow, it's been 20 whole years—yet it's* only *been 20 years*!

Genetics is a dizzyingly complex field that is still in its infancy. Because of that, new finds and advances have a lot of potential for misinterpretation and misuse. But the field has also served as a potent reminder of how similar we all are at the core—and how blended humanity has been throughout all of deep time.

Humans have more than 3 billion letter pairs of DNA in their genome: It turns out that less than 2 percent of that spells out around 20,000 specific genes, or sets of instructions that code for the proteins that make our tissues. All humans share the same basic set of genes (we all have a gene for earwax consistency, for example), but there are subtle variations in the DNA spelling of those genes from individual to individual that result in slightly different proteins (sticky versus dry earwax). The Human Genome Project mapped out both our genes and the DNA in between, and set out to see how these tiny variations in DNA are linked

to variations in physical traits and disease. Overall, any given human being is about 99.9 percent similar, genetically, to any other human being.

All that is just for modern *Homo sapiens*, of course. As a researcher focused on human evolution and the lives of long-extinct hominin populations, the Human Genome Project was just the beginning of avenues of research that I find incredibly exciting.

The Neanderthal Genome Project began in July of 2006, and in May of 2010—just over a decade ago—researchers published the initial draft of the genome of one of our closest extinct relatives. Our genome overlaps with about 97–98 percent of that of Neanderthals, thanks to us sharing a common ancestor. (Many living things are surprisingly similar: Humans and chimps, for example, are only about 1.2–6 percent different from each other, depending on how you count.)

Human groups lived, moved, and mingled, and some traces of that world are left to us to tease out of our genome.

Thanks to this work, we now know details about Neanderthals that the archaeological record alone could never have provided. For example, fragments of DNA from specimens found in Spain and Italy showed that at least some Neanderthals likely had pale skin and reddish hair—although, interestingly, the variations for this coloring are different from the variants found in modern humans. Apparently, redheads among *Homo sapiens* evolved separately.

I am particularly interested in how Neanderthals and other early hominin populations used the plant and animal resources around them for food, tools, and other daily needs. DNA can provide clues in those arenas. For example, Neanderthals, like us, possessed a gene with the catchy name TAS2R38 that controls the ability to taste bitter substances. Chances are this adaptation evolved in the human lineage to enable us to avoid foods that contain toxins, which often have a bitter taste.

In 2016, researchers examined a gene in both modern humans and Neanderthals that controls the body's response to carcinogenic hydrocarbons. They found that Neanderthals were up to 1,000 percent more sensitive to these carcinogens than humans but had more genetic variants that better neutralized the harmful effects. Maybe this was an adaptation that occurred as the result of early fire use as our hominin ancestors started to inhale carcinogenic smoke. That is still unclear.

12. Modern human origins cannot be traced back to a single point in time

Genetic and fossil records do not reveal a single point where modern humans originated, /

Genetic and fossil records do not reveal a single point where modern humans originated, researchers have found.

Experts from the Museum, the Francis Crick Institute and the Max Planck Institute for the Science of Human History have partnered to untangle the different lines of ancestry in the evolution of our species, Homo sapiens.

They argue that no specific point in time can currently be identified when modern human ancestry was confined to a limited birthplace. The known patterns of the first appearance of anatomical or behavioural traits that are often used to define H. sapiens fit a range of evolutionary histories.

Their new paper, published in Nature, reviews our current understanding of how modern human ancestry around the globe can be traced into the distant past, and which ancestors it passes through during our journey back in time.

Prof Chris Stringer, co-author and researcher at the Museum, says, 'Some of our ancestors will have lived in groups or populations that can be identified in the fossil record, whereas very little will be known about others.

'Over the next decade, growing understanding of our complex origins should expand the geographic focus to regions previously considered peripheral to our evolution, such as Central and West Africa, the Indian subcontinent and southeast Asia.'

Three key phases in our ancestry are surrounded by major questions, including:

- the worldwide expansion of modern humans between 40,000 and 60,000 years ago and the last known contacts with archaic groups such as the Neanderthals and Denisovans
- an African origin of modern human diversity about 60,000 to 300,000 years ago

- the complex separation of modern human ancestors from archaic human groups about 300,000 to one million years ago

Co-author Pontus Skoglund from the Francis Crick Institute says, 'Contrary to what many believe, neither the genetic nor fossil records has so far revealed a defined time and place for the origin of our species.

'Such a point in time may not have existed, when the majority of our ancestry was found in a small geographic region and the traits we associate with our species appeared. For now, it would be useful to move away from the idea of a single time and place of origin.'

Interdisciplinary analysis of the growing genetic, fossil and archaeological records will undoubtedly reveal many new surprises about the roots of modern human ancestry.

13. New Evolutionary Theory: The Human Brain Grew as a Result of the Extinction of Large Animals

A new paper by Dr. Miki Ben-Dor and Prof. Ran Barkai from the Jacob M. Alkow Department of Archaeology at Tel Aviv University proposes an original unifying explanation for the physiological, behavioral and cultural evolution of the human species, from its first appearance about two million years ago, to the agricultural revolution (around 10,000 BCE). According to the paper, humans developed as hunters of large animals, causing their ultimate extinction. As they adapted to hunting small, swift prey animals, humans developed higher cognitive abilities, evidenced by the most obvious evolutionary change — the growth of brain volume from 650cc to 1,500cc. To date, no unifying explanation has been proposed for the major phenomena in human prehistory. The novel theory was published in Quaternary Journal.

In recent years more and more evidence has been accumulated to the effect that humans were a major factor in the extinction of large animals, and consequently had to adapt to hunting smaller game, first in Africa and later in all other parts of the world. In Africa, 2.6 million years ago, when humans first emerged, the average size of land mammals was close to 500kg. Just before the advent of agriculture this figure had decreased by over 90% — down to several tens of kg.

According to the researchers, the decrease in the size of game and the need to hunt small, swift animals forced humans to display cunning and boldness — an evolutionary process that demanded increased volume of the human brain and

later led to the development of language enabling the exchange of information about where prey could be found. The theory claims that all means served one end: body energy conservation.

The researchers show that, throughout most of their evolution, early humans were apex (top) predators, specializing in hunting large game. Representing most of the biomass available for hunting, these animals provided humans with high fat levels, an essential source of energy, and enabled a higher energy return than small game. In the past, six different species of elephants lived in Africa, comprising more than half of the biomass of all herbivores hunted by humans. Initial evidence from East Africa indicates that homo sapiens only emerged in that area after a significant decline in the number of elephant species in certain regions. Comparing the size of animals found in archaeological cultures, representing different species of humans in east Africa, southern Europe and Israel, the researchers found that in all cases there was a significant decline in the prevalence of animals weighing over 200kg, coupled with an increase in the volume of the human brain.

"We correlate the increase in human brain volume with the need to become smarter hunters," explains Dr. Ben-Dor. For example, the need to hunt dozens of gazelles instead of one elephant generated prolonged evolutionary pressure on the brain functions of humans, who were now using up much more energy in both movement and thought processes. Hunting small animals, that are constantly threatened by predators and therefore very quick to take flight, requires a physiology adapted to the chase as well as more sophisticated hunting tools. Cognitive activity also rises as fast tracking requires fast decision-making, based on phenomenal acquaintance with the animals' behavior — information that needs to be stored in a larger memory."

The evolutionary adaptation of humans was very successful," says Dr. Ben-Dor. "As the size of animals continued to decrease, the invention of the bow and arrow and domestication of dogs enabled more efficient hunting of medium-sized and small animals — until these populations also dwindled. Toward the end of the Stone Age, as animals became even smaller, humans had to put more energy into hunting than they were able to get back. Indeed, this is when the Agricultural Revolution occurred, involving the domestication of both animals and plants. As humans moved into permanent settlements and became farmers, their brain size decreased to its current volume of 1300-1400cc. This happened because, with domesticated plants and animals that don't take flight, there was

no more need for the allocation of outstanding cognitive abilities to the task of hunting."

Prof. Barkai: "While the chimpanzee's brain, for example, has remained stable for 7 million years, the human brain grew threefold, reaching its greatest size about 300,000 years ago. In addition to brain volume, evolutionary pressure caused humans to use language, fire and sophisticated tools such as bow and arrow, adapt their arms and shoulders to the tasks of throwing and hurling and their bodies to the prolonged chase, improve their stone tools, domesticate dogs and ultimately also domesticate the game itself and turn to agriculture."

Prof. Barkai adds: "It must be understood that our perspective is not deterministic. Humans brought this trouble upon themselves. By focusing on hunting the largest animals, they caused extinctions. Wherever humans appeared — whether homo erectus or homo sapiens, we see, sooner or later, mass extinction of large animals. Dependence on large animals had its price. Humans undercut their own livelihood. But while other species, like our cousins the Neanderthals, became extinct when their large prey disappeared, homo sapiens decided to start over again, this time relying on agriculture."

14. Neanderthals helped create early human art, researcher says

When Neanderthals, Denisovans and homo sapiens met one another 50,000 years ago, these archaic and modern humans not only interbred during the thousands of years in which they overlapped, but they exchanged ideas that led to a surge in creativity, according to a leading academic.

Tom Higham, a professor of archaeological science at the University of Oxford, argues that their exchange explains "a proliferation of objects in the archaeological record", such as perforated teeth and shell pendants, the use of pigments and colourants, decorated and incised bones, carved figurative art and cave painting: "Through the early 50,000s, up to around 38,000 to 40,000 years ago, we see a massive growth in these types of ornaments that we simply didn't see before."

Between 40,000 and 150,000 years ago, our cousins included the Neanderthals, Homo floresiensis, Homo luzonesis and the Denisovans.

"Now it's just us; there aren't any other types of humans on the planet," Higham says. "We always thought that the origins of art and complex cognitive thought was the hallmark of us – modern humans. This was called the human revolution. The basis of this hypothesis, which came out in the 1970s, was that humans came out of Africa and brought with them a cognitive ability that no other types of humans – particularly Neanderthals – had ... Now what we think is happening is that … it's not restricted to modern humans at all.

"If our groups were interbreeding, then cultural transfer – the exchange of ideas, thoughts and language – may well also have been happening. Humans are good at picking up new ideas."

The latest research, which draws on recent findings by international scientists and archaeologists, will feature in Higham's forthcoming book, The World Before Us: How Science is Revealing a New Story of Our Human Origins, to be published by Viking on 25 March.

He writes that Earth was a primevally complicated place 50,000 years ago: "To borrow from the words of Tolkien, we should think of it as a veritable 'Middle Earth' in terms of the diversity of forms of the human family that existed at the time. There were five, six, or even more, different types of human present in various parts of the world."

In the book, through the latest scientific and technological advances – including radiocarbon dating and ancient DNA analysis – Higham explores how we became the only humans on Earth and how our forebears lived – "and live on in our genes today".

He is a world expert in technology that is revolutionising what we know about previous human species. Archaeological and genetic discoveries are transforming our understanding of our ancestors.

Higham is among academics who have been working in Siberia, where a new type of human, the Denisovans, was discovered in a remote cave in 2010. From a finger bone fragment so tiny that it would previously have been unidentifiable, they were able to extract crucial DNA details that link them to people spread across a vast area of Eurasia, including south-east Asia.

He says: "Denisovans are closely related to Neanderthals and to us. As with Neanderthals, we interbred with them. People today, depending on where they

are geographically, have a small amount – and, in some cases, big amounts – of Denisovan DNA.

"At the site of the Denisova cave, we've also uncovered evidence that intriguingly suggests that Denisovans too might have been involved in making personal ornaments and doing the kinds of things that hitherto we only thought were the exclusive preserve of us and later Neanderthals."

That evidence includes rings and beads made out of mammoth tusks and ostrich eggshells. "Were these and the other ornaments made by both Denisovans and modern humans?" Higham asks.

New research means that all sorts of artworks and decorative items that have been assumed to be linked to the earliest modern human could have been created by Neanderthals or Denisovans, in the absence of other evidence.

Higham says: "The weight of evidence now suggests that if there was cultural transmission, it probably occurred in both directions, and that the earliest evidence for the beginnings of complex behaviour in Europe was prior to the widespread arrival of Homo sapiens."

The last known resting place of *Homo erectus*, one of the most successful human ancestors and the first to walk fully upright, has been traced to a floodplain near the longest river on the Indonesian island of Java.

A dozen partial skulls and two shinbones, discovered in a bonebed near the Solo river in the 1930s, but never reliably dated, have now been placed at between 108,000 and 117,000 years old after a comprehensive survey of the site.

The age of the remains marks Central Java as *Homo erectus*'s final stand, and confirms the species as the longest surviving human ancestor by far, its presence stretching across the evolutionary tree for about 1.8m years.

"This is the largest collection of *Homo erectus* fossils at a single site in the world and dating it has always been important," said Russell Ciochon, an anthropologist at the University of Iowa. "This was a very long-lived species and we have now nailed the date of their last appearance."

Homo erectus racked up a score of firsts. It was the first of our predecessors to have modern human-like body proportions, and may have been the first to cook food. The species emerged in Africa nearly 2m years ago and became the first to leave the continent, spreading across Asia and down into Indonesia. It hung on in Java long after it had vanished elsewhere.

Excavations at Ngandong, Indonesia in 2010. Photograph: Russell Ciochon/Nature

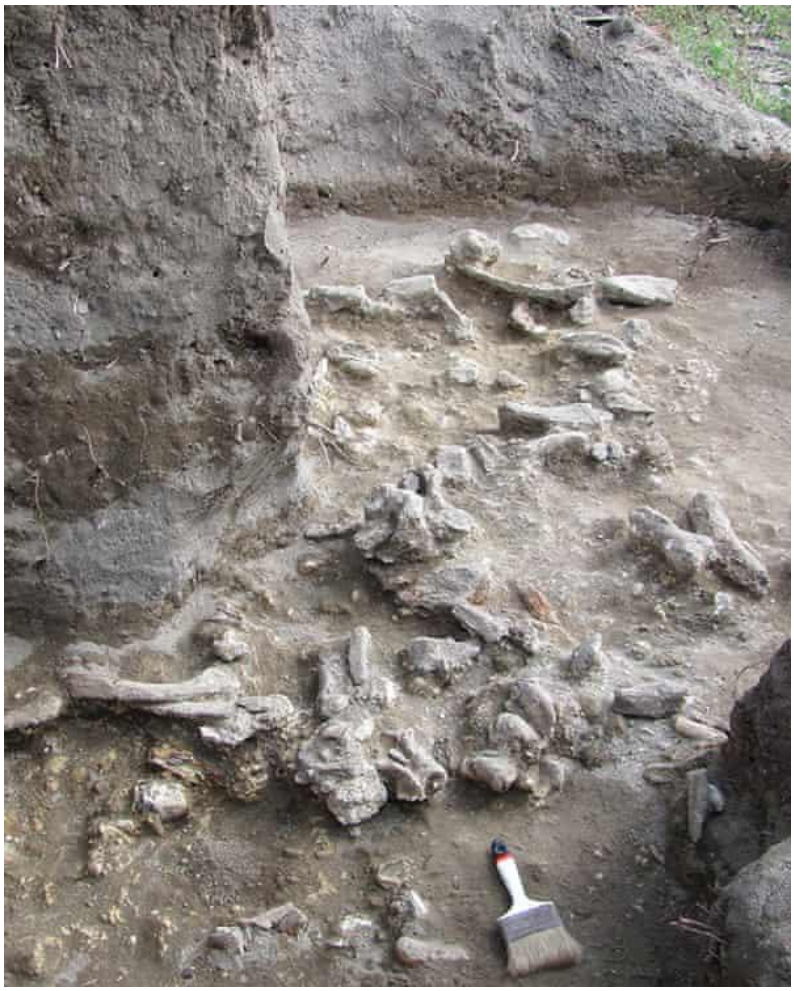
The bones belong to a haul of 25,000 mostly animal fossils that were unearthed by Dutch geologists as they excavated the Ngandong terrace, a floodplain along the Solo, between 1931 and 1933. The bones became lodged in the floodplain after being washed downriver, but how the individuals died is unknown. Scientists have long tried to date the site, but have come up with wildly different estimates from 27,000 to half a million years old.

With staff from the Institute of Technology in Bandung, Indonesia, the research team spent 16 years dating the site with a panoply of modern techniques. Their work was aided by the grandchildren of one of the Dutch geologists, who provided maps and journals that, once translated into English, pointed to the location of the original bonebed.

Writing in the journal Nature, the scientists describe how they worked out the age of the *Homo erectus* fossils by dating the landscape and new animal fossils

excavated from the Ngandong terrace. They dated stalagmites in the caves of nearby mountains to show that the mountains themselves rose up at least half a million years ago and diverted the Solo into the Kendeng hills where the Ngandong terrace sits.

Further dating revealed that the Ngandong terrace itself formed between 140,000 and 92,000 years ago. Finally, the researchers located the original bone bed and dug up hundreds more fossils. None belonged to *Homo erectus*, but rather a smattering of animals from the Ngandong tiger to water buffalo and elephants.



An exposed bonebed at Ngandong. Photograph: Russell L. Ciochon Univ. of Iowa/Nature

The work produced 52 new dates for the different parts of the site, which Richard Bailey, a researcher at Oxford, fed into a computer model. This weighted the dates according to the uncertainties of the different techniques and came up with a final age range for the fossils.

"Knowing when a species was alive and when they eventually died out is important for understanding where they sit in the evolutionary tree, who they interacted with, and why they became extinct," said Kira Westaway, who co-led the study at Macquarie University in Sydney.

Given the age of the remains, *Homo erectus* did not overlap with *Homo sapiens*. But the prehistoric species may have mingled with the enigmatic Denisovans, an early human known from the cold caves of Siberia, which may have reached south-east Asia.

The dating shows that *Homo erectus* finally went extinct on Java when the environment grew warmer and the woodland was replaced by rainforest.

Josephine Joordens, a paleoecologist at the Naturalis Biodiversity Center in Leiden, said it was an "impressive" piece of work. "It's an important result because it nails down the time span of this highly successful, cosmopolitan and long-lasting species," she said.

Mark Maslin, a researcher at UCL, said: "Even more exciting is the realisation that around 100,000 years ago, there existed at least seven or eight different hominin species including our own, *Homo sapiens*. From this complex bush of ancestors only one species emerged, our own, which finally arrived in Java 35,000 years after the last known appearance of *Homo erectus*."

But John Hawks, an anthropologist at the University of Wisconsin-Madison, raised doubts about the identity of the fossils. "The question I'm asking is why should we think that these fossils are *Homo erectus*?" he said. "It's hard for me to see a population of fossils from Java 120,000 years ago and not assume they were probably Denisovan."

SOCIO – CULTURAL ANTHROPOLOGY

15. Scholars link diet, dentition, and linguistics

Summary:

Anthropologists used a novel data analysis of thousands of languages, in addition to studying a unique subset of celebrities, to reveal how a soft food diet -- contrasted with the diet of hunter-gatherers -- is restructuring dentition and changing how people speak.

Their findings, published in *Scientific Reports*, counter the longstanding belief within the field that maintains that languages are susceptible to the same pressures and so are essentially immune to external factors.

"Our results represent the most compelling evidence to date that languages are very much affected by external factors that differ across populations," said Everett, professor and chair of the Department of Anthropology at the University of Miami.

"Languages change -- we can see this in any language -- but the thinking has long been that all languages have the same pressures, that there is no difference across populations that make some people more prone than others to use certain sounds," he noted.

Everett said that in the past decade, he and others have produced new evidence suggesting that there might be other factors that are likely to influence speech patterns. He highlighted a "highly publicized" paper published in Science Magazine two years ago, while noting that in addition to this new research, he has spent several years studying how environmental factors such as ambient aridity -- extreme dryness -- shift speech patterns by reducing vowel usage, which requires more effort to pronounce.

He credited the linguistic acumen and diligence of Chen, his former student now pursuing a doctorate in cognitive science, with advancing the dentition study.

"Sihan took a linguistics course and fell in love with the study of languages. An exceptionally bright student, he demonstrated an incredible aptitude for phonetics and transcribing precisely what's going on in people's mouths as they speak," said Everett, who holds a secondary appointment in psychology.

Yet changes in language take hundreds of years to emerge, Everett explained. So, to obtain a quicker accounting, the two examined the speech patterns of 10 celebrities -- including British singing phenom Freddie Mercury and former Olympic swimmer Michael Phelps -- a research subset that offered a spectrum of dentition variance.

Mercury's four additional teeth -- a hereditary dental condition -- caused a famously unusual overbite. (Mercury was embarrassed by the protrusion but resisted any oral surgery believing the anomaly contributed to his exceptional four-octave vocal range.) And Phelps also presented a unique alignment issue.

Everett recognized that, from a research standpoint, utilizing the data from the 10 celebrities was "a bit tricky."

"Freddie Mercury's bite isn't the way that it is because of his diet; there are obviously genetic factors here," he said. "Yet the data from the celebrities provides us insight in real time and contributes to understanding this story of human language that is changing over time."

Additionally, using the publicly accessible videos created a research trail that allowed others to check the data and transcriptions, Everett noted, adding, "the pattern was a lot clearer than I would have expected."

In meticulously transcribing the online videos of the celebrities, Chen focused on establishing the ratio of labiodental sounds such as "f" and "v" -- sounds common today but that rarely existed until soft diets became pervasive. Mercury in particular was known to pronounce these particular sounds with abnormal frequency due to his dental abnormality.

"He was really an extreme because he produced these labiodental sounds all over the place even when they shouldn't be there," Everett said. "On the other end of the spectrum Michael Phelps is kind of doing the reverse."

In studying thousands of languages, the researchers established two linguistic camps -- hunter-gatherers, whose diets have changed little and whose mouths get a lot more wear, and non-hunter-gatherers. Everett's extensive previous

research on indigenous peoples in the Amazon -- whose diets remain akin to those of hunter-gatherers -- aided the study.

Previous research on the subject has examined whether languages have this sound, or they don't. Everett and Chen delved deeper, analyzing the ratios of frequency between the two research groups.

"We basically adopted a whole new series of methods to test this and we found extensive support for it," he said, yet emphasized that the findings show correlational, not causal, links between diet, dentition, and speech patterns.

"These pressures are subtle and operate over hundreds and thousands of years, so it's a hard thing to know for sure," he said. "But what we see are these probabilistic tendencies in the worlds 7,000 languages.

"These new findings provide a better understanding of why languages -- which are a key distinguishing characteristic for anthropologists and a key aspect of being human -- take the shape they do, how they diverge, and what factors impact their evolvement," Everett said.

16. Neanderthals had the capacity to perceive and produce human speech

Summary:

Neanderthals -- the closest ancestor to modern humans -- possessed the ability to perceive and produce human speech, according to a new study.

Neanderthals -- the closest ancestor to modern humans -- possessed the ability to perceive and produce human speech, according to a new study published by an international multidisciplinary team of researchers including Binghamton University Associate Professor of Anthropology Rolf Quam and graduate student Alex Velez.

"This is one of the most important studies I have been involved in during my career," said Quam. "The results are solid and clearly show the Neanderthals had the capacity to perceive and produce human speech. This is one of the very few current, ongoing research lines relying on fossil evidence to study the evolution of language, a notoriously tricky subject in anthropology."

The evolution of language, and the linguistic capacities in Neanderthals in particular, is a long-standing question in human evolution.

"For decades, one of the central questions in human evolutionary studies has been whether the human form of communication, spoken language, was also present in any other species of human ancestor, especially the Neanderthals," said coauthor Juan Luis Arsuaga, professor of paleontology at the Universidad Complutense de Madrid and co-director of excavations and research at the Atapuerca archaeological sites in northern Spain. The latest study has reconstructed how Neanderthals heard to draw some inferences about how they may have communicated.

The study relied on high resolution CT scans to create virtual 3D models of the ear structures in *Homo sapiens* and Neanderthals as well as earlier fossils from the site of Atapuerca that represent ancestors of the Neanderthals. Data collected on the 3D models were entered into a software-based model, developed in the field of auditory bioengineering, to estimate the hearing abilities up to 5 kHz, which encompasses most of the frequency range of modern human speech sounds. Compared with the Atapuerca fossils, the Neanderthals showed slightly better hearing between 4-5 kHz, resembling modern humans more closely.

In addition, the researchers were able to calculate the frequency range of maximum sensitivity, technically known as the occupied bandwidth, in each species. The occupied bandwidth is related to the communication system, such that a wider bandwidth allows for a larger number of easily distinguishable acoustic signals to be used in the oral communication of a species. This, in turn, improves the efficiency of communication, the ability to deliver a clear message in the shortest amount of time. The Neanderthals show a wider bandwidth compared with their ancestors from Atapuerca, more closely resembling modern humans in this feature.

"This really is the key," said Mercedes Conde-Valverde, professor at the Universidad de Alcalá in Spain and lead author of the study. "The presence of similar hearing abilities, particularly the bandwidth, demonstrates that the Neanderthals possessed a communication system that was as complex and efficient as modern human speech."

"One of the other interesting results from the study was the suggestion that Neanderthal speech likely included an increased use of consonants," said Quam. "Most previous studies of Neanderthal speech capacities focused on their ability to produce the main vowels in English spoken language. However, we feel this emphasis is misplaced, since the use of consonants is a way to include more information in the vocal signal and it also separates human speech and language

from the communication patterns in nearly all other primates. The fact that our study picked up on this is a really interesting aspect of the research and is a novel suggestion regarding the linguistic capacities in our fossil ancestors."

Thus, Neanderthals had a similar capacity to us to produce the sounds of human speech, and their ear was "tuned" to perceive these frequencies. This change in the auditory capacities in Neanderthals, compared with their ancestors from Atapuerca, parallels archaeological evidence for increasingly complex behavioral patterns, including changes in stone tool technology, domestication of fire and possible symbolic practices. Along these lines, the study provides strong evidence in favor of the coevolution of increasingly complex behaviors and increasing efficiency in vocal communication throughout the course of human evolution.

The team behind the new study has been developing this research line for nearly two decades, and has ongoing collaborations to extend the analyses to additional fossil species. For the moment, however, the new results are exciting.

"These results are particularly gratifying," said Ignacio Martinez, a professor at Universidad de Alcalá in Spain. "We believe, after more than a century of research into this question, that we have provided a conclusive answer to the question of Neanderthal speech capacities."

The study, "Neandertals and modern humans had similar auditory and speech capacities," was published in *Nature Ecology and Evolution*.

INDIAN & TRIBAL ANTHROPOLOGY

1. Many get false community certificates to take away opportunities of Scheduled Caste/ Scheduled Tribe candidates: Madras High Court raises concern

"By obtaining such false certificates, undeserving persons get unjustly enriched knocking away the rights of those belonging to SC/ST community," the Court observed.

The Madras High Court on Friday raised concerns about persons not belonging to the Scheduled Caste or Scheduled Tribe (SC/ST) communities procuring false SC/ST community certificates thereby taking away opportunities earmarked for the SC/ST communities, be it in elections, educational admissions or employment (**Nirguna v. The Chairman and ors**).

The interim order passed by a Bench of Justices **N Kirubakaran** and **TV Thamilselvi** further noted that by obtaining such false certificates, undeserving people get unjustly enriched by knocking away the Constitutional rights of SC/ST persons.

"Many persons, who do not belong to either Scheduled Caste or Scheduled Tribe, obtain fake certificates declaring their community status either as Scheduled Caste or Scheduled Tribe to enable them to contest in the elections to constituencies or local bodies reserved for SC or ST candidates or to seek admission in educational institutions in respect of seats meant for SC/STs or to get employment under SC/ST category violating the rights of deserving candidates belonging to SC/ ST community. **Many number of cases are coming up before this Court in which people belonging to other communities obtain false SC/ST community certificates from authorities, who also for various reasons, merrily issue such certificates, violating the constitutional rights of SC/ST people. By obtaining such false certificates, undeserving persons get unjustly enriched knocking away the rights of those belonging to SC/ST community,**" stated the order.

To curb such malpractices, the Bench asked the State government to respond to a suggestion made by the Court to nominate Revenue Divisional Officers in each district, who may be exclusively authorised to issue community certificates as well as income certificates and nativity certificates after due inquiry.

The order was passed in a case involving allegations that the President of a village in Krishnagiri district did not belong to the ST community, although he contested from a constituency exclusively reserved for the ST candidates.

The petitioner told the Court that the President-elect belonged to the Vakkaligar community and that he had gotten elected to the post after falsely declaring that he belonged to the ST community in his nomination form.

In this regard, reference was also made to information obtained under the Right to Information (RTI) Act from the Block Educational Officer, which described the candidate community status as Vakkaligar.

The petitioner, therefore, made a request for an enquiry into the matter. Whereas the District Collector was directed to conduct an enquiry into the petitioner's allegations and send a report by January 18, till date no such report had been furnished, the Court was told.

The petitioner had, therefore, moved the Court for relief.

The Court proceeded to ask the village president whose election has been questioned to prove his community status before the Court.

Given that the allegations raised by the petitioner involves a serious issue, the Court also suo motu impleaded the Secretary, Government of Tamil Nadu, Revenue Department to respond to the Court's proposal to nominate Revenue Divisional Officers for the issuance of community certificates, nativity certificates and income certificates.

The Court also noted that in the past, there have been allegations of students being selected for medical admissions by obtaining dual nativity certificates thereby benefiting students from outside Tamil Nadu.

"The need has arisen for the State Government to nominate an officer, not below the rank of Revenue Divisional Officer, in each Disctict, who alone shall be competent to conduct an enquiry and issue not only SC/ST community certificates, but also income certificates, nativity certificates, etc. **Nativity Certificates play an important role in getting medical admissions under the State Quota,"** the Court said.

Such an endeavour, if undertaken by the State Government, would go a long way in considerably reducing the malpractices in issuance of not only community certificates but also income certificates, nativity certificates etc., the Court observed.

Given that similar concerns were earlier raised in another pending 2017 case, the Bench also opined that both cases should be clubbed once appropriate orders are passed for the same by the Chief Justice.

2. Completion of school education is costly for these tribal region students

According to students and their parents, the problem of truancy can be solved if authorities concerned arrange bus transportation to a higher secondary school in the nearby village Natrampalayam. KRISHNAGIRI: Nestled in the lap of western ghats are many tribal villages and one such village -- Doddamanju tribal panchayat village -- looks quite beautiful here with its vastly varying culture and dialects. However, when it comes to children's education, villagers continue to lag far behind. With just one high school in the panchayat, students, completing their high school (Class X), drop out of studies and start doing odd jobs. According to students and their parents, the problem of truancy can be solved if authorities concerned arrange bus transportation to a higher secondary school in the nearby village Natrampalayam, among other requests.

The school in Doddamanju panchayat in Anchetty taluk is about 110 km away from the district headquarters of Krishnagiri and 20 km away from Doddamanju. School Education Department said that the government high school in Doddamanju tribal panchayat was upgraded to high school in 2011 and since then a total of 213 students have appeared for the class X exam. Though 174 students -- 92 boys and 82 girls -- passed the boards, only 45 students have joined for higher education (class XI and other ITI courses). There is only one boy who

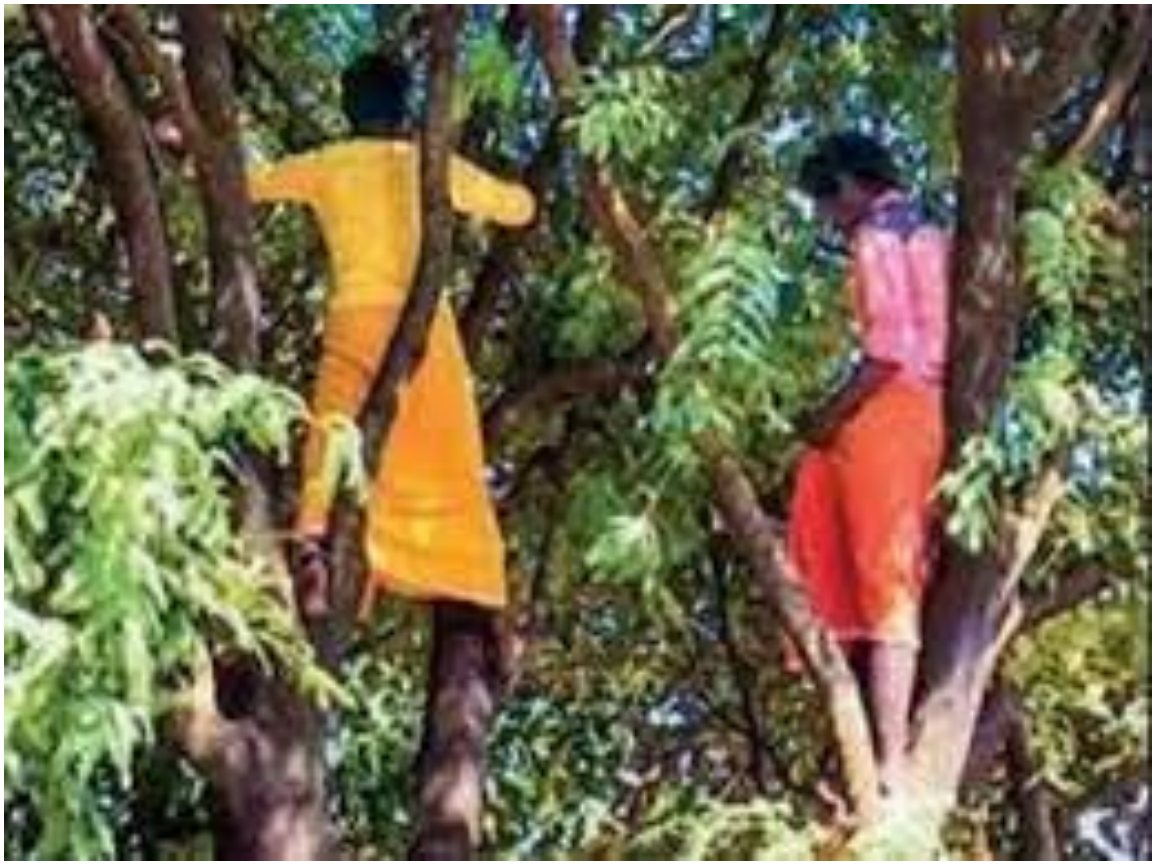
has completed his post-graduation from the village. In the academic year 2019-2020, 46 students appeared for class X exam and attained all pass, only seven students joined for class XI and four for the Industrial Training Institute said an educational department source. TNIE trekked to the village to find out the condition and found out that a few students after completing their boards switch to jobs in spinning mills at Erode, Tirupur and Namakkal districts.

One of the students who completed class IX from Doddamanju GHS and went to a spinning mill near Erode during this lockdown said that he earned `8, 000 each month for two months. However, he joined class X at his school after permission was denied for him to reach his native. Similarly, Chinnan from Onnepuram village, said, "My daughter completed class X a few years before, but since we had no road facility, let alone bus facility, students walked eight km to reach Sivalingapuram and then boarded the bus for Anchetti, which is 12 km away. This tedious and strenuous trekking led to reluctance in parents and students," he said. A mini-bus facility was started by the TNSTC from Anchetti to Doddamanju in 2018 and that has led to to a few admission to class XI in the school.

Cases of Child Marriage Meanwhile, due to early drop out from schools, many cases of child marriages have been taking place in the village. Apart from this, three girls have killed self over love disputes. Frightened parents are thus reluctant to send their wards to faraway schools and urge the government to upgrade the school in Doddamanju to a higher secondary school. A school teacher said that though the government should arrange a bus facility to the government higher secondary school at Natrampalayam, which would prevent drop out after class X. Teacher also mentioned that a junior assistant should be appointed administration work as there are only five teachers for the total 304 students.

Denkanikottai District Education Officer Jothi Chandra said that they are processing the work to upgrade the school and have communicated at the State-level authorities. Thally constituency DMK MLA Y Prakash said that he would speak about the transport issue to the district authorities and try to arrange bus facility from Doddamanju to Natrampalayam. **Trouble for students in continuing higher education** A major problem faced by the students is that the higher secondary schools run by the State government are present in Anchetti, Natrampalayam, Denkanikottai, Thally, and a government model school at Bodichipalli. Hostel facility for boys is only available in Anchetti and for girls, it is there in Bodichipalli near Kelamangalam, Thally and Denkanikottai.

3. Tribal men climb trees to avoid COVID-19 jabs



Only 7 persons could be vaccinated

A group of men from a tribal settlement near Coimbatore climbed trees to avoid a team of health workers, who had approached them to administer COVID-19 vaccines on Friday. A few women, too, left the hamlet on the pretext of collecting water from a stream.

While the Health Department said the men climbed the trees due to vaccine hesitancy, tribal welfare activists felt the incident highlighted the poor reach of the healthcare system to the Adivasi community and the failure to create awareness among them.

Hid on treetops

A few men from Sarkaraporathi tribal settlement hid on treetops when health workers from the Pooluvapatti Primary Health Centre visited the remote settlement, about 5 km away from the Forest Department check-post at Chadivayal.

The team, led by the medical officer of the Pooluvapatti Primary Health Centre, could vaccinate only seven persons in the settlement, sources said.

The team received a similar response from Adivasis of a few other tribal settlements in the region.

According to Deputy Director of Health Services S. Senthil Kumar, vaccine hesitancy was the reason for their reaction.

He said he would look into complaints that the health workers had not undertaken proactive interventions for providing healthcare to Adivasis in the region, and that they visited the settlements only for the vaccination drive.

“Rather than saying that Adivasis climbed trees due to fear of vaccination, the incident shows that our healthcare system has not yet reached Adivasis fully and earned their trust. The Health Department should ensure that Adivasis benefit from all healthcare interventions, and not the vaccination drive alone,” tribal welfare activist S. Thanraj said.

Echoing Mr. Thanraj’s view, J.M. Murugavel, of the South Indian Tribal Movement, alleged that a majority of the health workers were not making enough visits to remote settlements, and were yet to build a rapport with Adivasis, who lacked awareness on various health issues.

“Visiting the tribal hamlets’ vaccination and testing camps alone will not help the department in instilling confidence in the healthcare system among Adivasis,” he said.

4. A silent emergency

Rising cases of leprosy among Adivasis call for urgent public action.

India officially eliminated Leprosy in 2005 by bringing the Prevalence Rate below 1/10000 at the national level. However, the National Health Policy 2017 (NHP), which will guide the health policy direction of the country over the next decade or so, still has elimination of Leprosy as a national level target. It is highly unlikely that India achieves elimination of Leprosy at the state or district levels any time soon. Yet, elimination of Leprosy remains a pet topic, and many ministers including the PM have called for it, and the health minister has reportedly reassured the country in June that India will be Leprosy Free in 2018 itself. The discussion is clearly about national level elimination, yet again.

While official data says that the number of new Leprosy cases detected during 2016-17 is 135485 and the prevalence Rate per 10000 population as on March 2017 for India is 0.66, it is established that the number underestimates the real Leprosy burden. The Health Minister himself is on record saying that there may be 2,50,000 new Leprosy cases every year, based on a sample survey by Indian Council of Medical Research (ICMR) conducted in 2008-2011. Interestingly, the results of this pan India survey have not yet been released to the public.

India is also known to have had several discriminatory laws against persons affected by Leprosy. One of the oldest laws (The Lepers Act of 1898), which sanctioned the arrest and segregation of persons affected by leprosy into 'leper asylums' was repealed only as late as in May 2016, by the current government. Before the national level repealment, even though 12 states and five union territories of India had abandoned its application within their respective jurisdictions, it continued to be in force in the remaining states and union territories.

India has had major advances against Leprosy in the past. Internationally, prevalence was brought under one case per 10000 population by 2000, and there was pressure on most endemic countries like India to achieve the same at the national level at least by 2005, marking a significant milestone in the elimination of leprosy as a public health problem. The current global prevalence is estimated by the World Health Organisation (WHO) to be 0.23 per 10000 population. In 2017, India along with Brazil and Indonesia are the only countries where more than 10000 new cases are reported per year. For the year 2017, 135485 out of the 204686 new Leprosy cases detected globally were in India – a staggering 66%. In other words, two out of three new global Leprosy cases are detected in India, according to official data.

The somewhat forced 2005 declaration of Leprosy elimination had a dampening effect on the fight against the disease by reducing funds available, making sure cases are not registered, and shifting focus and resources to other diseases. After 2005, curiously, the number of new Leprosy cases detected in India remained around 1.3 lakhs every year, keeping the national prevalence rate safely well within the elimination target.

However, analysis of government data by the Observer Research Foundation has revealed a distinct trend that should worry every health policymaker in the country – Leprosy is soon becoming even more of a disease of most marginalized and underserved populations in far-flung areas. We do have some data on the prevalence of Leprosy amongst the Adivasis (Scheduled Tribes) who, according to Census 2011, constituted 8.6% of the Indian population. As the following Graph shows, the percentage of new Leprosy patients in India belonging to the Adivasi community is 18.8% – much more than their proportion in the Indian population- and that proportion is fast increasing. From 13.3% in 2009, it has increased to an alarming 18.8%. In the same period, overall number of new cases have remained almost the same at the national level.

State level reported data paints an even more distressing picture. As discussed earlier, Leprosy is at risk of becoming a disease exclusively of the Adivasis in certain states like Gujarat, where despite constituting 14.8% of the state population, Adivasis bear 64.9% of the total new Leprosy case load. 21% of Madhya Pradesh's Adivasis bear 39.4% of the new leprosy case load in the state. Maharashtra, which has under 10% Adivasis, had 33.7% of all new Leprosy cases reported from the community. West Bengal's Adivasis report 20.3% of all new Leprosy cases when their proportion in the state population is just 5.8%. Tripura, with 31.8% Adivasis and Dadra and Nagar Haveli with 52% Adivasis report 64.7% and 98.2% new Leprosy cases from among the Adivasi communities, respectively.

That Leprosy is still a major public health problem for the country and the fact that the strategies to contain it are simple and drugs are available in the public sector, draw into question the ethical priorities of our national and state health policies and their implementation. Government's own data from districts like Tapi in Gujarat with more than 80% Adivasis show that Incidence of Leprosy has gone up from 9.37 per 10000 population in 2010 to 17.16 per 10000 population in 2014. Clearly, inadequate attention is being given to this silent emergency hitting the most underserved populations of the country because the emerging spread of the disease is away from the public gaze.

5. Tribal group sets example for others in Mulugu

Sri Sammakka-Saralamma JLG, Shivapuram, in Eturunagaram, set up the detergent making unit with the aid of TSGCC and ITDA, Eturungaram, at a cost of Rs 40 lakhs in December last year under MSME scheme.

Mulugu: A group of 10 Adivasi women, who formed a Joint Liability Group (JLG), are setting an example for others, successfully manufacturing and selling detergent soaps, thanks to the Telangana State Girijan Co-operative Corporation Limited (TSGCC).

Sri Sammakka-Saralamma JLG, Shivapuram, in Eturunagaram, set up the detergent making unit with the aid of TSGCC and Integrated Tribal Development Agency (ITDA), Eturungaram, at a cost of Rs 40 lakhs in December last year under Micro, Small and Medium Enterprises (MSME) scheme.

While the JLG secured Rs 24 lakh grant from the Union government, which is 60 percent of the unit cost, they obtained a loan of Rs 12 lakh (30 per cent of the unit cost) while their own contribution was Rs 4 lakh (10 percent of the unit cost).

Speaking to Telangana Today, JLG president Dansari Soujanya said the members of the group underwent training for three months in a detergent manufacturing unit at Jeedimetla in Hyderabad with the help of TSGCC before setting up the unit.

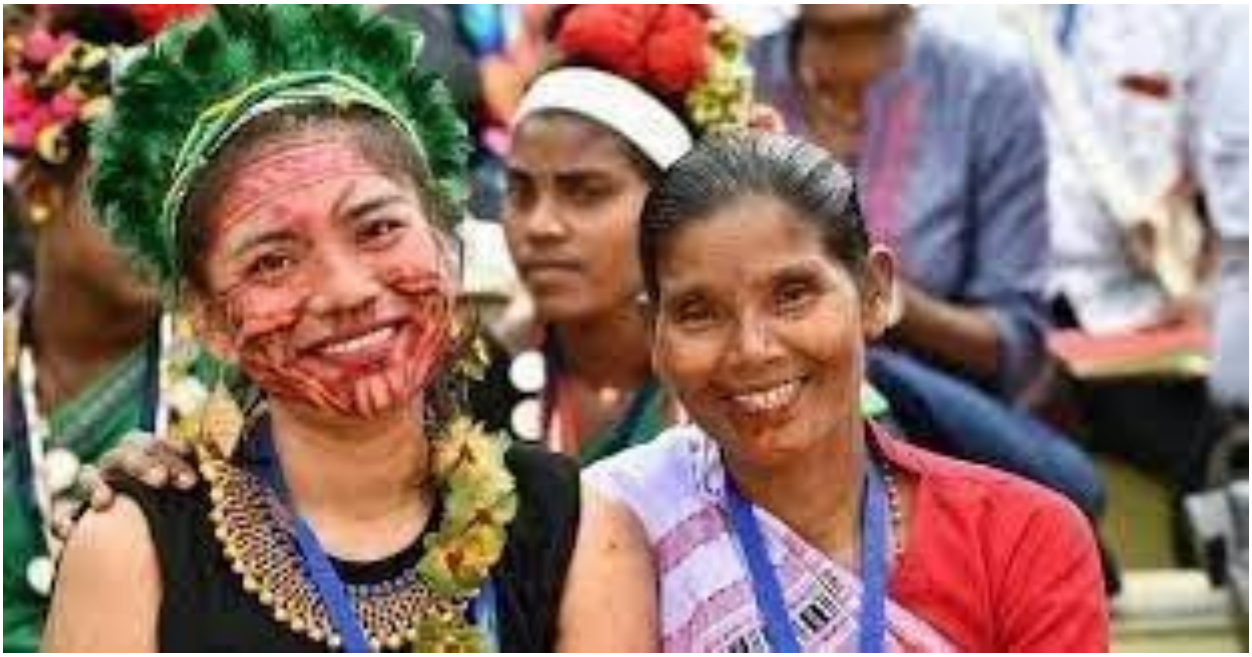
"We have so far produced three lakh detergent cakes and 75,000 of them have already been sold to tribal Ashram schools and hostels under the jurisdiction of the ITDA, Utnoor, ITDA, Eturunagram and ITDA, Bhadarachalam," she said, adding that they sell a 150 grams soap for Rs 9 to the TSGCC, while the corporation in turn sell the same to the Tribal Welfare Educational Institutions at Rs 10.

"We are giving high priority to the quality of soaps. We are selling them under the brand name of Giri Detergent Soaps," Soujanya added.

Stating that she was confident that the break-even point would be achieved in the next four to five months, she said: "After achieving break-even, we may get around Rs 800 per day compared to the daily wage." The unit can make 15,000 soaps per day, and it is also providing employment to 10 more members. The TSGCC is ensuring supply of the raw material for the unit.

Divisional Manager, TSGCC, Eturnagaram, G Pratap Reddy said the corporation was planning to set up some more units for the economic empowerment of tribal women under the jurisdiction of the ITDA, Eturunagaram.

6. For, Of and By Tribes: This Powerful Idea Is Molding the Tribal Leaders of Tomorrow



Deriving its name from the Sanskrit word for 'dialogue,' Samvaad, organised by Tata Steel, is one of the largest tribal conclaves or ecosystems in India. It has reached out to more than 10,000 people and 17 countries worldwide.

The cry of Adivasi resistance that Bhagwan Maajhi once belted out as he protested the bauxite mining in Kashipur resounds through the open stage of Samvaad at the Tribal Culture Centre in Jamshedpur, Jharkhand.

Only this time, 23 tribes from India and across the world put their arms around each other in a circular formation, as they dance to its tune sung live by popular folk singer and lyricist, Padma Shri Madhu Mansuri Hasmukh. The song not only connects the story of the struggles, aspirations and dreams of the tribal communities gathered at Samvaad but also celebrates adivasiyat (tribal identity), culture, history and heritage.

And that is precisely what Samvaad set out to do.

What is Samvaad?

Among the few examples of the incredible stories that come out of the five day-conclave are those of young tribal men using music to break taboos about menstruation, women fighting for their right to education, women contesting in and winning panchayat elections, and entire villages coming together to build rainwater harvesting structures.

In addition to being a safe space for indigenous communities to open up conversations about culture, identity, language preservation, climate justice, legal rights and constitutional frameworks, it also brings together the joys of sharing tribal cuisine, handicrafts, healers and cultural performances at Gopal Maidan over five evenings.

In its visit to Samvaad 2019, The Better India **(TBI) met with the driving forces behind the event and got a consensus on what makes it the first-of-its-kind open platform for indigenous communities.**

Dr Ramaswami Balasubramanian, an Indian author, public policy advocate and activist, who is known for his development work with rural and tribal people in Mysore, beautifully summarises the purpose of Samvaad. He explains how it isn't just about the song or the dance, the language, food or the dress that one sees from the outside, but something that runs much deeper. "For the last five years, Tata Steel has been quietly communicating its conviction to the cause of mobilising tribals for the larger good in a very silent, subtle way. Samvaad is unlike any other conclave because it is about love, respect, dignity and a genuine concern for positive change among indigenous communities. To help people believe that they must take control of their lives and not merely respond to the narrative that others fashion for them. It is invigorating to see thousands of young tribals from all over the country and outside come together to discuss, to debate, and participate in dialogue."

55-year-old Mansaram Madari from the Gond tribe of Madhya Pradesh who has been attending the conclave for the last two years echoes Balasubramanian's musings. "Samvaad brings together tribes who manifest the utmost love and respect for Jal (water), Jangal (forests) and Jameen (land). With changing times, many of our youngsters who are moving into bigger cities have forgotten their roots. Thanks to platforms like Samvaad that celebrate our identity, we can find

ways to involve young people more. The many stories of struggles shared here give us hope that we aren't alone in our fight to preserve our identity. It has inspired us to take charge of our lives. Today we are working with 600 tribal families in and around our village to preserve our culture and traditions."

A first-time attendee, Kunal Singh from the Munda tribe of Nilgiris, Odisha, says, "We have never attended a tribal event held at this scale. The exposure is amazing, and the opportunity is huge. As we sat amongst our brothers and sisters from different tribes and corners of India, there were times; we couldn't understand each other due to barriers of language. But the bond of kinship we felt surpassed it all."

For Sourav Roy, the Chief of Tata Steel's corporate social responsibility arm, Samvaad is all about building relationships and changemakers.

Samvaad has come a long way from being a celebratory event once conducted for tribal communities. Today, it has become a platform that is helping indigenous communities find solutions to modern-day problems. Another interesting offshoot of the event is to empower deserving tribal youth with the Samvaad Fellowship 2019. The fellowship provides financial help to tribal youth to undertake a project —through a research proposal or a social action initiative—to work on cultural aspects concerning their community.

With more than seven regional Samvaads being organised in Odisha, Tamil Nadu, Rajasthan, Nagaland, Chhattisgarh, Gujarat, Karnataka, Meghalaya, Kerala and Madhya Pradesh in partnership with reputed institutions, the revolution is reaching out to more tribal communities in the hinterland. As said, one can only hope that it continues to reach more and more people on the margins and the 'samvaad' (conversation) never ceases!

7. Amid acute poverty, M.P.'s Saharia children battle malnutrition

News: Saharias,a particularly vulnerable tribal group has been facing acute malnutrition due to crushing poverty, delayed breastfeeding, premature pregnancies and seasonal migrations.

Facts:

About Saharias:

- Sahariya tribe comes under particularly vulnerable tribal group(PVTGs)
- The Saharias are mainly found in many districts of Madhya Pradesh and Baran district of Rajasthan.
- Due to the fact that it is the most backward tribe of Madhya Pradesh the government has declared this tribe as special backward tribe.

Particularly Vulnerable Tribal Group(PVTG)

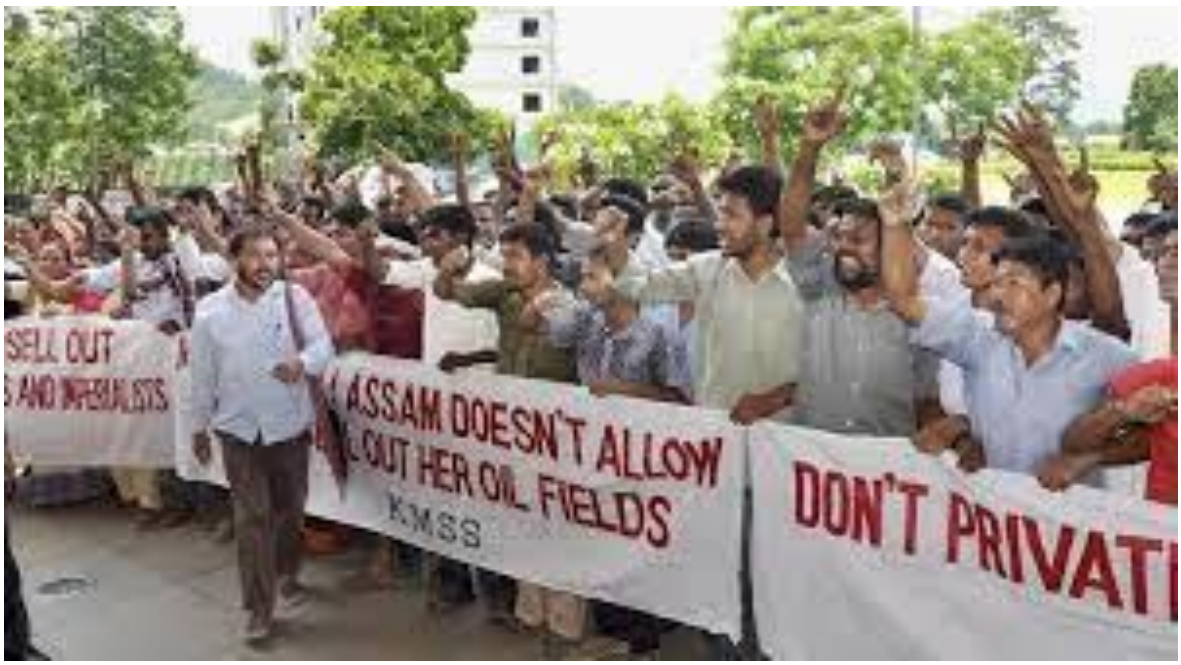
- The PVTGs are the marginalized section of the Scheduled tribes of India.
- They are a section who are relatively isolated, educationally and socio-economically backward living in a habitat far away from amenities.
- PVTG is not a Constitutional category nor are these constitutionally recognized communities.

- It is a government of India classification created with the purpose of enabling improvement in the conditions of certain communities with particularly low development
- The criteria followed for determination of PVTGs are (a)pre-agriculture level of technology (b)stagnant or declining population (c) Extremely low literacy and d)subsistence level of economy.
- Among the 75 listed PVTG's the highest number are found in Odisha (13), followed by Andhra Pradesh (12) and among others.

Scheme of development of Particularly Vulnerable Tribal Group(PVTG)

- The Ministry of Tribal Affairs implements the Scheme Development of Particularly Vulnerable Tribal Groups(PVTGs).
- The scheme was first started in 1998-199 for exclusive development of PVTGs and later revised in 2015.
- The scheme aims at planning their socio-economic development in a comprehensive manner while retaining the culture and heritage of the community by adopting habitat development approach.
- The scheme mandates all the 18 State Governments and the Union Territory of A&N Island shall prepare a long term "Conservation cum development(CCD) Plan" for each PVTG of their State based on baseline survey.
- The plan is then appraised and approved by the Project Appraisal Committee of the Ministry of Tribal Affairs.

8. Protests, outrage over Assam's bid to convert land for industries



The Assam government's approval of an ordinance to allow conversion of land without clearances for setting up micro, small and medium enterprises (MSMEs) triggered protests across the State on July 2.

The State Cabinet had on June 29 approved the industrial ordinance, whose details are not available. The ordinance awaits approval of Governor Jagdish Mukhi.

Members of the All Assam Students' Union (AASU) symbolically burnt copies of the ordinance across all its urban and rural units on Thursday, calling it a "betrayal of trust" by the Bharatiya Janata Party (BJP) that had come to power promising to protect 'jati' (race), 'mati' (land) and 'bheti' (hearth).

"The BJP has taken advantage of the COVID-19 lockdown to plot the end of the indigenous people in the name of reviving the economy. Instead of bringing in investments to boost the farm economy of the local people, it is paving the way for industrialists who have scant regard for the people, the land and the ecology," AASU's general secretary Lurinjyoti Gogoi told The Hindu.

'Tribal belts under threat'

He added that by pushing an ordinance that overrules all laws, the BJP has virtually junked the implementation of the Clause 6 of the Assam Accord that guarantees constitutional safeguards for the indigenous people of the State.

The All Assam Tribal Sangha slammed the ordinance too.

"Large swathes of the tribal blocks and belts protected during the British regime have already been encroached upon. We cannot accept this ordinance that threatens tribal areas by facilitating the easy transfer of land to non-indigenous industrialists," the Sangha's secretary-general Aditya Khakhlari said.

Some of the constituents of the Sangha did not rule out the possibility of the ordinance bulldozing rules that restrict the use of land in Sixth Schedule areas such as Bodoland and Karbi Anglong ruled by tribal councils.

"The ordinance, if approved, will be the second blow to the people of Assam after the Citizenship (Amendment) Act. We will not let this happen," said Rajya Sabha member Ajit Kumar Bhuyan, the chief convenor of Anchalik Gana Morcha, a regional front.

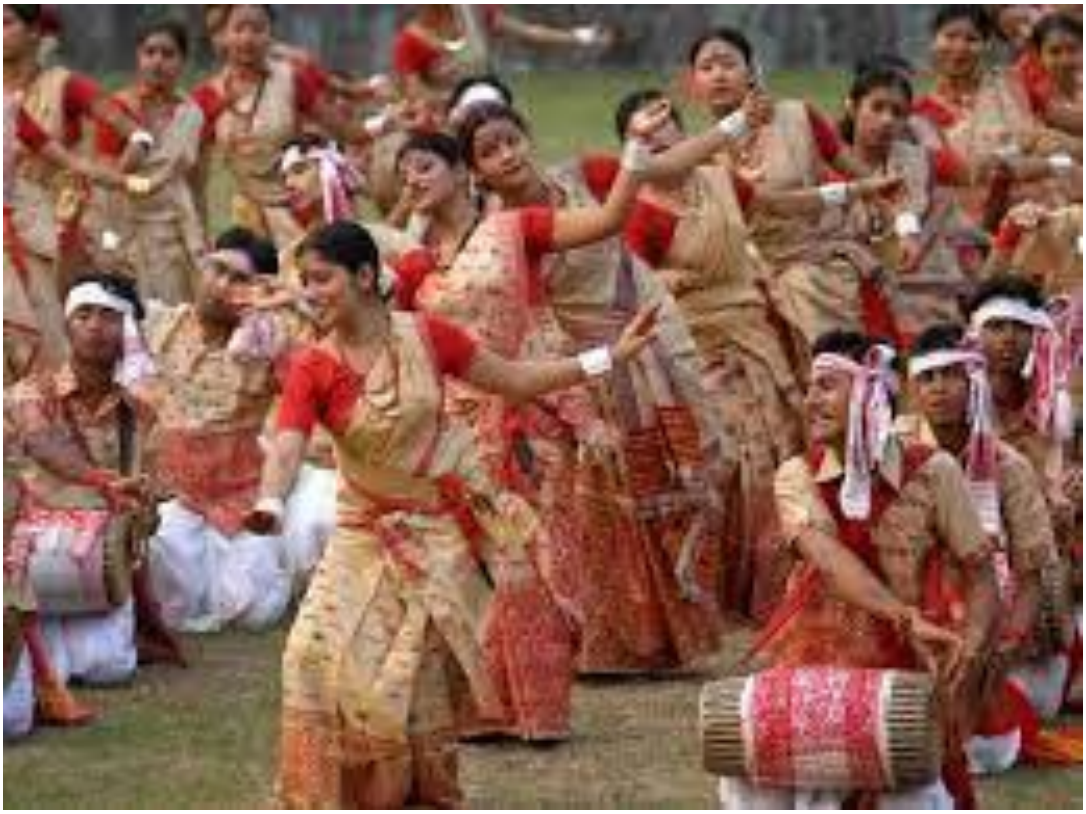
Assam's Industry and Commerce Minister Chandra Mohan Patowary has, meanwhile, clarified that the ordinance will not be applicable for hazardous industries and no industry will be allowed in eco-sensitive zones. "The ordinance has been approved for MSMEs only to largely help local entrepreneurs," he said.

Plea to Governor
The Delhi-based Rights and Risks Analysis Group (RRAG) has urged Governor Mukhi not to give assent to the "disastrous" ordinance for the stated objective of promoting MSMEs.

"The ordinance effectively suspends the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act of 2013, the Forest Rights Act of 2006, Chapter X of the Assam Land And Revenue Regulation of 1886, the Environment Protection Act of 1986 and the Biological Diversity Act of 2002, which prohibit certain land acquisition and prescribe the manner in which land can be acquired," RRAG director Suhas Chakma said.

"There is no provision either in the Constitution of India or these laws to suspend their operation for the purposes of acquiring lands to set up industries. The ordinance will be disastrous for the MSMEs as their investment shall remain stuck up because of the illegality of land acquisition," he added.

9. Assam to create new department for indigenous faith and culture: Himanta Biswa Sarma



"Our tribes and communities have their own set of beliefs, customs and practices…the Department of Indigenous Faith and Culture is aimed to preserve such practices," said Chief Minister Himanta Biswa Sarma.

The Assam Cabinet on Saturday announced the creation of an independent department to protect and preserve the "faith, culture and traditions of tribes and indigenous communities" of the state.

"Our tribes and communities have their own set of beliefs, customs and practices…the Department of Indigenous Faith and Culture is aimed to preserve such practices," said Chief Minister Himanta Biswa Sarma at a press conference here. He added that the finance ministry will allocate a separate budget for it.

Sarma also announced a number of financial reforms. He said that while department heads can green signal projects and schemes worth Rs 2 crore and below, a standing finance committee headed by chief secretary, will take the call on projects worth Rs 2 crore to Rs 5 crore.

"Apart from that, those between Rs 5 crore and Rs 100 crore will be looked at by a special standing finance committee headed by the finance minister and for projects over Rs 100 crore, only the cabinet can give the go-ahead," he added.

Sarma further stated that in the coming months, legislations related to population control, cow protection, and marriage will be brought in by the government. "You can expect some big announcements in our budget towards population control with regard to things like voluntary sterilisation. All this will be notified in a month," he said.

He also said that a marriage law will be introduced. "This won't be like a love jihad law…I don't believe in the word. It will apply to all faiths. Even Hindus can cheat Hindus…this [law] is not just against Muslims," he said.

In the run up to elections in Assam, Union Home Minister Amit Shah had said that if the BJP comes to power in Assam, laws will be implemented against "love jihad" and "land jihad". These found mention in the party's manifesto as well.

In November last year, Sarma, who was the state's health and finance minister then, had spoken about the proposed law saying that it would require the man and the woman to disclose details like their source of income, profession, address and religion in a government form prior to marriage.

10. Deifying of leopards by Maharashtra's Warli tribe has prompted a better man-wild relationship

'Waghoba' is the institution under which the Warli tribe of Maharashtra has been worshipping leopards.

Across India, worship of nature as gods and goddesses is a common practice. The latest study by the Wildlife Conservation Society (WCS) India has documented how a big cat worshipped as a deity by indigenous people, has facilitated the coexistence between humans and leopards. An example of Maharashtra's Warli tribe has been cited in this regard, which explains that these people have been worshipping 'Waghoba' (a leopard or tiger deity) to gain protection from leopards, which has prompted their peaceful coexistence.

This study was conducted by researchers affiliated with WCS-India, NINA, Norway, Inland Norway University of Applied Sciences, Norway and supported by Wildlife Conservation Trust. The fieldwork for the same was conducted between 2018 to 2019, across Mumbai suburban areas, Palghar and Thane districts of Maharashtra.

To complete this study, an ethnographic approach was undertaken while collecting data where researchers conducted semi-structured interviews, participant observation and deeply understood all aspects of Waghoba, in the lives of the Warli. They also took part as an audience during the worship ceremonies, concurrent to documenting Waghoba shrines.

This study, has been published in a special issue of Frontiers in Conservation Science: Human-Wildlife Dynamics, called 'Understanding Coexistence with Wildlife'. The researchers have noted that though negative interactions with leopards continue, they find much acceptance under 'Waghoba' - the institution under which the Warli tribe worships leopards.

Further, during this study, over 150 shrines dedicated to Waghoba have been identified, despite incidents like that of livestock deprivation due to wild attacks continue. The people belonging to Warli believe in a reciprocal relationship, hence, they continue annual traditions, such as 'Waghbaras', to spare themselves from the wrath of this deity.

The lead author of this study was quoted saying- "The main aim of the study is to diversify the way we understand and approach human-wildlife interactions. It does so by shedding light on how local institutions that contribute to co-existence are not devoid of conflict but have a role in negotiating the conflicts that arise."

Relevance of such institutions in the modern era

Such local arrangements that allay the conflict between man and animal may exist in several other cultures and landscapes. These traditional arrangements are relevant in the modern era as they are likely to act as tolerance-building mechanisms and build an understanding of the term 'peaceful coexistence among the upcoming generation.

However, the authors of this study state that such conservation interventions are yet to recognise that landscapes have a history before their own point of entry into them. Moreover, when in the area of the Warli tribe, people have to address this issue with more caution as outsiders are no more dealing with just an animal, but a religious belief regarding which all cultures are sensitive.

11. Plight of Adiyan and Vetan communities of Kerala highlight why India needs to revisit criteria for determining tribal identity

While ascertaining the tribal identity of a community, India must keep in mind that tribal communities are never static and they have been undergoing shifts at a fast pace

Adiyan, a community predominantly found in northern Kerala and residing in Kannur district was denied the Scheduled Tribe (ST) status by authorities (without any prior notice) on the grounds that they have lost resemblance to their counterparts in the Wayanad district.

A study conducted by Kerala Institute for Research Training and Development Studies of Scheduled Castes and Scheduled Tribes (KIRTADS) concluded that the Adiyan community of Kannur has lost its 'tribal or primitive' characteristics and now resembles the Hindu community of Thiyya who belong to the OBC category. The community fought a legal battle in the high court resulting in the restoration of their rightful ST status in 2015.

The Vetan and Vetar communities from Kollam, Paththanamthitta and Thiruvananthapuram districts of Kerala are fighting a similar battle. The two communities have been demanding ST status since the 1960s.

In the earlier days, the Vetan community lived in forests and was engaged mostly in hunting. In the course of time, many of them settled in rural areas, which gradually led to a division among the community: one section lived in forests and the other in towns. The government categorised the community as Malavetan and Vetan. While the Malavetans are categorised as ST, the Vetans are counted in the Scheduled Caste (SC) category. The Vetans are demanding ST status as they see themselves as part of the Malavetan community, and, are equally marginalised in terms of educational and economic achievements.

Both these instances raise certain important questions about the complexities and dynamics of tribal identity in contemporary times, and our hegemonic conceptualisation of the same. Central to this are debates on the criteria of defining ST, reservations, marginality and backwardness as well as the ideas of geographical boundaries and the notion of contemporaneity. In both the above-mentioned cases, members of the same community but living in a particular area (urban) were denied tribal status because it was said that they did not fulfil the criteria for ST, unlike their counterparts living in the hilly/forest regions.

It is important to note that Article 366 (5) of the Constitution doesn't give any criteria for specification of a community as a Scheduled Tribe. It states that "Scheduled Tribes means such tribes or tribal communities which are deemed under Article 342 of the Constitution to be Scheduled Tribes".

Article 342 only specifies who has the powers to deem a community (or part thereof) as being Scheduled Tribe. The definitions and concepts of tribal communities adopted in the 1931 Census were taken into consideration while developing such rules and have been adhered to since. Later in 1965, the Lokur committee made a recommendation carrying forward the definitions followed by the colonial state to recognise the Scheduled Caste and Scheduled Tribes in India.

Terms like indigenous communities, adivasi and tribes are heavily contested in India. The term 'tribe' is a colonial and Brahminical construct, which denied the contemporary and simultaneous existence of certain communities and resulted in the labelling of these communities as primitive, backward and uncivilised. By the 19th century, 'tribe' began to be considered not only as a particular society but also as a particular stage of evolution. The idea of 'tribe' was based on the

presumption that, these communities are isolated, self-contained and primitive groups that are geographically isolated and distanced from the caste or Hindu social order. Scholars have since pointed out how difficult and complicated the application of such notions are in the context of South Asia, and, particularly, in India.

The particular regions and their specific historical, socio-cultural and economic milieu have shown varying patterns of migrations and social interactions. Therefore, one has to move beyond the 'white man's colonial imagination' while exploring and defining the meanings attached to the term tribe. We have to consider the nuances of the Indian society without denying the historically rooted marginalisation and injustice against tribal identities.

We must begin by recognising that tribal communities are never static and they have been undergoing shifts in the socio-cultural realms of current times at a fast pace and that they continue to be in extremely vulnerable situations in terms of social development and material progress.

The captive forces of the market economy, the influence of non-adivasi religions, processes like modernisation and globalisation, the resistance movements and the increasing control of the State over forests and invasion of adivasi areas and resources by the mainstream communities have played a decisive role in these changes. It should also be remembered that such changes are met with resistance and struggles from the tribal communities, aimed at preserving their identity and consciousness. In order to emphasise this 'shifting' nature of the adivasi communities, sociologist Andre Beteille had used the concept 'tribes in transition'. Amita Baviskar rightly challenges this by pointing out that the idea of transition is an over-simplification and it stems from a linear understanding of change.

Should we then reconsider our definitions in the context of wider social changes in these communities and their attempts to preserve their cultural specificities without denying them their rightful status and affirmative support from the government? Are the existing criteria sufficient to define the tribal communities in the contemporary context? How should we consider the idea of time in identifying and designating a community as a tribe? Is it more important to protect non-tribal assumptions, prejudices, and stereotypes about tribal communities or create a space for the power of tribal self-determination? It would be safe to say that unless we make space for the perspectives, histories,

and knowledge of tribal communities we will continue to deny them their rights and access to justice.

12. Govt taking measures to upgrade all Eklavya model schools: Tribal Affairs minister

Eklavya Model Residential Schools were started in 1997-98 with the aim of imparting quality education to children belonging to the ST category in remote areas.

Union Minister for Tribal Affairs Arjun Munda said on Monday that the government is making efforts to upgrade all the Eklavya Model Residential Schools (EMRS) across the country to improve the quality of education for Scheduled Tribe students.

Munda also reviewed central schemes being implemented in the state for the welfare of tribal people. “We have taken initiatives to upgrade the Ekalavya model schools all over India,” he added.

“The matter was also taken up with state governments and their suggestions were incorporated in the process of upgradations,” the minister told reporters. EMRS started in 1997-98 with the aim of imparting quality education to ST children in remote areas.

In May, the Ministry of Tribal Affairs and Microsoft had announced a pact signed between the two, according to which artificial intelligence (AI) curriculum would be made available in English and Hindi to tribal students in Eklavya Model Residential Schools (EMRS) and Ashram Schools across the country. Further, teachers would be trained to use applications such as Office 365 and others, to use in teaching. In its initial phase, the programme had taken 250 schools across the country for implementation.

"Through these programs, our students would get the required skill set through digital transformation and this would open a new chapter with AI and coding being a part of the curriculum," Munda had said.

13. Processing units to boost tribals' income

Union Minister for Tribal Affairs Arjun Munda virtually launched Trifood project in Raigad, Maharashtra and Jagdalpur, Chhattisgarh.

NEW DELHI: The Ministry of Tribal Affairs will set up processing units for minor forest produce in Chattisgarh and Maharashtra in a bid to enhance incomes of tribal communities.

For representational purposes (Photo | EPS)

By Express News Service

The venture would be carried out with the Ministry of Food Processing

Industries under the project name of 'Trifood'. The implementation agency of the programme will be the Tribal Cooperative Marketing Development Federation of India (TRIFED).

Union Minister for Tribal Affairs Arjun Munda virtually launched Trifood project in Raigad, Maharashtra and Jagdalpur, Chhattisgarh. The project would enhance the income of tribal communities through better utilisation of and value addition to the minor forest produces (MFPs) collected by the tribal forest gatherers.

The unit in Raigad will be used for value addition to mahua, amla, custard apple and jamun to produce mahua drink, amla juice, candy, jamun juice and custard apple pulp.

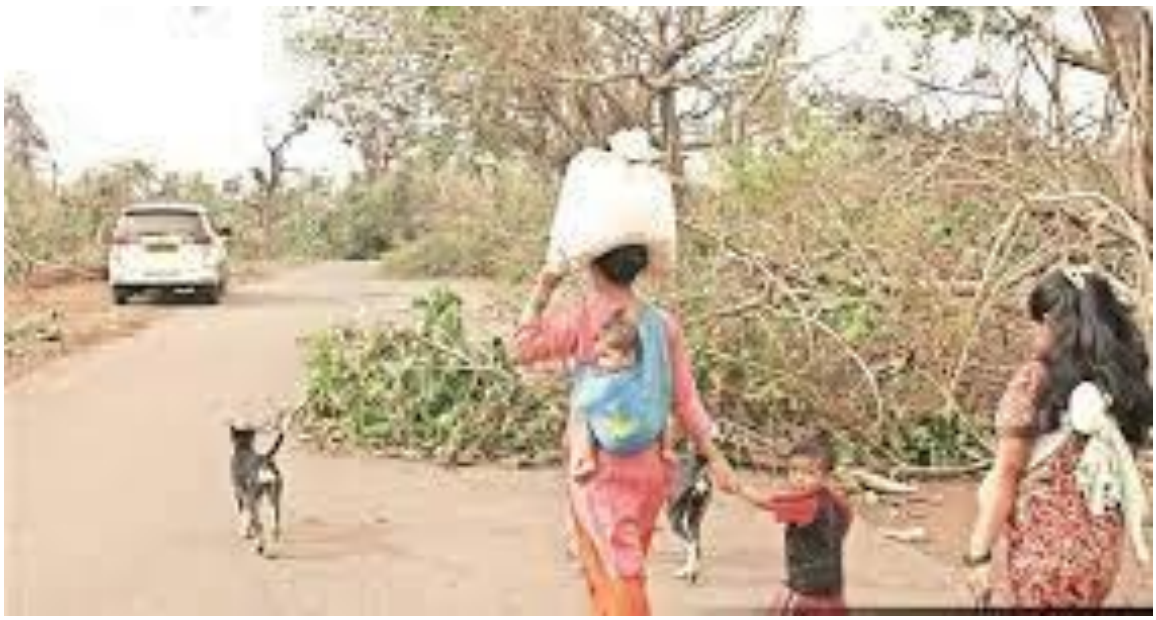
The multi-commodity processing centre in Jagdalpur will be used for the processing of commodities like mahua, amla, honey, cashew, tamarind, ginger, garlic and other fruits and vegetables.

The processed products will be sold across the country in Tribes India outlets, and franchisee stores. TRIFED also plans to identify and train tribal entrepreneurs who can also sell the products.

To help tribals

The TRIFOOD project in Chhattisgarh and Maharashtra is an attempt to offer a development package for tribals, said the TRIFED MD Pravir Krishna

14. In Thane's rural and tribal areas, Zilla Parishad seeks to do away with unsafe child hammocks



In the tribal areas, all homes have two wooden poles fixed in the ground a metre apart, with a saree or bedsheet tied to the two poles serving as a cradle for newborn children.

The Thane Zilla Parishad has started a 'Jholi Mukt Abhiyan' in the tribal pockets of the district to end the practice of carrying or resting infants in cloth hammocks.

The hammocks, which are typically made out of saris, force the infant into a position in which breathing might get constricted, prevent access to fresh air, increase the potential of malnourishment, and can even cause adverse changes to body shape and impact growth, Zilla Parishad officials said.

In the tribal areas, all homes have two wooden poles fixed in the ground a metre apart, with a saree or bedsheet tied to the two poles serving as a cradle for newborn children.

"This practice can harm the child's growth…newborns should sleep and be rested on flat and firm surfaces. A hammock can lead to unsafe sleep positions for newborns," Santosh Bhosle, women and child development

officer of Thane ZP, said.

Dr Bhausaheb Dangde, chief executive officer of Thane ZP, said that considering these issues, it has been decided to provide cradles, kangaroo baby carriers, and other necessities to families with newborn babies.

"This is important for the proper growth of children. We will also be carrying out an awareness programme for parents on the necessity of using a proper cradle, and stopping use of the hammocks," Dr Dangde said.

Bhosle said there had been "many cases" of infants dying due to suffocation and asphyxia, for which there were "no other visible reasons apart from the use of hammocks".

By taking these steps, "we are trying to ensure that we do not leave any stone unturned to reduce the number of child deaths, and make all possible efforts to provide facilities and guidance to the parents of newborn babies," he said.

Officials said there are approximately 1.20 lakh children of ages 5 or younger in the rural areas of Thane. A total 74 deaths of children in this age group were reported in 2019 and 2020, they said. Most of these deaths were due to asphyxia, pneumonia, and insect- and animal-bites.

Dr Yashwant Sadavarte, paediatrician at Thane district Civil Hospital, said: "Keeping infants in cloth hammocks can cause aspiration pneumonitis. In most cases the child is put back into the hammock after feeding, and sometimes, when the child vomits, it cannot move and the liquid goes into the lungs. This can be fatal. Using a cradle is a better option, because they have flat platforms and are spacious enough for the child to move."

Sushila Lobhi, a new mother in Bhangwadi village of Murbad district, said she was unaware of the harm the hammocks can cause.

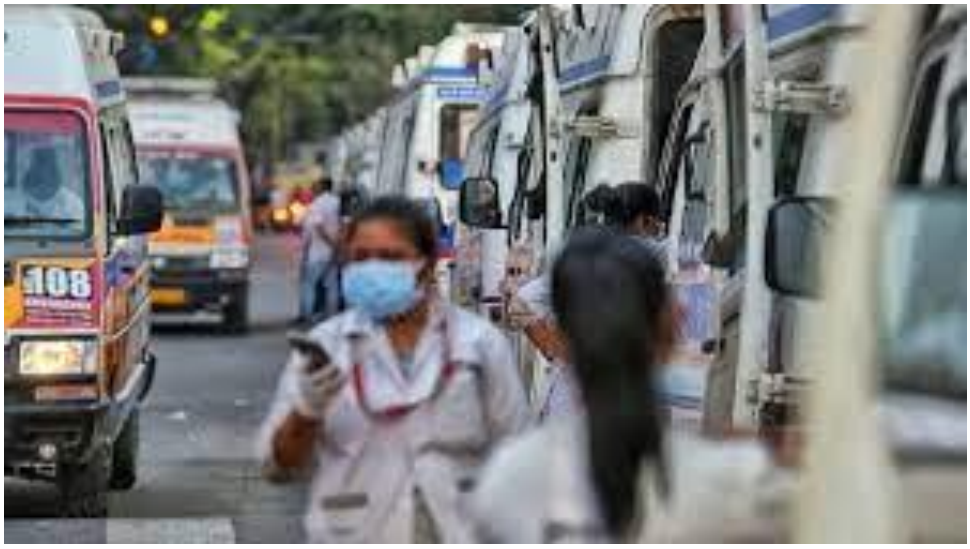
"We have been following this tradition for generations. Also, we do not have access to proper cradles in the village… We will be happy to use cradles if the government provides them," she said.

Apart from tribal areas like Murbad and Shahapur talukas in Thane district, in other rural area too, parents tend to make hammocks at their home for their babies. The women and child development department of the Zilla Parishad has

decided to start the initiative in the tribal area and extend it subsequently to other rural parts of the district.

The department plans to take back the cradle once the infant has outgrown it. "We can give that cradle to another family where a child has been born," an official said.

15. Gujarat: For those from tribal districts, long journey to get to oxygen beds



Satish Chaudhary's hopes of getting an oxygen bed, however, were dashed as the state-run NCH and the civic body's SMIMER hospital had stopped new admissions of from Wednesday citing low oxygen supply.

A 35-year-old Covid-19 patient from the tribal-dominated Palwada village of Surat district was rushed to the New Civil Hospital (NCH) in Surat city, some 60 kilometres away, after his oxygen saturation had shown a continuous decline. Satish Chaudhary's hopes of getting an oxygen bed, however, were dashed as the state-run NCH and the civic body's SMIMER hospital had stopped new admissions of from Wednesday citing low oxygen supply.

Jeni Narsinh Vasava (75), a resident of Gangapara village inthe tribal Narmada district, was luckier. She got discharged from a Covid hospital on NCH campus, where she was admitted since April 23, after recovering fully from the infection. She was brought here in a critical condition on oxygen support in a '108' ambulance from Sagbara government hospital after a more than four-hour-long journey.

The NCH has been flooded with Covid-19 patients from as far as Bharuch, Narmada, Tapi and Dang districts.

On Wednesday, Vasava told The Indian Express that this was her second life. "When I was brought to Surat from Sagbara, my condition was serious and I thought that now I will not survive. It was a difficult situation but somehow, I fought and got cured. We travelled around 140 kilometres to reach Surat. We don't have any good hospital in our districts or neighbouring ones, so we came directly to Surat," she said.

Supervisor of 108 services, Roshan Shah, said, "Today (Wednesday) we got at least 100 calls till 3 pm for shifting of patients from private hospitals to NCH or SMIMER. We did not take such calls, as we have been intimated by both the authorities that admissions to both hospitals have been restricted. On average we get around 300 calls of which around 200 are related to Covid patients in Surat city."

16. How a School Is Giving Hope to Chattisgarh's "Particularly Vulnerable" Pahadi Korba Tribe

The only primary school in one of the most remote and backward regions of Chhattisgarh has brightened the future prospects of the Pahadi Korva tribes living here.

It is the region's first school since India's independence and, notwithstanding the remote forests and deep rivers surrounding it, the children of Sardi village confess they are happy to come to study every day, come what may.

Located in Kartala block, Korba district of Chhattisgarh, the village is inhabited by the Pahadi Korba tribe who belong to the Particularly Vulnerable Tribal Groups (PVTGs). The latter are a special class of tribal groups classified by the Dhebar Commission in the early 60s due to their especially low development indices when compared to other local tribes.

The Pahadi Korba are mainly dependent on a pre-agricultural system of existence such as gathering of minor forest products, agriculture, and fishing with minimal population growth, and work as daily wage workers in neighbouring villages—some even weave bamboo baskets for a living. With the nearest school located at a distance of 7 km. (even the neighbouring village of Chittabooda has no school), children were forced to cross the surrounding deep

forest and the wide Chuiyya river to reach the Madanpur school on a daily basis. Because of the extreme long distances and the endurance levels needed to cross the wide river, most children opted to stay at home instead.

In the monsoons, the river swells to twice its usual size, and children yet again stay back in large numbers rather than venturing out to go to school.**The school under a tree**

Set up in 2014, the school has generated much interest among the 21 tribal families currently living here, despite the fact that it continues to operate out of a hut made up of bricks and a thatched roof.

Alma Baig, a teacher with the Gair Awasi Prarthamik Shala – simply translated to 'No Building Primary School' – says that she makes it a point to see that the families regularly send their children to school, even after two years.

"When the school was initially set up, some families refused to send their children, as many tribals who work as daily-wage-labourers believed that their kids were better off working with them and earning money rather than going to school.

I used to visit their homes five times a week to persuade them to send their children to study. We do have 22 students (4 boys and 18 girls) now, between the ages of 6-10 years. But, I still visit their homes to see that they don't forget their promise," says Alma. She is a graduate herself, and stays in the neighbouring village of Baghdari Dard, 2 km. away.

Alma states that she finds her current task to be more fulfilling than a 9-5 regular desk job. "There are very few opportunities for tribals, and having a school in such a remote area definitely helps. I want the villagers to realize this and make full use of this opportunity," she says. She adds that the children look forward to school everyday, and she too avoids taking a day off, unless necessary. The school is among the many successful initiatives of CRY-supported project Gram Mitra Samaj Seva Sansthan in the region.

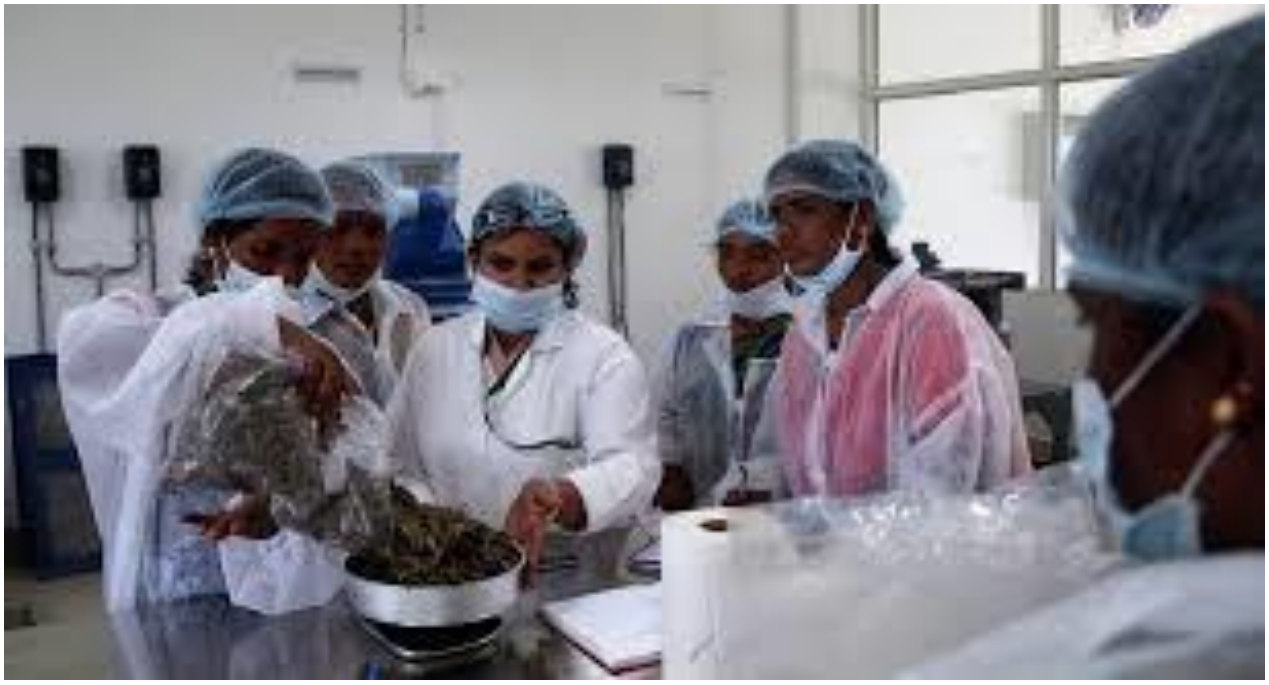
It came into fruition after at least five years of constant struggle and follow-ups with the government.

Alma Baig with her students

The organisation has been successful in getting the state to establish a school, as there were no primary schools here. They started building a perspective of the community regarding the provisions provided in the RTE Act of 2009. The community submitted an application to the education department and the collector, demanding a primary school.

"With concerted follow-ups over the years, in early 2014, a school with two primary teachers was finally started. The school was conducted under the shade of a tree. It was only this year that the community built a temporary place to run it. The community has discussed the issue with the forest department. They have agreed to provide a regular space for the school," says Dinesh Kakkoth, Associate General Manager (West), CRY.

17. Tribal women farmers train to be 'nutrition entrepreneurs' to contribute to healthier community diets



The hands that farm the fields and cook the family meals are now taking on bigger ventures by running small businesses that contribute to healthier community diets. To take on the role of 'nutrition entrepreneurs' tribal women farmers in Telangana, India, were trained to procure local farm produce, prepare nutritious ready-to-cook/eat products, finance their venture, maintain accounts, supply their products to childcare centers (anganwadis) and market the rest through a co-operative.

Brimming with a newfound confidence, the women farmers say they now know how to run their own businesses. "In addition to learning some nutritious recipes, I have learnt about quality control, food safety management systems and FSSAI certification, book keeping, business planning and how to market what I make," says Rukum Bai, a farmer from Utnoor who was part of the group that learned to process pigonpea dal, prepare groundnut bar (chikki) and a 'Nutri-

mix' comprising of sorghum, millets and pulses. In this region, farmers grow pigeonpea, sorghum and groundnut intercropped with cotton.

The training was inaugurated by Dr Christina Z Chongthu, IAS, Commissioner of Tribal Welfare and Managing Director, Tribal Cooperative Finance Corporation Ltd (TRICOR), Government of Telangana. She briefed the participants of the support extended by the government to tribal farmers, especially women, and encouraged them to make the units self-sustainable in the long run.

Dr Anthony Whitbread, Research Program Director – Innovation Systems for the Drylands, ICRISAT, said the trainings will usher in a big change as they equip the local farming community to take charge of their produce, process it and market it without depending on external service providers.

This is the first out of 2 trainings to be conducted as part of an initiative to enhance the incomes of tribal farmers by establishing small business enterprises in tribal areas and linking them to markets, said Dr Saikat Datta Mazumdar, COO, NutriPlus Knowledge Program. He said that ICRISAT is a Center of Excellence for Tribal Development, recognized by the Ministry of Tribal Affairs, Government of India.

During the training, officials from the Tribal Welfare department, TRICOR and Girijan Cooperative Corporation interacted with the participants and explained about the initiative. Under this initiative, Agribusiness and Innovation Platform (AIP)-ICRISAT shall set up and hand-hold eight processing units in Utnoor, Bhadrachalam and Eturnagaram Integrated Tribal Development Agency (ITDA) areas through women-lead Joint Liability Groups (JLGs). Ninety percent of the cost for setting up the processing facility will be met through subsidies i.e. 60% from the Ministry of Tribal Affairs, 30% by ITDAs and 10% will be borne by the JLGs.

A total of 39 women tribal farmers, who are members of JLGs from ITDA-Utnoor and ITDA-Eturnagaram participated. Training material in Telugu on "Technical and quality manual for the production of nutritious food products-Giri Poshana" was released and distributed to the participants.

AIP organized the 3-day training program on processing, marketing and Small and Medium Enterprises (SMEs) business management from 23-25 September at

ICRISAT. The second program, which will train 50 women tribal farmers, will be held at ICRISAT

18. Forest depts as nodal agency for community forest resources: A political blunder

The Chhattisgarh government issued an order on May 31, 2020 making the state forest department the nodal agency for Community Forest Resource Rights (CFRR) under the Scheduled Tribes and the Traditional Forest Dwellers Act, 2006. The move invoked discontent from several quarters. Alok Shukla, coordinator of Chhattisgarh Bachao Andolan (CBA), called the move 'illegal'. Article 11 of the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) [FRA] Act, 2006, states that only agencies authorised by the ministry or the central government can be the nodal agency for CFFR.The reason behind it is clear: The forest department has been involved in activities that have brought injustice to the tribal and forest-dwelling communities of India and the department is a stakeholder in the process of settling forest rights.

Since the colonial times, the state forest department has committed numerous atrocities and injustice against these communities, which makes it a party for settling their rights. The recent order, too, betrays the FRA to its core. A similar order was passed by the Raman Singh government in 2017, under which alcohol sale was brought under strict state government control, leading to the closing of makeshift stalls that sold country liquor, including mahua. The order was a violation of Panchayats (Extension to the Scheduled Areas) Act, 1996 [PESA Act] and the FRA. Both Acts validate the customary rights of tribal communities. In the fifth schedule areas of the state, restrictions could not be imposed on food

and cultural-traditional practice of tribal communities under the excise laws applicable in the non schedule areas, according to the PESA Act.

Another example was seen in 2018. With an ambition of promoting mobile services in Chhattisgarh, Raman Singh government rolled back the untied 14th Finance Commission (FFC) funds allocated to panchayats so the "mobile companies could be paid for erecting mobile towers". A report by Alok Putul published on February 2, 2018, stated that Rs 6,100 million were taken back from the bank accounts of 9,810 panchayats. This was about 70 per cent of the total FFC grant.Within a week, however, the state government had to repeal the order — the FFC funds can be used for essential requirements of the village and only gram sabhas and panchayats have the right to take decisions on the utilisation of these funds. The Raman Singh government tried to establish mobile communication as an essential service, but failed. The present chief minister and the then state Congress president, Bhupesh Baghel, also criticised these two decisions. In both cases, Baghel attempted to protect the autonomy of Panchayats and traditional rights of adivasis. The May 31, 2020 order, however, proves that when power comes to them, politicians don't hesitate to mend or break laws. It also proves that the state government has no intention to prioritise the initiatives towards settling community rights over forest and natural resources.

They only intend to prolong the process, so that the natural resources can be controlled by them. It is proven that the forest department has deep-seated colonial roots. With all 'good intentions', the department is still working towards establishing undisputed control over forests and its resources. Hence, it is observed that in the process of settling rights of forest dependent communities, the forest department is creating obstacles. After all, allowing the state forest department to be the nodal agency is not only against the law, but against the universal law of 'natural justice' as well. The government has to understand that the department itself is a party here, which needs to hand over the control of forest resources to forest dependent communities. It is the core objective of the FRA, 2006, which is backed by fact that protection of wildlife, biodiversity and forest conservation is only possible with the symbiotic relationship between forests and forest-dependent communities. A forest department is nothing more than an administrative unit under the law that is takes care of the forest in the absence of an able system. In theory, as soon FRA, 2006 came into existence, these rights were transferred to these communities. After its implementation, the rights of forest resources should be transferred to

the Gram Sabhas.The move, hence, is not only a political blunder, but can also be seen as an attempt to recolonise resources. This step will end up raising questions on the government's intention towards the well-being of people.

The state government did take initiatives towards settling forest rights claims. By raising support price of minor forest produce and making arrangements for forest dependent communities in the middle of the ensuing novel coronavirus disease (COVID-19) pandemic, Baghel has earned the reputation of a tribal-friendly CM. It will not be easy for the state government to repaint the picture tainted dull with historical injustice. On the basis of his three-decade long research, advocate Anil Garg found that several issues were resolved in undivided Madhya Pradesh, but which were not initiated for resolution in Chattisgarh. These include cases related to resources registered for the community's traditional rights, public and welfare purposes of the forest items in revenue villages, forest records and Khasra registers and patwari maps in the forest and non-forest items. There have also been cases related to reporting of protected forests or the matter relating to filing of deauthorisation of notified lands in section 34A. Apart from this, there has been no initiative on the offenses being done since 1996 in the name of orange land. Significantly, a special task force was formed in MP to address the pending cases. These issues have been investigated in detail, and have brought to light the gross administrative negligence of the state government. The Chhattisgarh government should also take similar initiatives in the direction of correcting historical mistakes for permanent resolution of these issues. The article was originally written in Hindi and was translated by Siddharth Bhatt from SRUTI

19. Top CSR Projects for Tribal Welfare

With a population of more than 10.2 crores, India has the single largest tribal population in the world yet has rather few government and corporate initiatives working for its betterment. Here are the Corporate Social Responsibility interventions doing justice to the humongous but long-ignored adivasis of India.

Top CSR Projects for Tribal Welfare

1. Community Development – NMDC

Around Bailadila – the centre of NMDC's major activity – in the State of Chhattisgarh, there are 20 predominantly tribal villages. NMDC (National Mineral Development Corporation) attempts to share the fruits of progress with them. A full-fledged peripheral development plan has been drawn up in each project management which finalises annual development schemes in the area. In Bailadila area, NMDC is spending about Rs. 3 crores every year on peripheral development, while at Donimalai in Karnataka about Rs. 40 lakhs in a year is being spent on CSR activities for tribal welfare.

Some of the peripheral/community development programmes initiated by NMDC include free educational facilities for the children of the local adivasis in the project schools, construction of new school buildings and additional classrooms besides undertaking repair and renovation of a number of school buildings of the State Government in Bailadila and Donimalai, supply of school uniforms, text books and other stationery items to the advasi children besides suitable cash awards to the adivasi children passing out the V standard Board Examination in certain identified tribal schools to inculcate the positive attitude towards education.

A special Skill Development Programme which includes in-house training programme aimed at equipping VIII standard pass tribal youth to acquire the necessary knowledge, skill and proficiency in the operation of mines to help them in seeking employment. During the period of programme, they are paid out of pocket expenses of Rs. 750 per month besides subsidised breakfast, lunch, uniforms.

Free medical treatment in project hospitals and frequent camps are conducted for eye, dental, cancer, orthopaedic, family planning and other health camps where free counselling as well as outdoor and indoor medical treatment is provided. NMDC corporate social responsibililty facilitates frequent visits of project doctors to the tribal villages for providing medical assistance to the needy and help the District Administration in extending medical assistance by supply of ambulances, donation of medical equipment for use in providing medicare in interior villages.

2. Shikshit Sunderhattu – Nuvoco

'Shikshit Sunderhattu' is an award-winning CSR project by Nuvoco Vistas Corp, a top manufacturer and retailer of building materials. It bagged the FICCI CSR Award 2018-19 in the Education category. Shikshit Sunderhattu was initiated in 2014 under the company's CSR initiative 'Sakshar Bharat' in order to provide formal education, create education awareness and contribute to the tribal population's development in Sunderhattu and Sarenbera villages near Nuvoco's Jojobera cement plant in Jharkhand.

Under this initiative, Nuvoco started Birsa Prathmik Vidyalaya to empower the tribal population by giving them access to education and enrolling them into mainstream education. This intervention is a success as Nuvoco has observed zero dropouts since the inception of the school Birsa Prathmik Vidyalaya. Nuvoco is planing to replicate the project by developing model government schools at various locations. The success of Shikshit Sunderhattu has motivated the organisation to expand the school till class V. The company is contributing towards education across various plants, through the development of smart classes, providing better infrastructure, learning essentials, setting libraries and computer labs.

3. Tribal Leadership Programme (TLP) – Tata Steel

The Tribal leadership Programme, part of the Samvaad ecosystem of Tata Steel, is an effort to foster a spirit of 'servant leadership' among young women and men from tribal communities who have inculcated the best of tribal value systems, feel strongly for the tribal discourse in India and demonstrated the will to work towards positive societal change.

TLP is a year-long engagement which is initiated through a week-long module in April each year. It gives continued access to experts and peer perspectives to leverage the Samvaad platform of Tata Steel. The TLP agenda is built to emphasize:

a) self-governance, to help address conflicts within oneself, build real relationships and create a strong inner compass which are key elements of community leadership;

(b) worldview, to help understand real world issues on development and representation from the lived experiences of the best, appreciate that there may be more than one perspective on an issue and wade through the glut of information that characterizes the current times; and

(c) cross-learning, through shared stories, debates and experiences within this pan India cohort of TLP.

4. Mahanadi Coalfields Limited (MCL)

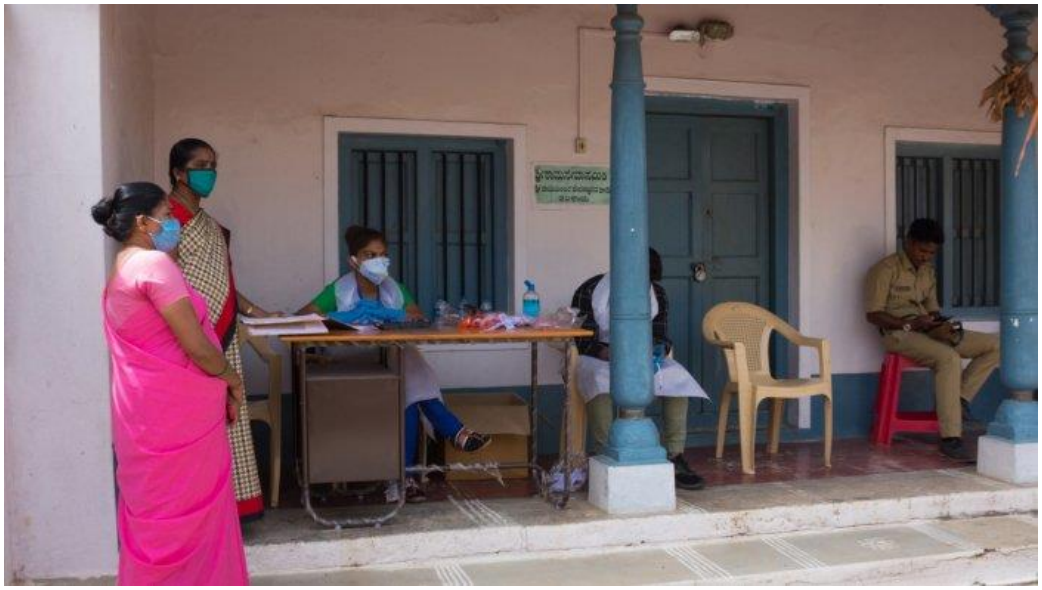
Mahanadi Coalfields Limited is one of the major coal producing company of India. It is one of the eight subsidiaries of Coal India Limited. The operational units of MCL are mostly in remote locations where communities are mostly tribal having their own respective sets of culture and tradition. Hence, the rapport of the CSR division with communities is pre-established, considering them as part of the composite operational ecosystem of the company.

MCL, in its command area, is implementing projects like development of Anganwadis, Aahar Mandal (promotion of low-cost, perennial, nutrition-based farming in tribal areas) benefitting 200 marginalized farmers, Utthan project for 6,000 tribal households encompassing development of livestock, Wadi-improved agriculture, rural piped water supply projects worth Rs. 126 Crore with 3.5 Lakh potential beneficiaries, tanker water supply covering 100 peripheral settlements and a poultry project benefitting tribal women.

5. Rubber Plantations – TFDPC Ltd.

In the local lingo, a Jhumia is a tribal who practices shifting cultivation or "jhuming". This ancient slash-and-burn technique of agriculture is how the Jhumias subsist. Rather than building villages, they move within the forest and live in tree houses. Modern society, with all its notions of "owning" land and property, has shunted the Jhumias and left them homeless. Tripura Forest Development and Plantation Corporation Limited (TFDPC Ltd.) is a PSU of the Tripura government that has been making a constant endeavour to rehabilitate the Jhumias by raising Rubber plantations. Not only are the plantations providing a place of rest for this tribe in the interiors, but it is also generating employment and helping people raise their income levels. In certain areas, the income levels have gone up to Rs. 15,000 per month for a family.

20. 73% rise in healthcare facilities in tribal areas between 2005 and 2020: GoI data



The number of SHC's in tribal areas reportedly increased by 78% in 2020

There has been a 73 per cent increase in healthcare facilities in tribal areas between 2005 and 2020 as compared to a 10 per cent increase across the country, according to government data.

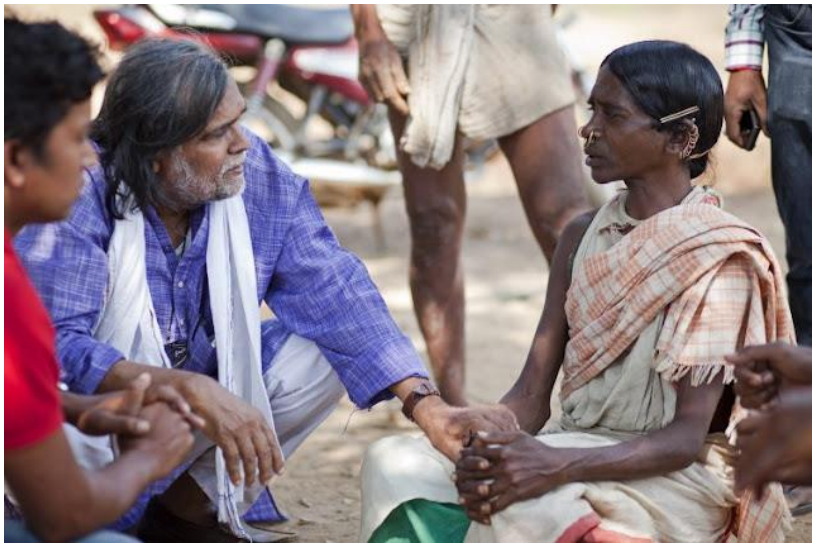
The number of sub health centres (SHC) in tribal areas increased by 78 per cent, from 16,748 in 2005 to 29,745 in 2020. The "all-India" number of SHCs increased by nine per cent during this period, from 1,42,655 to 1,55,404, the government data showed.

The number of primary health centres (PHCs) in tribal areas rose by 50 per cent, from 2,809 to 4,203, in these 15 years. PHCs across "all-India" increased by eight per cent, from 23,109 to 24,918. Community health centres in tribal areas increased from 643 in 2005 to 1,035 in 2020, a rise of 61 per cent. All-India, the number of CHCs rose from 3,222 to 5,183 during this period. Under the National Health Mission (NHM), tribal areas enjoy relaxed norms for setting up public health facilities.

According to population norms, there should one SHC for every 5,000 people, one PHC for every 30,000 people and one CHC for every 1.2 lakh people. In tribal and desert areas it is 3,000, 20,000 and 80,000. Also, all tribal majority districts where... composite health index is below the state average have been identified as High Priority Districts (HPDs) and these districts receive more resources per capita under the NHM as compared to the rest of the districts.

These districts receive higher per capita funding, have enhanced monitoring and focused supportive supervision and are encouraged to adopt innovative approaches to address their peculiar health challenges.

21. Giant conglomerates 'favoured': Whither tribal rights for jal-jungle-jameen?



The struggle for “Jal, Jungle and Jameen” has been a long-drawn battle for the

tribal communities of India. This tussle was once again in the limelight with the proposed diamond mining in the Buxwaha forest of Chhatarpur (Madhya Pradesh). The only difference in this movement was the massive social media support it gained, which actually seems to tilt the scale for the tribal people in a long time.

A lot has changed over the past two decades when it comes to the people's movement fighting for tribal rights. Prafulla Samantara, the 2017 Goldman Prize Recipient, when recounting his days of struggle in the Niyamgiri Movement, talked about the three death attempts and how it did not deter his motivation. Starting as a student activist, he has always been active in fighting for constitutional rights, be it against the unlawful Emergency during Indira Gandhi or his most celebrated success against the bauxite mining of Vedanta. Unlike the earlier times when it was very difficult to gather support for such causes, the internet has made it a lot easier to gather support for a movement.

But there are things which still have not changed. The greed of the corporates for natural resources is still the same, if not worse. Coupled with the support from the government and the police, the conglomerates have got free reign over the "Jal, Jungle and Jameen". It again brings us to the basic question as to who owns them – is it the government, the tribal people, the general public, or the companies? While we debate over this, there is certainly a need for sustainable development.

Samantara, during our interaction, stressed for a strictly implemented national policy on the utilisation of natural resources. The national policy needs to address these key questions:

- How much "Jameen" (Land) will be destroyed?
- How many "Jungles" (Trees) will be cut down?
- How will "Jal" (Water Resources) be impacted?

At the same time, we have to ensure that all the stakeholders, particularly the tribal people, get an equal say during key decisions. According to few reports, the tribal people in the mined areas are hardly gaining anything while the conglomerates, at the same time, have multiplied their wealth. Hence, there is a need for equity when reaping the benefits from these natural resources.

Article 38 of our constitution already demands the same:

"The State shall strive to promote the welfare of the people by securing and protecting as effectively as it may a social order in which justice, social, economic and political, shall inform all the institutions of the national life."

Yet, governments have failed miserably to uphold the same for the tribal people. Over 25 million people have already been displaced due to development projects

during 1951-2000, out of which 70% are tribals. Only 25% of the displaced people have been rehabilitated.

There also has been a blatant attempt to suppress all the voices of dissent. Those who have protested against this injustice are often labelled as Maoists. Therefore, it is the tribal people who have been on the receiving end due to mining.

On top of that, the judiciary has failed the tribal community as well. The lawsuits often go for a few decades when deciding on the tribal rights over "Jal, Jungle and Jameen" and most of them favour the giant conglomerates. It is only a few cases like the Niyamgiri Movement where the court ruled in favour of the tribes.

When asked about the reason as to why many movements failed, Samantara refused to accept those movements as failures. In his opinion, every movement has helped to save the environment and tribal rights – even those movements where the decision was not in their favour.

Many of the so-called failures have bought people together in raising voices against the wrongdoings. These movements have made the government, police and corporate more conscious of their responsibilities for the tribal communities of the mined areas.

But the responsibility is not just restricted to the judiciary, government, or the corporate. The invisible hand of the free market has already inculcated a toxic culture of "every man for himself". People nowadays believe that their sole objective is to earn for themselves, even if it comes at the cost of others.

We need to learn from our tribal friends to consume as much as required and live a simple lifestyle. If we use everything today, what would we leave for our children in the end? At the same time, the general public also needs to stand together with their fellow tribal people in these tough times.

The road is not that easy, given that the voice of dissent is attacked from all sides. The constitutional rights of the public have been heavily suppressed. It is also not helped by the fact that the state has become a facilitator in the same.

In the absence of the people's voice, the state is no less than a tyrant. In that case, we can even say goodbye to the last ray of hope for the tribes – people's movements. At such a crucial junction, the youth can make or break the situation.

Hence, they need to be educated and made aware of the current shortcomings of the development. With the advent of the internet and social media, nothing is hidden from the sights of the public. And the fight is not just restricted to raising voices against the companies. The youth, therefore, must be encouraged to debate about these topics and arrive at a solution.

They must shift their focus towards sustainable practices and arriving at better feasible solutions for all the stakeholders, including the conglomerates. They can learn from the examples of countries like Brazil etc., where the youth have been

proactive in fighting for the rights of the indigenous communities and saving Amazon forest.

In the end, I would like to quote William Shakespeare from "Merchant of Venice" to summarise what "Jal, Jungle and Jameen" means for the tribal:

"Nay, take my life and all. Pardon not that.
You take my house when you do take the prop
That doth sustain my house. You take my life
When you do take the means whereby I live."