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## PAPER - 1

### PHYSICAL & ARCHAEOLOGICAL ANTHROPOLOGY

#### 1. Face of 75,000-year-old female Neanderthal from cave where species buried their dead



The team even referred to forensic science – studies on how bones shift after blunt force trauma and during decomposition – to help them understand if remains had been buried, and the ways in which teeth had pinged from jawbones. The rebuilt skull was surface scanned and 3D-printed, forming the basis of a reconstructed head created by world-leading palaeoartists and identical twins Adrie and Alfons Kennis, who built up layers of fabricated muscle and skin to reveal a face.

New analysis strongly suggests that Shanidar Z was an older female, perhaps in her mid-forties according to researchers – a significant age to reach so deep in prehistory. Without pelvic bones, the team relied on sequencing tooth enamel proteins to determine her sex. Teeth were also used to gauge her age through levels of wear and tear – with some front teeth worn down to the root.

At around five feet tall, and with some of the smallest adult arm bones in the Neanderthal fossil record, her physique also implies a female.

While remnants of at least ten separate Neanderthals have now come from the cave, Shanidar Z is the fifth to be found in a cluster of bodies buried at a similar time in the same location: right behind a huge vertical rock, over two metres tall at the time, which sits in the centre of the cave. The rock had come down from the ceiling long before the bodies were interred. Researchers say it may have served as a landmark for Neanderthals to identify a particular site for repeated burials.

“Neanderthals have had a bad press ever since the first ones were found over 150 years ago,” said Professor Graeme Barker from Cambridge’s McDonald Institute for Archaeological Research, who leads the excavations at the cave. “Our discoveries show that the Shanidar Neanderthals may have been thinking about death and its aftermath in ways not so very different from their closest evolutionary cousins – ourselves.”

The other four bodies in the cluster were discovered by archaeologist Ralph Solecki in 1960. One was surrounded by clumps of ancient pollen. Solecki and pollen specialist Arlette Leroi-Gourhan argued the finds were evidence of funerary rituals where the deceased was laid to rest on a bed of flowers.

This archaeological work was among the first to suggest Neanderthals were far more sophisticated than the primitive creatures many had assumed, based on their stocky frames and ape-like brows. Decades later, the Cambridge-led team retraced Solecki’s dig, aiming to use the latest techniques to retrieve more evidence for his contentious claims, as well as the environment and activities of the Neanderthals and later modern humans who lived there, when they uncovered Shanidar Z.

“Shanidar Cave was used first by Neanderthals and then by our own species, so it provides an ideal laboratory to tackle one of the biggest questions of human evolution,” said Barker. “Why did Neanderthals disappear from the stage around the same time as *Homo sapiens* spread over regions where Neanderthals had lived successfully for almost half a million years?”

A study led by Professor Chris Hunt of Liverpool John Moores University now suggests the pollen was left by bees burrowing into the cave floor. However, remains from Shanidar Cave still show signs of an empathetic species. For example, one male had a paralysed arm, deafness and head trauma that likely rendered him partially blind, yet had lived a long time, so must have been cared for.

Site analysis suggests that Shanidar Z was laid to rest in a gully formed by running water that had been further hollowed out by hand to accommodate the body.

Posture indicates she had been leant against the side, with her left hand curled under her head, and a rock behind the head like a small cushion, which may have been placed there.

While Shanidar Z was buried within a similar timeframe as other bodies in the cluster, researchers cannot say how contemporaneous they are, only that they all date to around 75,000 years ago. In fact, while filming onsite for the new documentary in 2022, the team found remains of yet another individual in the same burial cluster, uncovering the left shoulder blade, some ribs and a fairly complete right hand.

In the sediments several feet above, another three Neanderthals dating to around 50,000 years had been found by Solecki, more of which have been recovered by the current team. Further research since Shanidar Z was found has detected microscopic traces of charred food in the soil around the older body cluster. These carbonised bits of wild seeds, nuts and grasses, suggest not only that Neanderthals prepared food – soaking and pounding pulses – and then cooked it, but did so in the presence of their dead.

“The body of Shanidar Z was within arm’s reach of living individuals cooking with fire and eating,” said Pomeroy. “For these Neanderthals, there does not appear to be that clear separation between life and death.” “We can see that Neanderthals are coming back to one particular spot to bury their dead. This could be decades or even thousands of years apart. Is it just a coincidence, or is it intentional, and if so what brings them back?”

“As an older female, Shanidar Z would have been a repository of knowledge for her group, and here we are seventy-five thousand years later, learning from her still,” Pomeroy said.

## **2. Endogamous practices may be the cause of the Persistence of harmful genetic variants in India**

A study by **Centre for Cellular and Molecular Biology**, Hyderabad has recently found causes of **cardiac failure** at **younger ages** in the **Indian** population.

- **Deoxyribonucleic acid (DNA)** of such individuals lacked **25 base pairs** in a **gene** crucial for the **rhythmic beating** of the **heart** (scientists call it a **25 base-pair deletion**).

**About 25 base pair deletions:**

- 25 base pair deletion is a risk **allele** for late-onset **left ventricular (LV) dysfunction**, hypertrophy, and **heart failure**.
- A 25-base pair (25bp) deletion in the **MYBPC3 gene** is enriched in **South Asians**, being **unique** to the **Indian** and **Southeast Asian** population and **not** found elsewhere.
- This affects about **4%** of the **Indian population**.

**Key findings of the study:****Genetic differences among populations:**

- Whole-genome sequencing of individuals from India, Pakistan, and Bangladesh found **genetic differences** between people from different regions of the **subcontinent**.
- These genetic differences were even found at the level of **smaller geographies** within **India**.
- There was **little mixing** between individuals from **different communities**.
- **Endogamous practices** (including caste-based, region-based, and consanguineous marriages) in the subcontinent are responsible for such **conserved genetic patterns** at the community level.
- In ideal conditions, there would have been **random mating** in a **population**, leading to **greater genetic diversity** and **lower** frequency of **variants** linked to **disorders**.
- The **cultural aspects** of Indians might need mending to improve the population's health.

**Homozygous genotypes:**

- The South Indian and Pakistani sub-group showed a **higher frequency** of **homozygous genotypes**.
- Humans typically have **two copies** of **each gene**.
- When an individual has two copies of the **same variant**, it is called a **homozygous genotype**.
- Most **genetic variants** linked to **major disorders** are **recessive** in nature and show their effect only when present in **two copies**.
- **Heterozygous individuals** are at **lower** risk of getting affected by **genetic disorders**.
- The main cause of **homozygous** genetic composition is **inbreeding** or **consanguineous marriages** which is prevalent in South India and Pakistan.

- The South Asian cohort has a **higher number of variants** that could **disrupt the functioning of genes**, but there were also **unique variants** that were **not** found in **European** individuals.
  - These variants affect many **physiological parameters**, leading to a higher risk of cardiovascular disorders, diabetes, cancers, and mental disorders.

### Indian genome mapping:

- **Human Genome Sequencing** was completed in **2003**.
- **African** and **Chinese** population gene sequencing has been done.
- As **India** has a **diverse population**, there is a **need for genome sequencing** of the Indian population for economic, matrimonial, and geographical reasons.
- The Genome India project has been launched in **2020** to sequence **10,000** Indian human genomes.
- The idea of **genetic puritanism** must be taken away to prevent major **hereditary disorders**.

### About Human Genome Sequencing:

- The **Human Genome Project (HGP)** was an international scientific research project for determining the **base pairs** that make up **human DNA**, and identifying, mapping, and sequencing all of the genes of the human genome.
- It was **started in 1990** and was **completed in 2003**.
- The human genome has approximately **3.1 billion base pairs**.
- There are approximately **22,300 protein-coding genes** in human beings.

### Significance of the study:

- The study of sequenced human genes was helpful to **identify the genetic variants** that **increase the risk** for common diseases like cancer and diabetes.
- The study has shown that **identifying unique genetic variants** can help develop **interventions** for major health concerns.



### 3. Unearthing Europe's First Homo sapiens 45,000 Years Later



**The arrival of Homo sapiens in cold northern latitudes took place several thousand years before Neanderthals disappeared in southwest Europe.**

The three published studies describe the Homo sapiens fossils from Ilsehöhle at Ranis and their associated context (Mylopotamitaki et al.), the diet and lifeways of these first pioneers (Smith et al.), and the environmental conditions they faced in Central and NW Europe (Pederzani et al.).

“The Ranis cave site provides evidence for the first dispersal of Homo sapiens across the higher latitudes of Europe. It turns out that stone artifacts that were thought to be produced by Neanderthals were in fact part of the early H. sapiens tool kit. This fundamentally changes our previous knowledge about this time period: H. sapiens reached northwestern Europe long before Neanderthal disappearance in southwestern Europe,” says Jean-Jacques Hublin, Professor at the Collège de France, Paris and emeritus director at the Max Planck Institute for Evolutionary Anthropology in Leipzig, Germany.

An international research team led by Jean-Jacques Hublin (Max Planck Institute for Evolutionary Anthropology and Collège de France, Paris), Shannon McPherron (Max Planck Institute for Evolutionary Anthropology), Tim Schöler (Thüringisches Landesamt für Denkmalpflege und Archäologie) and Marcel Weiss (Friedrich-Alexander-Universität Erlangen-Nürnberg and Max Planck Institute for Evolutionary Anthropology) re-excavated Ranis between 2016 and 2022.

The aims were to locate the remaining deposits from the 1930s excavation, clarify the stratigraphy and chronology of the site, and identify the makers of the LRJ. At

the bottom of the 8-meter-deep sequence, the researchers discovered layers containing the LRJ.

“The challenge was to excavate the full 8-meter sequence from top to bottom, hoping that some deposits were left from the 1930s excavation. We were fortunate to find a 1.7-meter-thick rock the previous excavators did not get past. After removing that rock by hand, we finally uncovered the LRJ layers and even found human fossils. This came as a huge surprise, as no human fossils were known from the LRJ before, and was a reward for the hard work at the site,” says Marcel Weiss of the Friedrich-Alexander-Universität Erlangen-Nürnberg and the Max Planck Institute for Evolutionary Anthropology.

### **Thousands of Bone Fragments Revealed Patterns of Site Use and Human Diet**

Thousands of highly fragmented pieces of bone were recovered at the site.

“Zooarchaeological analysis shows that the Ranis cave was used intermittently by denning hyaenas, hibernating cave bears, and small groups of humans,” explained zooarchaeologist Geoff Smith from the University of Kent and the Max Planck Institute for Evolutionary Anthropology.

“While these humans only used the cave for short periods of time, they consumed meat from a range of animals, including reindeer, woolly rhinoceros, and horses,” said Smith. “Although the bones were broken into smaller pieces, they were exceptionally well preserved and allowed us to apply the latest cutting-edge methods from archaeological science, proteomics, and genetics,” explained Smith.

### **The First Human Bones From Ranis Were Identified Using Palaeoproteomics**

The researchers used the proteins extracted from the morphologically unidentifiable bone fragments to identify the animal and the human remains found in the LRJ layers.

“Palaeoproteomics is a relatively new tool to perform taxonomic identifications of previously unidentifiable skeletal remains recovered from archaeological sites. At Ranis, this enabled us to identify the first human remains associated with the LRJ layers, which were then analyzed further with the latest methods in ancient DNA, radiocarbon dating, and stable isotope analysis,” says Dorothea Mylopotamitaki, a former PUSHH-Marie Skłodowska-Curie Actions Doctoral Fellow at the Collège de France and the Max Planck Institute for Evolutionary Anthropology.

## **More H. sapiens Bones Discovered Among Material From the 1930s Excavation**

In addition to these new excavations, the team also undertook new analyses of the bone fragments from the old Ranis collection (1932 to 1938 excavations), which are curated and stored at the State Office for Heritage Management and Archaeology Saxony-Anhalt in Germany. This included a study where the bones were examined one by one to potentially identify human remains.

“This painstaking work was rewarded by the discovery of several new human bones,” said H el ene Rougier, a palaeoanthropologist at California State University Northridge. “Finding human remains mixed with animal bones that had been stored for almost a century was an unexpected and fantastic surprise,” she added.

Further work on these collections is ongoing by H el ene Rougier and researchers from the State Office for Heritage Management and Archaeology Saxony-Anhalt and highlights the enormous value of museum collections.

## **DNA Sequencing Showed That the Bones Were Homo sapiens**

Once the 13 human skeletal remains from both the old and new excavations were identified, DNA was extracted from these fossils and analyzed.

“We confirmed that the skeletal fragments belonged to Homo sapiens. Interestingly, several fragments shared the same mitochondrial DNA sequences – even fragments from different excavations. This indicates that the fragments belonged to the same individual or were maternal relatives, linking these new finds with the ones from decades ago,” says Elena Zavala, a Miller Postdoctoral Research Fellow at the University of California, Berkeley, and Max Planck Institute for Evolutionary Anthropology.

Another important goal was to obtain DNA from the sediments at the site, especially from the LRJ layers. Therefore, in addition to their search for human bone fragments, the team also extracted ancient mammalian DNA from sediment samples to complete the zooarchaeological analysis. Additionally, nuclear DNA analyses are ongoing in collaboration with Arev S umer at the Max Planck Institute for Evolutionary Anthropology.

## **Homo sapiens Reached Northwest Europe As Early as 47,500 Years Ago**

Radiocarbon dating was used to understand when humans occupied the cave. Homo sapiens bones from both the 1930s and 2016 to 2022 excavations were directly dated using very small amounts of bone to preserve the material for further analyses. The dates show that these individuals were some of the earliest Homo sapiens to inhabit Europe. The team also carried out radiocarbon dating of animal bones from different layers of the site to reconstruct the site's chronology. They focused on bones with traces of human modifications on their surfaces, linking the dates to human presence at the cave.

"We found very good agreement between the radiocarbon dates from the Homo sapiens bones from both excavation collections and with modified animal bones from the LRJ layers of the new excavation, making a very strong link between the human remains and LRJ. The evidence suggests that Homo sapiens were sporadically occupying the site from as early as 47,500 years ago," says Helen Fewlass, an EMBO Postdoctoral Fellow at the Francis Crick Institute, London, and formerly of the Max Planck Institute for Evolutionary Anthropology.

## **Homo sapiens Had the Capacity To Adapt to Harsh, Cold Climatic Conditions**

Stable isotope analyses on animal teeth and bones allow insights into the climatic conditions and environments that the pioneering groups of Homo sapiens encountered around Ranis. The team combined information from a broad range of different stable isotope ratios and was able to show that a very cold continental climate and open steppe landscapes, similar to those found in Siberia or northern Scandinavia today, prevailed during the time of the LRJ, and climatic conditions cooled even further throughout the LRJ occupations of Ranis.

"This shows that even these earlier groups of Homo sapiens dispersing across Eurasia already had some capacity to adapt to such harsh climatic conditions," says Sarah Pederzani from the University of La Laguna and the Max Planck Institute for Evolutionary Anthropology, who led the palaeoclimate study of the site.

"Until recently it was thought that resilience to cold-climate conditions did not appear until several thousand years later, so this is a fascinating and surprising result. Perhaps cold steppes with larger herds of prey animals were more attractive environments for these human groups than previously appreciated."

## Milestone Study on the Initial Incursions of Homo sapiens Into Europe

This comprehensive study, integrating archaeological excavation, morphological and proteomic taxonomic identification, mitochondrial DNA analysis, radiocarbon dating of newly excavated archaeological material and of human remains, zooarchaeology, and isotope analysis marks a significant milestone in understanding the initial incursions of Homo sapiens into Europe north of the Alps during the Middle to Upper Palaeolithic transition.

Furthermore, the team found that Homo sapiens ventured into Europe under severe cold climatic conditions. Moving in small groups, they shared their environment and sites with large carnivores, like hyenas, and they manufactured elaborately crafted leaf-shaped stone tools.

### 4. Social change may explain decline in genetic diversity of the Y chromosome at the end of the Neolithic period



The emergence in the Neolithic of patrilineal social systems, in which children are affiliated with their father's lineage, may explain a spectacular decline in the genetic diversity of the Y chromosome observed worldwide between 3,000 and 5,000 years ago.

In a study published today in Nature Communications, a team of scientists from the CNRS, MNHN and Université Paris Cité suggest that these patrilineal

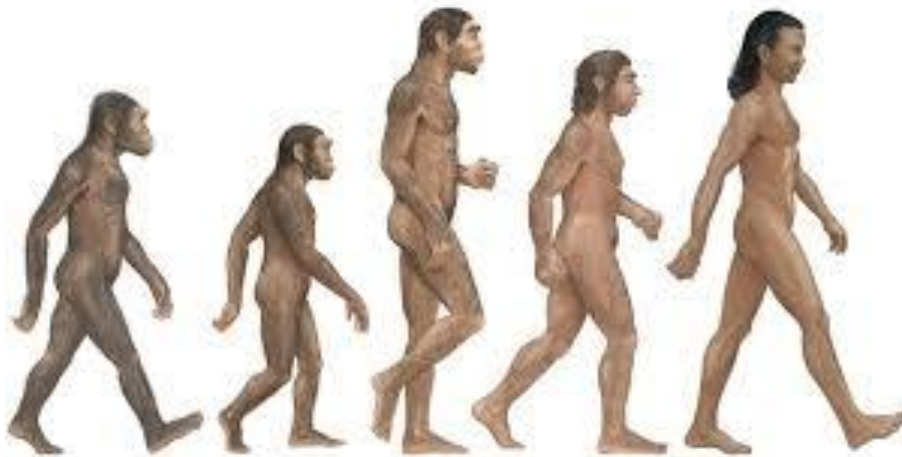
organizations had a greater impact on the Y chromosome than mortality during conflict.

This conclusion was reached after analyzing 20 years of anthropological field data – from contemporary non-warlike patrilineal groups, particularly from the scientists' own fieldwork carried out in Asia – and modeling various socio-demographic scenarios.

The team compared warrior and non-warrior scenarios and showed that two processes play a major role in genetic diversity: The splitting of clans into several sub-clans and differences in social status that lead to the expansion of certain lineages to the detriment of others.

This study calls into question the previously proposed theory that violent clashes, supposedly due to competition between different clans, in which many men died, were at the origin of the loss of genetic diversity of the Y chromosome. The results of this study also provide new hypotheses on human social organization in the Neolithic and Bronze Age.

## 5. Oldest Known Human Viruses Discovered In 50,000-Year-Old Neanderthal Bones



**Researchers found traces of many present-day viruses in the bones of two Neanderthals who lived 50,000 years ago, providing a new perspective on their extinction.**

## Breakthrough Study on Neanderthals

- Ancient viruses in Neanderthal DNA samples from skeletons found in **Russia's Chagyrskaya cave**.
- The study detected fragments resembling three modern viruses: **adenovirus** (common colds), **herpesvirus** (cold sores), and **papillomavirus** (genital warts).

**Health Impacts Inherited in Modern Human Beings:**  
Modern humans inherit various health impacts from Neanderthals, including skin conditions, allergies, metabolism, nicotine addiction, mood disorders, sleep patterns, blood clotting, sense of smell, and UV radiation response.

### Who were the Neanderthals?

- Neanderthals were a distinct **species of hominins** that lived in **Europe and parts of Asia** around **400,000 to 40,000 years ago** during the **Middle to Late Pleistocene Epochs**.
- Their evidence was **first found in 1856** in the **Neander Valley** in present-day **Germany**.
- **Physical Features:**
  - Neanderthals were **robustly built**, with a **stocky and muscular frame** adapted to cold climates.
  - They had **large brains**, comparable in size to modern humans, indicating advanced cognitive abilities.
  - Distinctive features included a **prominent brow ridge**, **large nose**, and a **receding chin**.

### Social Life:

- Neanderthals were **skilled hunters and gatherers**, using tools such as **stone flakes, scrapers, and spears** for hunting and butchering animals.
- They **utilized fire for cooking, warmth, and protection**, as evidenced by the presence of hearths in their archaeological sites.

- Evidence suggests they had **complex social structures** and **engaged in rituals and symbolic behaviours**, including **burying their dead with grave goods**.
- **Habitat and Distribution:**
- Neanderthals inhabited a wide range of environments, including **open grasslands, forests, and even cold tundra regions**.
  - Their range extended from **Western Europe to Central Asia**, with evidence of populations in regions such as Spain, France, Germany, Croatia, and the Middle East.
- **Interactions with Modern Humans:**
  - Neanderthals **coexisted with early modern humans (Homo sapiens)** for thousands of years in Europe and Asia.
  - There is **evidence of interbreeding** between Neanderthals and modern humans, with genetic studies indicating that non-African humans carry about 1-2% Neanderthal DNA.

## 6. Novel genomic analysis technique uncovered a severe population bottleneck that nearly threatened humanity's existence

### About the Research:

- The research involved scientists from **China, Italy, and the United States**.
- Researchers utilized a novel analytical method called **fast infinitesimal time coalescent process (FitCoal)** to uncover the reasons behind a significant bottleneck in the growth of the human population.

### Key Highlights of the Research:

- **Population Bottleneck:** It reveals that early human ancestors endured a population bottleneck in which only around **1,280 breeding individuals** managed to sustain a population for approximately **117,000 years**.
- **Genomic Analysis:** To uncover these demographic characteristics, modern human genome sequences from **3,154 individuals** were analyzed using the **FitCoal method**.



- This approach allowed to estimate **historical population sizes** based on **contemporary genetic sequences**.
- **Loss of Genetic Diversity:** The bottleneck led to a significant **loss of life** and, consequently, a **loss of genetic diversity** among early human ancestors.
  - This loss is attributed to factors like **glaciation events, temperature fluctuations, severe droughts**, and the extinction of potential food sources for ancestral humans.
- **Impact on Genetic Diversity:** An estimated **65.85%** of the current genetic diversity in humans may have been lost during this bottleneck, which occurred in the early to middle Pleistocene era (from two million to 11,000 years ago).
  - The prolonged period of minimal breeding individuals posed a significant **threat to the existence of modern humankind**.
- **Speciation Event:** The bottleneck may have contributed to a speciation event, where two **ancestral chromosomes** may have merged to form **chromosome 2** in modern humans.
  - This discovery raises questions about the **evolution of the human brain** and other aspects of human biology.

#### Term Used in Research:

- **FitCoal:** Fast infinitesimal time coalescent process is a specific analytical method used in genomic analysis to estimate historical population sizes based on contemporary genetic sequences.
  - It is a tool for understanding demographic characteristics of **populations over time**.
- **Pleistocene Era:** Pleistocene is a geological epoch characterized by **ice ages and interglacial periods**. It spans from about **2.6 million years ago** to approximately **11,700 years ago**.
- **Population Bottleneck (Genetic Bottleneck):** It refers to a sharp decline in the size of a population due to environmental events like famines, earthquakes, floods, fires, disease, and droughts or human activities like specicide, widespread violence or intentional culling.
  - This can lead to a loss of **genetic diversity** and **potentially impact the population's future evolution**.

## SOCIO – CULTURAL ANTHROPOLOGY

### 1. Digital Anthropology offer endless possibilities for human interactions and social transformations



By 2030, 700 million people will inhabit the metaverse. These digital worlds offer endless possibilities for human interactions and social transformations, but they also come with inherent threats. Without a deep understanding of the cultures and dynamics at play, we risk losing our ethical bearings. To fully grasp the human experience in the metaverse, we need to embrace new fields of social sciences such as digital anthropology.

Creating a metaverse that works for everyone

The metaverse promises to seamlessly blend our physical and virtual lives, as the digital world moves towards an immersive and interactive future where humans and artificial intelligence (AI) coexist (as glimpsed by ChatGPT). The challenge is creating virtual worlds that are truly inclusive and ethical.

The question of how to shape the metaverse was discussed at the World Economic Forum's Annual Meeting in Davos in 2022 and in 2023, and twice Chris Cox, Chief

Product Officer of Meta, framed the metaverse as merely a technical evolution of the internet, downplaying its potential social impact. Cox repeatedly described it as simply “the internet, but less flat”. In contrast, Tom Boellstorff, a pioneering anthropologist exploring metaverse-like worlds, has called for an open the debate about what the metaverse is, recognizing how its definition will mould new social norms and standards.

Many uncertainties linger: Will the metaverse produce more or less disinformation? Will children be safe from inappropriate content? Will gaming and pornography drive its evolution? Will it extend discrimination and inequalities? We don’t know, and that’s worrying.

As the metaverse evolves, leaders need to consider how culture, technology and behaviours are intrinsically linked to ensure better outcomes for both businesses and society.

### **Decoding digital culture**

To understand digital human cultures, decision-makers must bring “thick data” to the conversation with speed and scale. Thick data is the emotions, stories, meanings and tones of a situation. This data is implicit, often invisible, and traditionally gathered through human observations.

Digital anthropology leverages thick data, which provides qualitative and contextual insights, to better understand digital communities. When combined with big data, which provides a quantitative and statistical perspective, digital anthropology can reveal the human perspectives that are often missing from our analysis. Also, digital anthropology’s thick data informs better decision-making while avoiding biases and short-sightedness.

With digital anthropology tools, the metaverse can benefit everyone, as leaders can use them to counter discrimination, exclusion and exploitation of cognitive biases. For example, suppose data scientists identify a digital community that distributes threatening deepfake videos. In that case, digital anthropologists, equipped with new methods and technical innovations, could uncover the social and cultural reasons behind this behaviour and reveal the values that underpin this damaging practice. This science can also help us to protect women from online discrimination and violence, as we have confirmed in our work in 2022.

How to observe the human side of the metaverse

The first step for a team that wants to integrate human insights into its thinking is to observe the digital world without prejudice and immerse itself in online communities. The next step is to scale the scope and speed of its observations using technology.

Instead of humans, imagine bots hiking through virtual worlds and delivering selected observations to multidisciplinary research teams. These bots are created with what we call “cultural algorithms” and they have been recently used to monitor electoral violence and moderate extreme speech online.

Unlocking this new layer of observational data can spark a virtuous cycle of innovation and trust. When decision-makers understand and react to the behaviour and values of their digital audiences, institutions work better. This, in turn, helps institutions become value-driven and better aligned with their communities, leading to increased trust and support. This virtuous circle may be key in restoring confidence in institutions.

Communities, consumers and social movements have the power to disrupt global institutions, markets, and belief systems using social media. They can divide us or bring us together on peaceful common ground. The metaverse will be the next arena for them to act. But these new worlds are fragile, and we only have one opportunity to build them ethically and effectively for all.

As digital worlds continue to evolve and transform society, it is imperative that ethical considerations are at the forefront of their construction. This is exemplified by the worldwide adoption of UNESCO’s Recommendation on the Ethics of Artificial Intelligence, which raises critical questions about the impact of this rapidly advancing technology on individuals and societies. The metaverse is not “the internet but less flat”. The metaverse is a human system, a place for people, cultures and communities to come together. It is a human place that needs to be understood by the social and human sciences.

## **2. Shunned villagers facing caste-based discrimination seek help to vote in coastal Odisha**

Families are unable to exercise their franchise as they had to flee their villages after they refused to perform exploitative 'inherited vocations' in the Puri Lok Sabha constituency. The 2024 Lok Sabha election might be a nationwide celebration in democracy for millions but Ashok Sethi and his family, citizens living in this coastal region, may have to forego another opportunity to vote.

Five years ago, in Nuagaon, in Odisha's Krushnaprasad block under the Puri Lok Sabha constituency, Mr. Sethi and his fellow villagers faced social ostracisation for refusing to wash dirty clothes, an exploitative vocation they had inherited from their forefathers. Now stranded in Brahmagiri, 15 km away from his own village, Mr. Sethi holds out hope that the Odisha Human Rights Commission (OHRC) will intervene, enabling them to exercise their right to vote.

In the same locality lives Maheshwar Barik and his family members, who too had refused to perform the 'hereditary' menial job of cutting hair, and clearing leftover food on social occasions, in 2018. They were also driven out from Manpur village under the Brahmagiri Police Station. Following the OHRC's intervention, they managed to go back to their own village under police protection and cast their votes in the 2022 panchayat election. Mr. Barik hopes a similar arrangement will enable him to cast his vote this year.

On the other hand, Sangram Puhan, who fled his village along with 30 families in 2021 upon their refusal to perform caste-based servitude, including carrying a palanquin during marriages, are enjoying a rare rapprochement, although temporary, at Nathapur in the Krushnaprasad block of Puri. As every vote matters this time in a closely fought election, the villagers who were driven out have been invited to return to exercise their franchise. "We know the bonhomie is aimed at securing our votes," Mr. Puhan said.

Baghambar Pattnaik, a renowned human right activist, on Monday moved the OHRC, seeking police protection for families driven out from their villages, so that they could exercise of their voting rights.

“These villagers are defenceless in the wake of the dominance of upper caste families in their respective villages. Even after the passage of six years, they feel threatened to return home and participate in the election. I have urged that these villagers should be taken in police vans to their respective polling booths for the protection of their voting rights,” Mr. Pattnaik said.

The human rights activists said he had taken up over 100 cases of caste-based ‘social boycotts’ to the OHRC and National Human Rights Commission. “In 2014, voters belonging to the washermen community in Kanas block of Puri district were able to cast votes after the NHRC intervened in a similar social boycott,” Mr. Pattnaik said.

“We are paid nine kilogrammes of paddy worth ₹180 for washing the clothes of a married couple throughout the year. These clothes include the soiled clothes of menstruating women. When there is a death, we cut big trees to ready them as fuel wood for cremation,” Mr. Sethi, who was officially released from caste-based bondage in accordance with the Bonded Labour System (Abolition) Act, 1976, said.

Credit: BISWARANJAN ROUT

The 2024 Lok Sabha election might be a nationwide celebration in democracy for millions but Ashok Sethi and his family, citizens living in this coastal region, may have to forego another opportunity to vote.

Five years ago, in Nuagaon, in Odisha’s Krushnaprasad block under the Puri Lok Sabha constituency, Mr. Sethi and his fellow villagers faced social ostracisation for refusing to wash dirty clothes, an exploitative vocation they had inherited from their forefathers.

Now stranded in Brahmagiri, 15 km away from his own village, Mr. Sethi holds out hope that the Odisha Human Rights Commission (OHRC) will intervene, enabling them to exercise their right to vote.

In the same locality lives Maheshwar Barik and his family members, who too had refused to perform the ‘hereditary’ menial job of cutting hair, and clearing leftover food on social occasions, in 2018. They were also driven out from Manpur village under the Brahmagiri Police Station. Following the OHRC’s intervention, they

managed to go back to their own village under police protection and cast their votes in the 2022 panchayat election. Mr. Barik hopes a similar arrangement will enable him to cast his vote this year.

On the other hand, Sangram Puhan, who fled his village along with 30 families in 2021 upon their refusal to perform caste-based servitude, including carrying a palanquin during marriages, are enjoying a rare rapprochement, although temporary, at Nathapur in the Krushnaprasad block of Puri. As every vote matters this time in a closely fought election, the villagers who were driven out have been invited to return to exercise their franchise. "We know the bonhomie is aimed at securing our votes," Mr. Puhan said.

Baghambar Pattnaik, a renowned human right activist, on Monday moved the OHRC, seeking police protection for families driven out from their villages, so that they could exercise of their voting rights.

"These villagers are defenceless in the wake of the dominance of upper caste families in their respective villages. Even after the passage of six years, they feel threatened to return home and participate in the election. I have urged that these villagers should be taken in police vans to their respective polling booths for the protection of their voting rights," Mr. Pattnaik said.

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"We are paid nine kilogrammes of paddy worth ₹180 for washing the clothes of a married couple throughout the year. These clothes include the soiled clothes of menstruating women. When there is a death, we cut big trees to ready them as fuel wood for cremation," Mr. Sethi, who was officially released from caste-based bondage in accordance with the Bonded Labour System (Abolition) Act, 1976, said.

"We demanded that all physical labour should be accounted for as per prevailing wages. It enraged villagers and we faced the backlash," he said. Mr. Sethi said 20 voters belonging to four discriminated and shunned families had missed the 2019 simultaneous Lok Sabha and Assembly elections in the State, and the 2022 panchayat election.

The annual compensation of 15 kg rice for rendering demeaning service to every family or married couple, known as the '*bartan*' system, is still in practice in many of Odisha's coastal districts. Caste bondage is acute in Puri, where polling will take place on May 25.

## PAPER - 2

### INDIAN & TRIBAL ANTHROPOLOGY

#### 1. First time Bru community exercised their vote

For the first time, the newly settled Bru voters of Tripura exercised their franchise for the General Elections to Lok Sabha 2024.

#### Bru community:

- Also referred to as Reangs, they are a **tribal community indigenous to northeast India** and have historically resided in parts of **Mizoram, Tripura, and Assam**.
- In **Mizoram**, they are scattered in **Kolasib, Lunglei and Mamit districts**.
- In the state of Tripura, the Brus are a designated **Particularly Vulnerable Tribal Group (PVTG)**.

#### Distinct from Mizos:

- they are ethnically different from the Mizos, with their own distinct language and dialect and form **one of the 21 scheduled tribes of Tripura**.
- The Mizos are part of the **Kuki-Chin Linguistic Group**, while the Brus are part of the **Bodo Linguistic Group**.
- While many Brus of Assam and Tripura are **Hindu**, the **Brus of Mizoram** converted to **Christianity** over the years

#### Persecution:

- In 1995, the **Brus clashed with the majority Mizos** in Mizoram.



- The Mizos demanded that the Brus, who were perceived to be **non-indigenous**, be **removed from Mizoram's electoral rolls**.
- This led to an **armed movement by a Bru outfit**.
- Over **30,000 Brus fled Mizoram** due to ethnic clashes with Mizo tribes in **1997**.
- They were **displaced to refugee camps in Tripura**.

### **Resettlement Efforts:**

- In 2020, a **quadripartite agreement** was signed between the **Central Government, the Governments of Tripura and Mizoram, and Bru-Reang representatives**.
- It aimed to **resettle Brus within Tripura**, offering them various rehabilitation aids including housing and stipends.

## **2. Article 244(A) of the Constitution**

In Assam's tribal-majority Diphu Lok Sabha constituency election candidates from all parties have pledged to implement Article 244(A) of the Constitution to establish an autonomous "state within a state."

### **Article 244(A) of the Constitution**

- **Article 244(A) was introduced by The Constitution (Twenty-second Amendment) Act, 1969, granting Parliament the authority to enact legislation to establish an autonomous state within Assam, encompassing specified tribal areas, including Karbi Anglong.**
- This autonomous state would have its **own Legislature or Council of Ministers** or both.
- Article 244(A) **offers more autonomy than the Sixth Schedule** as it potentially allows for self-governance with broader legislative and administrative powers, **including law and order.**
  - Autonomous councils under the Sixth Schedule **offer decentralized governance in tribal areas through elected representatives.**
  - However, their **legislative, law enforcement, and financial powers are limited.**

### Diphu Lok Sabha Constituency:

- Diphu is located in Assam and is the **least populated among Assam's 14 Lok Sabha** constituencies with approximately 8.9 lakh voters.
- This constituency is **reserved for Scheduled Tribes** and spans across six legislative assembly segments in the tribal-majority hill districts of **Karbi Anglong, West Karbi Anglong, and Dima Hasao**.

### Administrative Framework:

- **Governed under the Sixth Schedule of the Constitution**, which allows for the administration of tribal areas in Assam, Meghalaya, Tripura, and Mizoram through autonomous councils.
- The area is **managed by two autonomous councils**: the Karbi Anglong Autonomous Council and the North Cachar Hills Autonomous Council.

### Community Profile:

- Diverse ethnic groups including Karbi, Dimasa, Hmar, Kuki, Rengma Naga, Zeme Naga, Bodo, Garo, and others.

### 3. Integrating tribal knowledge systems: Key to make India a 'knowledge superpower'

Recently, President Droupadi Murmu addressed a National Workshop on 'Janjatiya Anusandhan - Asmita, Astitva evam Vikas', held at the Rashtrapati Bhavan.

- While addressing the workshop, she said that the knowledge of tribal communities needs to be included in the Indian Knowledge System (IKS).
- This knowledge of tribal communities will play an important role in making India a "knowledge superpower".

### Tribal Knowledge Systems-Background:

- Over time, **Indigenous peoples** around the world have preserved distinctive understandings, rooted in cultural experience, that guide relations among human and other-than human beings in specific ecosystems.

- These understandings and relations constitute a system broadly identified as Indigenous knowledge, also called traditional knowledge or aboriginal knowledge.
  - Tribal knowledge system can be defined as a **network of knowledges, beliefs, and traditions** intended to preserve, communicate, and contextualize Indigenous relationships with culture and landscape over time.
- These knowledges are conveyed formally and informally among kin groups and communities through social encounters, oral traditions, ritual practices, and other activities.
- Inter-generational wisdom, contained in tribal knowledge systems, is passed on to the present times through centuries of experience and learnings.

### Steps taken by the govt to preserve/promote tribal knowledge system

- **Tribal Research Institutes (TRI)** have been set up across the country with an objective to act as a think tank and become repository of information on tribal communities.
  - Under the scheme “**Support to TRIs**”, ministry provides funds to TRIs for undertaking studies and documentation on life and culture of tribal communities including tribes of North East.
  - **Documentation** for research of Indigenous practices by tribal healers, medicinal plants, Adivasi Languages, etc.
- **Digital repository** (<https://repository.tribal.gov.in/>) has been developed by Ministry of Tribal Affairs to preserve and promote rich tribal cultural heritage.
- **Traditional Knowledge Digital Library (TKDL)** is a pioneering initiative of India to protect Indian traditional medicinal knowledge and prevent its misappropriation at International Patent Offices.
- The National Commission for Scheduled Tribes (NCST) is now pushing for the “re-documentation” of the cultures and social practices of tribal societies in India.
  - The existing scholarly literature is heavily reliant on the body of knowledge created by colonising governments.

### Significance

- **Contemporary knowledge of nature**
  - Due to continued closeness to forests, tribal knowledge system possesses rich knowledge of nature.

- This knowledge can contribute to environmental assessments and sustainable ecosystem management.
  - For example, the sustainable production and consumption of indigenous and traditional food has invaluable benefits for natural resources and ecosystems.
  - It contributes to a sustainable and healthier diet, and helps mitigate climate change.
  - They know which plants to use to build houses, to make tools and weapons, for fuel, for lashing and tying, for basketry, for making temporary hammocks, for dyes, poisons, body paints, perfumes, hallucinogenic drugs and more
- **Contribution to Modern Medicine**
  - From centuries Indigenous people have been using several plants for combating disease which have found wide acceptance in traditional medicinal use.
    - Eg., Plants like *Bauhinia purpurea*, *Jatropha curcus*, etc. are conserved as used in muscular pain, cure of fever, headache, and body swelling.
- **Conservational aspect**
  - The ethnic people of India have played a vital role in preserving biodiversity of several virgin forests and have conserved several flora and fauna in sacred groves of tribals.
  - Tribals are **experts in animal behavior**.
- **Disaster reduction**
  - Traditional knowledge had helped to save ancient tribes on India's Andaman and Nicobar Islands from the worst of the tsunami in 2004.
    - Their folklore talks of huge shaking of ground followed by high wall of water.
    - When the earthquakes struck, the Onges moved to higher ground deep inside their forest and escaped the fury of the waves.
- **Promotion of integrated learning**
  - Tribal knowledge systems are stored in songs, stories, drama, folklores etc. Hence, it promotes integrated learning for the community.
  - Due to their mode, these knowledge systems are non-exclusionary and marked by equity.
- **Remarkable Sex ratio**
  - They have the remarkable sex ratio and almost nil rape cases in there society.

## Indian Knowledge System (IKS)

- The IKS is an innovative cell under the Ministry of Education at All India Council for Technical Education (AICTE), New Delhi. It was established in Oct. 2020.
- It is established to promote interdisciplinary research on all aspects of IKS, preserve and disseminate IKS for further research and societal applications.
- It will actively engage in spreading the rich heritage of our country and traditional knowledge in different field.

### 4. How a Unique Conclave Celebrates The Cultural Wealth of 200 Tribes of India



Tata Samvaad, enabled by the Tata Steel Foundation in Jharkhand, brings together 200 tribal communities annually to celebrate their rich culture and identity through art, food, workshops, and conversations.

Standing next to women dressed in colourful sarees, Pritesh Kumar Khalko looked out of place at first in his black jacket at Jamshedpur's Gopal Maidan. He looked tired, but that did not stop him from excitedly inviting strangers to his food stall and narrating the fascinating story behind each dish.

“The baas (bamboo) pickle is good for your blood, and the hau chutney made from red weaver ants is rich in protein and calcium. Jamun powder helps control sugar; you will not find this anywhere else in India,” he told the potential customer at his stall. The conviction in his tone changed as **The Better India** team asked about how his community cuisine could help his tribe do better. “Provide us platforms like

Samvaad where we can share our culture and food, and most importantly, help us tell our own stories,” he said.

Pritesh’s focus on preserving his tribal identity through cuisine mirrored the essence of Samvaad – Enabled by Tata Steel Foundation (TSF), which brings together the diverse tribes of India on one platform for a five-day-long festivity, which lets everyone immerse in tribal art, culture, and traditions. Pritesh belongs to one of the 200 tribal communities participating in Samvaad – a major tribal conclave which brings together tribes of the nation and beyond. It is emerging to be one of the most prominent platforms for dialogues on tribal discourse in India.

### **Strengthening the footprints of tribal identity**

There are 13 elements of Samvaad, which have emerged over the years, creating a permanent space for dialogue and conversations that are poised to tackle some of the challenges that lie ahead. This annual conclave not only celebrates tribal art and culture but also fosters dialogue to drive change in rural areas.

Held from 15 to 19 November each year, Samvaad honours the legacy of Birsa Munda – a tribal independence activist and leader from Jharkhand’s Munda tribe. In its tenth year, themed ‘Walk with Me’, Samvaad reflected on a decade of impactful dialogues, recognising the journey of ideas and changemakers shaping the present and future.

“The different elements of Samvaad, including food, music, artisans, cultural markers, and others, bring a lot of intangible potential through this tribal cultural conclave. It is not only a platform of expression but also a forum for meaningful dialogues that add perspectives to the different aspects of life and one’s journey through it,” said Sourav Roy, CEO of TSF.

He continued, “Throughout the year, we engage with the tribes through our initiatives to converge on dialogues that set the tone for Samvaad each year. Many new ideas and innovations emerge from these conversations, moderated by experts from respective fields and changemakers from all over the country. Celebration of culture also forms an integral part of Samvaad, which not only generates livelihood for tribal artisans but also allows people to appreciate their unique traditions, passed down through generations, rich in wisdom.”

### **Samvaad’s varied ecosystem**

The magnitude of Samvaad is reflected in its diverse ecosystem, which includes promoting tribal healers, artisans, cuisines, languages, sports and heritage conservation, Akhra, Samudaay ke Saath, Rhythms of the Earth, Tribal Leadership Programme, Samvaad Fellowship, and Samvaad Action Research Collective.

The Samvaad Fellowship aims to guide and nurture individuals committed to preserving tribal culture and heritage through community-based action. After a round of assessments, the fellows receive one-year grants and mentorships from academicians and experts. These fellowships have led to tangible outcomes like tribal dictionaries, song recordings, story books for children, collectives and more.

“From contesting elections to making documentaries on tribal issues, many people have emerged as leaders and changemakers. Some have even failed. Irrespective of your failure or success, you have made friends who will always support you. And that is what Samvaad aims to be,” says Jiren Xavier Topno, Head of Tribal Identity at TSF.

Samvaad’s ‘10tak at Akhra’, is another way in which the conclave served as a platform where individuals from diverse tribal groups came together to share their journey of change, challenges, and possible solutions. As Samvaad stepped into its tenth year, over 500 people gathered to share their inspiring stories at the open-air Amphitheatre at the Tribal Cultural Centre (TCC).

Aakash Pawar, instigated by the rising farmer suicides across Maharashtra, fought for his rights and now runs constitution schools to educate his community about their rights; Manasi from Odisha helped bring back thousands of migrant labourers amid the pandemic by being a citizen journalist; and Garima Siddhar is a lawyer providing justice to tribal communities. These changemakers are now a part of the tribal leadership programme alumni, which is over 400- members strong, who have stayed connected to share their narratives of change to inspire others.

From a cultural lens, Samvaad organises a grand inaugural show every year at Gopal Maidan. This year, 251 nagadas, dhols and musical instruments reverberated in homage to Birsa Munda. The tribals adorning bright yellow vests with white dhotis, played various goosebump-inducing songs – from the bonga taal, baika taal to the santal taal.

Dancers and singers participated in cultural performances as people gorged on tribal delicacies, shopped for vibrant artefacts (handcrafted by the same artisans who are selling them), and danced to the tribal beats.

“This is my tenth year and I have been a part of Samvaad since the beginning. I love the energy here. Of course, the highlight is selling our Oraon paintings,” said Sumanti Devi, a painter from Chhattisgarh. “Very few people knew about our paintings before, but now it is more popular. Initially, it was only handicrafts stalls, but Samvaad has grown so much with Akhara, fellowship, tribal healers, Tribal Leadership Programme and more.”

Meanwhile, Choisa Hakong from the Chakesang tribe (Nagaland) was at the conclave for the first time. “Samvaad is connecting tribals as one in spirit and culture. I am so happy to attend and showcase our products made from teak and bamboo,” he said.

Over the five days, Pritesh, Sumanti, and Choisa, along with people from 110 other tribes, displayed their cuisine, artwork, and healing practices. Besides the stalls, 140 home chefs from 37 tribes offered home delivery via the Zomato app.

The role of these artisans goes beyond selling their products. They also refine their skills through workshops and sessions led by handicraft experts, engage in healing practices, and showcase their culinary talents.

### **A tangible difference**

Looking over the last decade of Samvaad, the initiative has seen a visible impact, bringing together over 40,000 people from India and 17 other countries. The beauty of this conclave is that it extends beyond the five days; the dialogue and actions continue throughout the year. This meticulous approach has led to outcomes that once seemed far-fetched.

Take, for example, ‘Rhythms of the Earth’ – an ensemble of tribal musicians from across the country composed and launched five original compositions on a tribal narrative at the conclave. The compositions are on the theme of unifying tribals in the face of adversity. They include ‘Nukhtharini Juwmang’ by the Rabha tribe, ‘Eklaiwet Ajakong’ by the Karbi tribe, ‘Dela Dela’ by the Santal tribe, ‘Abua Disom’ from the Ho tribe and more.

Another significant outcome of Samvaad’s ten-year journey was seen in Jaincy John’s struggle to break away from the conventional narrative of urban education. Living in cities often limits our view of education to securing future jobs. However, for those in remote areas far from mainstream society, education is about identity and challenging stereotypes built over the years.



## 5. Dongrias of Niyamgiri are reviving indigenous seeds to cope with climate change



The Adivasi community had over the years gravitated toward rice monoculture, losing numerous landrace strains in the process.

The sun rose above the jagged spires of the Niyamgiri hills, the sky a wisp of apricot on rolling mounds of green. Trees bent with mangoes and jackfruits dropped manna for the occasional passerby. Around a dirt bend, a warm symphony drifted from a hill slope: the strike of a sickle, the pitter-patter of seeds, shuffling bangles of women unraveling weeds. It was sowing season for the Dongria Kondhs.

The Dongrias, one of the most vulnerable and traditional tribes of India, live in remote hamlets scattered throughout the Niyamgiri hill range in southern Orissa, a state in the country's eastern limb.

In the village of Rodango, not far from the hillside planters, 30-year-old Gatri Kadraka laid out a colourful array of seeds in her courtyard: three indigenous varieties of finger millet, two varieties of foxtail millet, pearl millet, barnyard millet, little millet, an upland variety of paddy or rice, two local varieties of sorghum, maize, black gram, cowpeas, pigeon peas, castor beans, cucumber, pumpkin, gourd and spinach, and tubers of tapioca and forest turmeric.

"These are presents from Niyam Raja, the king of all mountain gods in Niyamgiri," she said. The Dongrias call themselves royal descendants of Niyam Raja, and their deep reverence for the natural resources that have been conferred on them perfuses their everyday lives.

"As long as we respect our hills, rivers and soil, he will keep us nourished," she added.

As abundant as Kadraka's collection is, the Dongria Kondhs once possessed many more varieties of heirloom seeds. But they started losing their self-sufficient food systems when the forest became degraded due to unrestrained logging and the government introduced subsidised high-yielding paddy in the late 1990s. From a diverse indigenous farming system, the Dongrias gravitated toward rice monoculture, losing numerous landrace strains in the process.

"Their mindset shifted from good old co-dependence on nature to productivity," said Debeet Sarangi, founder of Living Farms, an Orissa-based nonprofit that works on food and resource management with indigenous communities. "They traditionally farmed for subsistence, but with rice came more mercenary concepts of 'profit' and 'yield.' They became reliant on commercial seed suppliers."

The villagers' consumption also shifted as rice cultivation gained hold and disrupted the nutrient-dense medley of traditional grains and legumes that once filled their food plates. Many communities began a slow descent into food insecurity.

However, with Orissa undergoing an agrarian crisis due to recurrent droughts and erratic rainfall that affect water-intensive crops such as rice, the Dongria Kondhs are on a mission to return to their farming roots. With a renewed sense of their

rights to the forest after ousting a UK-based mining company in a much-publicised resistance in 2013, and a little help from grassroots organisations such as Living Farms, the tribe began resuscitating lost seed varieties soon after. The Dongria women, through their elaborate cultural rituals, are leading this initiative.

### Climate-resilient farming

The Dongrias plant mostly on hill slopes, an entire community working together in lines on one piece of land. They sow close to 50 varieties of seeds intermixed on a single farm: millets, grains, pulses, beans, oilseeds, tubers and vegetables. They plant from late April until the end of August, depending on the weather. Apart from certain vegetables like spinach, which they get throughout the season, they harvest crop by crop, from October until the end of February.

The tribe's practice of planting a wide variety of crops holds the key to a strengthened and climate-resilient food system. Although crops failed in large parts of Orissa in 2017 due to drought, pests, disease and untimely rainfall, Dongria Kondh farmers still brought home a decent harvest. While suicides were reported in other farming communities as a result of despair over crop losses, the Dongrias recorded no such deaths. "We have never had a situation where all our crops have failed," said 42-year-old Kalia Nonraka from Barmaguda village in the foothills of Niyamgiri. "Something or other will grow in less rainfall."

### Food security and sustainability lessons

The revival of indigenous food systems also secures the nutritional well-being of the Dongria Kondh. Even though the farmers swear by the benefits of traditional crops, certain communities in the foothills and lower ranges of Niyamgiri have taken to government-subsidised rice for portions of their meals. However, the remote hamlets nestled deeper into the mountains still maintain more millets in their diets.

"Ragi [finger millet] gives us strength, rice just fills our stomachs," said 18-year-old Laxmi Kadraka from Rodango village.

Lakshminarayan Pushty, a public health officer in the district of Rayagada, advocates old agricultural ways and eating habits for the remote tribe. "When they eat a mix of a variety of millets, vegetables and lentils, they get more fibre, protein, antioxidants and minerals such as magnesium and potassium, in comparison to only rice," he said. "Just like their farms, good nutrition is all about how diverse their plate is."

Waking up to the nutritional benefits and climate resiliency of the long-neglected millets, as well as to the needs of the indigenous small-scale farmers who cultivate these hardy crops, the Indian government has started promoting them under the National Food Security Act. Beneficiaries of the Public Distribution System, roughly 813 million citizens, would be able to get millets to eat at deeply subsidised prices of 1 to 3 rupees (1 to 4 US cents) per kilogram.

The Orissa state government has also taken up an ambitious five-year “millet mission” since 2016. The program aims to increase millet

consumption in 60,000 households across several districts by boosting production and setting up processing machinery. By producing millets to meet a larger demand, the project also aims at improving the economic security of the Dongria Kondhs. Village head Jakesika is keen to adopt the government’s initiative to boost cultivation of traditional millets, but is wary of disrupting old, indigenous practices. She emphasised that the soil’s health is paramount to the Dongria Kondhs.

#### **6. Focus on nutrition tipped the health scale for children in remote Odisha**



Better funding, community training & cultural context can improve outcomes further, say experts

Amita Sikaka (21), was anemic and underweight when she was pregnant with her first child. Weighing 35 kilograms, she felt frequent bouts of nausea and weakness.

But in the months that followed, Amita's weight and nutrition parameters were constantly monitored. She was provided hot, sumptuous meals every day and her health parameters improved consistently. In February she delivered a healthy child.

Amita belongs to the Dongria Kondh tribe, a particularly vulnerable tribal group (PVTG). The PVTGs in Odisha are known for their particularly poor outcomes such as very low levels of literacy, high maternal and infant mortality from endemic malaria as well as poor nutritional indicators. India has 75 listed PVTGs with the highest number found in Odisha. Odisha has 13 PVTGs, with a population of 240,000 spread across 11 districts.

These outcomes stem from underemployment of these groups on the one hand and poor access to service delivery outposts (such as primary health centers and sub-centres) on the other. As poor nutritional status continues to remain an area of concern for the PVTGs, the state's Jiban Sampark nutrition programme is trying to bring in improvements. Like Amita, today many expecting and lactating mothers across the PVTG villages are being monitored and provided with one-time meals to keep their nutritional parameters buoyant.

The state government has also initiated a focussed initiative, the Odisha PVTG Nutritional Improvement Programme (OPNIP) under the Odisha PVTG Empowerment and Livelihoods Improvement Programme (OPELIP). OPNIP was initially started in three districts in phases in Malkanagiri, Rayagada and Kalahandi, and subsequently to nine others.

The major three interventions taken up under OPNIP were community-based creches for children of age 6 months to 3 years, spot feeding centres for children aged 3-6 yrs and maternal spot feeding centres for pregnant & lactating mothers.

### **Health remains a concern**

There is no national health data specific to PVTGs but a study by Asian Institute of Public Health and the Scheduled Castes and Scheduled Tribes Research and Training Institute (SCSTRTI), conducted in 2015, shed some light.

Among those below the age of five years, 32 per cent of the respondents were severely stunted, 35 per cent were severely underweight and 18 per cent severely

wasted. Around 34.9 per cent of the under-five age group were severely malnourished and 21.2 per cent were moderately malnourished. Every third child who was weighed at birth had a low birth-weight.

Among women of reproductive age, 38 per cent were underweight and 54 per cent were found to be anaemic. Anaemia poses a significant risk for maternal and child survival.

So when we speak of health, the approach needs to be holistic rather than unitary, the expert added.

These interventions, in convergence with related state departments, are designed to prioritise the first 1,000 days of life when rapid growth and development take place.

Local PVTG self-help groups are entrusted with managing the OPNIP interventions, noted OPELIP. This strengthens the community ownership and empowers local PVTG women's collectives in managing such nutrition interventions in their community.

### **Identifying and bridging the food gap**

The extent of dietary energy and protein inadequacy was more pronounced among PVTGs, studies have shown, reiterating the fact that there remains a food gap. The intakes of various micronutrients, specifically that of iron, vitamin A, riboflavin and folic acid was found to be grossly inadequate, which is in consonance with inadequate intake of protective foods.

Considering that poor nutritional status of mothers puts the children at a higher risk of diseases and mortality, the OPNIP provides pregnant and lactating mothers with one hot cooked meal, through the supplementary nutrition programme for the period from registration of pregnancy till completion of exclusive breastfeeding.

Currently, around 900 pregnant women and nursing mothers are receiving the meals at 119 maternal spot feeding centres under OPNIP in the PVTG villages. And the initiative has shown results.

Drubi Kirsani (24) (name changed) had suffered two miscarriages and postnatal complications after the birth of her other three children. Drubi, who belongs to the Bonda tribe in Padeiguda village, Malkangiri district, had anemia and was underweight. "I have never been to the hospital for institutional deliveries. All my

deliveries happened at home. There was no institutional care after delivery either. I always feared for my kids because they were thin and underweight," Drubi said.

In August last year, she was enrolled at the spot feeding centre and provided daily meals and iron tablets. "I generally eat just ragi or boiled rice for meals at home. My children eat that too," she said. The centre offers further dietary supplements with dal, vegetables and whole grains.

The 105 spot-feeding centres for PVTG children aged 3-6 years similarly provide hot cooked meals to around 1,100 children six days a week.

"Since small children from these hilly, tribal areas are not able to regularly commute to the Anganwadi Centres due to geographic inaccessibility, they are provided with the supplementary nutrition entitlement of morning snacks and hot cooked meal, as prescribed under Integrated Child Development Services, in the village of their habitation itself," an official from OPELIP said.

This is a deviation from the initial practice of providing take-home ration, said Namita Sahu, a nutrition coordinator. "We had observed that with take-home ration, there was no monitoring of what the mother would consume and what the child would consume. The spot feeding centres address this gap." Their health parameters are also observed every month to chart the difference," she added.

Experts working with the tribal groups feel that the initiative can not exclusively address the issue of bridging the gap, but can complement in the process, bridging the nutritional gap. "A majority of the PVTG habitations are located in unreachable areas. These habitations are also scattered and there are villages / hamlets with just 10-15 households. In such a place, anganwadi centres are not feasible to be established," said AB Ota, former director of SCSTRIL.

Also, ration / food distributed for children normally ends up in the family food basket as the entire family is food insecure, Ota added. Thus, setting up creches and spot feeding centres is essential to bridge the nutritional gap of PVTG children.

### **Early child care**

The initial years after birth, especially the first five years, are considered to be extremely vital for any child under five years of age, wherein optimal nutrition fosters healthy growth and improves cognitive development. In Devgada village of Kandhamahal district's Belghar block, Sanjuli Majhi drops off three children at the creche before venturing out into the forest to collect minor forest produce.

Belghar is home to the Kutia Kondh PVTG tribe. The creche facility not only addresses nutritional improvement for the children but also helps mothers leave their young children under proper care. The children would otherwise accompany their parents into the forests and get exposed to insects, snakes and vector-borne diseases. "There was a constant fear that my children would be bitten by snakes or any other insects. I would also develop back aches because the trek into the forest is usually through an uneven rocky path and would fall ill often," Sanjuli said.

Her children aged three years, two years and eight months had registered low birth weight. "When I enrolled them at the centre I was told that they were in the red zone. Now they are in the green zone and have shown significant improvement," Sanjuli said.

At the centres for younger children aged 6 months-3 years, children receive three meals, supervised care and attention of trained crèche workers, who are members selected from the PVTG self-help group. Creches function for 7-8 hours for six days a week and provide two snacks and one hot cooked meal, with a focus on calorie and protein-dense food items, said Jashoda Badanayale, nutritional manager in Belghar. "Around 60-70 per cent of calories and 75-100 per cent of their protein requirement is taken care of."

Children from selected villages are scanned for malnutrition through various technical methods and those found to be suffering from severe acute malnutrition are identified and treated with curative food and technical support, according to the programme.

A monthly log and growth chart is maintained to evaluate and assess the nutritional status of children. As a procedure to assess changes, the mid-upper arm circumference and weight is measured for all the children every month while the height is measured every four months. A community growth chart is maintained for all the children marking all improvements in green, minor improvements which still need care in yellow and children who need focussed attention in red. An analysis report of the intervention showed that for the 25 old creches, 49.5 per cent children fall under normal weight category and reported an improvement of 6 per cent from the baseline data.

From April 2022, 61 creches for children under three years of age have been made operational, catering to around 1,000 children under three years of age. Additionally, 46 new maternal spot feeding centres cum crèches are on the anvil and will be set up soon.



In the case of severe stunting, there is marked improvement with reduction from 34.8 per cent at baseline to 24.8 per cent in February 2023.

### **Not a smooth road still**

While the initiatives have shown positive growth, challenges over training ground cadre and finances remain.

In Odisha, the share of the nutrition budget was 20.05 per cent of the state's total budget, while it was 5.03 per cent of the gross state domestic product in 2022-23.

There has been an increment of 5.61 per cent in nutrition-specific components and of 28.46 per cent in nutrition-sensitive components for 2022-23, compared to 2021-22.

For OPNIP, in 2020-21 the nutrition budget was Rs 6.37 crore, which went down to Rs 3.3 crore in 2021-22. But it was revised to Rs 7 crore again for 2022-23. Among the initial challenges were that women from self-help groups had to be trained to take up the initiatives, said P Arthanari, Project Director, OPELIP. "For finances, we are converging with different departments, so this remains an area of challenge as well."

Experts also feel that interventions like these can yield better results when they are contextualised culturally. "For nutrition, we have a common approach across the country, which is developed and tested by the Government of India. But food has more cultural than nutritional value," said Biswajit Modak, a public health expert from Odisha. "So whatever the cultural food they have available within their immediate ecosystem, we should have a discussion with the tribal population and based on their food patterns, ecological systems and traditions, we should have our plan for nutritional initiatives," he added.

### **7. The torchbearers of tradition : Toda tribe women**

Amidst today's changing lifestyle and trends, Toda tribe women, based in Ooty strive to continue their traditional practices with very few people left practicing it. The lifestyle of women has been evolving ever since the ancient times. Change and development are the key words of humanity, and one always advocates progression in the way women live and are treated in every culture. That said, continuing traditional practices and safeguarding culture keeps alive the identity.

Indian tribesmen are known to be protective about their traditions and women play a key role in taking forward their cultural identity.

Women of the Toda tribe living near Ooty have a very interesting lifestyle, and they continue to practice the old way of living and strive to carry forward the legacy by practicing ancient practices that they follow. However, even they are dealing with onslaught of lifestyle changes, share the women on the sidelines of their dance performance at Sterling Fern Hill, Ooty. Devi narrates, "Since the time we have been settled in Ooty we are practicing our culture, though we are only 2000 people. We ensure we carry on our legacy by participating in the rituals and conducting few ceremonies that are coming down from generations."

"The elder women in our community are respected a lot; when we take the blessings of an elderly woman, she puts her feet on our head and blesses us. Infact, we take her feet and then place it on our head so that she could bless us. This tradition still continues in our community as we do not want to end this practice." Since the modern trends have been taking their bench in the society people are moving away from their old traditional the same situation is seen with the tribes of Toda.

"Since the lifestyle in the city is fetching money, people in our community began to adapt to city lifestyle. They work in cities in order to make more money, but there are few women who still practice our age-old tradition by weaving warm cloths and following other rich traditions during the festive times.

" Regarding the weaving of warm clothes, Devi shares, "The patterns used in a Toda shawl reflect the creativity of Toda women who are inspired by nature and mythological stories. We women have been practicing this art since ages; the base cotton material, normally bleached and pale white in colour is handwoven in single width and the embroidery is done by counting of threads. We do not refer to any kind of pattern from a book as we have designed them a hundred times. The shawl that we weave has a visible design on both the sides of the cloth, which gives it a finished look, a little tuft of the thread is left behind while drawing the needle back, which gives a rich look to the cloth.

The ladies here work on fabric with simple darning needle and thread without the assistance of modern tools." The handwoven cloth is pretty famous for its design, "Traditionally, three colours have great significance. The cream/ pale white stands for purity and innocence, red stands for youth and black stands for maturity. The design is usually red and black stripes, and the shawls are used as cover over the

clothes that we wear." Apart from the shawls that they design they also have a unique hair style which is styled specially for every occasion.

"We wash our hair and then we roll the hair strings as ringlets. This hair style also makes our hair healthy. We spend hours to get the hair style into shape." Every community has certain kind of rituals to follow when it comes to a wedding ceremony and so does the Toda tribes. There is a little twist on how a Toda man impresses his girl for marriage.

Devi, who has taken the mantle of the spokesperson of her tribe for the day, relates "The woman has the right to choose her husband. So, the man impresses her by lifting a 120 kg stone, which is known as the marriage stone, to impress her girl. And if incase he is not able to lift the stone; he is not eligible for marriage.

Women here still practice this ceremony." While we go through the tribe's unique traditions and lifestyle, we also notice that many of the rituals and dances are only seen during festivals or marriage occasions. However, Ooty being a tourist-rich destination, one can get to see the women of this community in vibrant colours and a cheer on their face to represent their culture to the tourists, who visit them.

## **8. Deda Method: A Traditional Seed Preservation Technique**

**The Deda method is a traditional method of seed preservation practiced by Muria tribal farmers, primarily in the Godavari Valley forests.**

- a. This method has been passed down through generations and ensures the **protection and viability of seeds for up to 5 years.**

**About the Deda Method:**

### **1. Seed Preservation Technique:**

- The Deda method involves **preserving seeds in multiple layers, creating a protective casing to safeguard them from pests and worms.**

### **2. Preparation of Deda:**

1. **The Deda Method is a traditional seed preservation technique practiced by the Muria tribal farmers.**

2. It involves **wrapping seeds in Siali leaves (Bauhinia vahlii)**, layering them with **wood ash and lemon leaves**, and then **sealing them airtight to form a package called a "deda."**
3. **Each deda can hold up to 5 kg of seeds** and protect them from pests and maintain their viability for up to five years.
4. This method is particularly effective for preserving pulses like **green gram, red gram, black gram, and beans.**
5. It is an eco-friendly and sustainable way to ensure seed security and promote agricultural biodiversity.

### 3. Advantages of the Deda Method:

1. **Protection from Pests and Worms:** The Deda method provides excellent protection against pests and worms, ensuring the viability of seeds for an extended period.
2. **Long-Term Storage:** Seeds stored using the Deda method remain viable and suitable for cultivation for up to five years.
3. **Preservation of Pulses:** This method is particularly effective in preserving the seeds of pulses such as green gram, red gram, black gram, and beans.

### Key Facts about the Muria Tribe:

#### 1. Location:

1. The Muria tribe is **primarily found in the states of Telangana, Andhra Pradesh, Chhattisgarh, and Odisha.**
  - The Muria are an indigenous Adivasi, scheduled tribe Dravidian community of the Bastar district of Chhattisgarh, India. They are **part of the Gondi people.**
2. They **speak Koya, a Dravidian language.**

#### 2. Internally Displaced People:

1. Their **settlement lies within 'India's Red Corridor'** on the Andhra Pradesh-Chhattisgarh border hit by Naxalism, and stands as an oasis within a reserved forest, protected by stringent laws prohibiting settlement and deforestation.
2. Muria settlements are **known as habitations of Internally Displaced People (IDPs), with a population of approximately 6,600 in Andhra Pradesh.**

3. Native tribes refer to them as 'Gutti Koyas.'

### 3. Progressive Perspective:

1. The Muria tribe has a progressive **outlook towards marriage and life in general.**
2. A notable example is the **Ghotul, a commune or hostel that aims to create an environment for Muria youth to understand their sexuality.**

### 4. Scheduled Tribe Status:

- While the **Gutti Koyas held Scheduled Tribe (ST) status in Chhattisgarh, they were not granted ST status in their migrated states like Telangana.**

### ABOUT GOND TRIBE

1. They are one of the **largest tribal groups in India**, predominantly residing in Madhya Pradesh, Chhattisgarh, Maharashtra, and Andhra Pradesh.
2. The name Gond comes from Kond (means green mountains).
3. Main occupation is Agriculture or daily wages.
4. Their native language, Gondi, belongs to the Dravidian family.
5. They believe in animistic belief system, where they worship nature spirits and deities. They also revere ancestors and have a rich tradition of folk worship
6. They have subdivided into various tribes such as raj Gonds, Madia, Dhurve etc.

### 9. Issues in the implementation of PM-JANMAN

**Particularly Vulnerable Tribal Groups (PVTGs):** India is home to numerous Adivasi groups, with 75 identified as PVTGs.

- **Demographics:** Comprising around 14.6 lakh households, PVTGs reside in scattered, remote, and often inaccessible areas.
- **Characteristics:** They rely on pre-agricultural methods and tools, have low literacy rates, economic backwardness, and stagnant populations.

### Government Initiatives:

**Pradhan Mantri PVTG Development Mission (2023-24):** Announced to improve the socio-economic conditions of PVTGs.

- **Pradhan Mantri Janjati Adivasi Nyaya Maha Abhiyan (PM-JANMAN):** Launched in November 2023 with a budget of ₹24,000 crore.
  - **Objective:** To provide essential services including safe housing, clean drinking water, and sanitation through 11 critical interventions.
  - **Target:** To reach 4.90 lakh PVTG households by 2026, ensuring secure and habitable housing with a DBT scheme providing ₹2.39 lakh per household in three instalments.

### Challenges in Registration:

#### Data Mismatch Issues:

- **DBT Challenges:** Instances of wrongful deletions in schemes like MGNREGA and PM KISAN due to registration and Aadhaar detail mismatches.
- **Survey Findings:** Inclusivity and accessibility issues for PVTGs and frontline officials in Andhra Pradesh, Jharkhand, and Odisha.

#### App Use and Confusion:

- **Awaas+ Mobile App:** Used for registering PVTG households, capturing geographical location, household profiles, and bank details.
- **Jobcard Requirement:** Mandatory for registration, but widespread deletion of MGNREGA jobcards has led to ineligibility for many PVTGs.
- **Village Discrepancies:** Mismatched village lists between the app and MGNREGA MIS, causing confusion.
- **Name and Aadhaar Issues:** Lack of guidance for non-Aadhaar names and default 'ST' option leading to non-PVTG registrations.
- **Bank Selection Complexity:** Over 300 options for banks and 500 for branches, creating unnecessary complexity.

#### Missing Banking Options and Recommendations:

**Exclusion of India Post Payments Bank (IPPB):** Despite its role in financial inclusion, the IPPB is not listed in the app's bank options.

- **Recommendations:**
  - **Streamline Registration:** Update the app and include IPPB.
  - **Reinstate Jobcards:** Take proactive measures to reinstate deleted jobcards.
  - **Community Engagement:** Involve gram sabhas to improve scheme effectiveness.
  - **Certifications and Network Issues:** Address certification issues and geo-tagging problems due to network issues.
- **Ongoing Struggles:** Despite initiatives, the narrative of PVTGs reflects ongoing struggles and broken promises.
- **Potential for Change:** The PM JANMAN presents an opportunity to transform the lives of PVTGs, helping them benefit from India's growth.

## 10. Santhals celebrate blossom festival

**Celebrating the beauty of mother nature, the tribals, mainly Santhals, are observing 'Sarhul' or blossom festival in Mayurbhanj district.**

The unique festival, which is known as 'Baha' is dedicated to flowers. It is held between second of February and mid-March every year and celebrates the relationship between nature, flowers and tribal community, said Salai Murmu, a scholar of Santhal community.

One of the major events of the festival is decoration of holy places with flowers, crushed straws and branches of blackberry trees. The tribal as practice, do not pluck or use the flowers and berries for other purposes.

Highlighting the special features of the festival, the community priest who is known as Nayake or Majhialam has key role in the festival, Mr Ramchandra Baskey informed that the priest's wife grind's flour on day one of the festival while village headman called 'Godet' goes round the village collecting rice, salt and chicken.

He collects the ingredients in a big basket while a bachelor, who accompanies him, carries a small pot of holy water. Several other rituals are also conducted at a holy place, called 'Jaherstan'. The day of the event, which symbolizes the return to

home, is devoted to general feasting and merry making. On this day the priest returns home.

The girls in the first house wash the feet of the priest with holy water and get Sal flowers in return as ritual of the event. The rituals are now a day's being performed in 'Jaherasthan', said Gurva Soren, Society for Research and Development of Tribal Culture. This ritual is a water festival where water is sprinkling on all. The festival is similar to Holi but colours are not used in our event, said Mr. Soren.

According to Mr. Soren, the festival is dedicated to flower and berries while followers of Sal, Mango, Jackleg, Mahula, Simuli, and Dhatika trees are blossomed from February towards. "It is a special feature for the celebration of 'Baha' festival that not a single Santhal people does not eat or used fruits and plucked flower till the celebration it by the community.

The festival must be completed within Pana Sankrati. If any people of the community will play holi or the colour of holi touches his body he has not entered into his own house and living outsider's house.

He has allowed to his own house after he attending the 'Baha' festival, Mr. Soren added that Marangburu Menko Turak means Pandab's five brothers and Darupadi also observed the flower festival at the forest during their Vanabas dedicate to nature.

The festivities concluded with songs and dances in which the whole village joins the merry maker's procession which starts from priest's house and ends it in the headman's house.

## **11. Lushai Tribe**

*Phtheirospermum lushaiorum*, a rare hemi-parasitic terrestrial plant has been found in Phawngpui National Park of Mizoram.

It is named after the **Lushai Tribe**.

### **About Lushai Tribe:**

**Part of Group:** The Lushai tribe is part of the Kuki-Chin group of tribes.



**Common Name:** They are commonly known as Mizos.

**Racial Origin:** The Lushai tribe is of Mongoloid descent.

**Demographics:**

Population in Tripura: Approximately **5,384 individuals** (2011 Census).

**Cultural Identity:**

Religion: Predominantly Christianity.

**Traditional Dance:** Known for the Cheraw Dance (Bamboo Dance).

**Societal Structure:**

**Family System:** Follows a patrilocal joint family system.

Inheritance: Practices patrilineal descent and inheritance rules.

**Occupational Practices:**

**Primary Occupations:** Engaged in Jhum cultivation and orange cultivation.

**Additional Activities:** Hunting of wild animals in the Jampui Hills, Tripura.

Legacy: Historically known as a Head Hunter community.

**Primary Location:** Mainly located in the Jampui Hills area in Tripura.

**12. Over 100 Odisha Gram Sabhas exercise forest rights, cut out middlemen to sell kendu leaves directly**



Move helping villagers get better prices, ensuring on gap in collection of leaves from all areas and helping underprivileged tribes. More than 100 Gram Sabhas in southern Odisha have joined forces to sell kendu leaves directly, leveraging their community forest rights in a move that empowers local communities while disrupting traditional middleman structures.

Kendu leaves, also known as tendu leaves in some parts of the country, are used to roll tobacco into *beedis* (local cigarettes) and possess a number of medicinal properties. The non-timber forest product (NTFP), which provides a vital source of income for tribal communities in the region, is commonly known as “green gold” in the state. The 103 Gram Sabhas in the Baipariguda block of Koraput district have decided to exercise their Community Forest Rights, which allow them to use forest products for their livelihood.

The traditional system included layers of middlemen who would frequently buy the leaves at a lower price. The leaves would be picked up less frequently, and some areas would be overlooked. To address this issue, Gram Sabhas formed the Baipariguda Gram Sabha Maha Sangha, which has the authority to issue transit permits to traders for the transportation of kendu leaves.

Bidyut Mohanty, secretary of SPREAD, a nonprofit that advocates for tribal rights in the region, said the villagers had filed requisitions under the Forest Rights Act to claim Community Forest Rights, which allow them to collect and market forest products.

Bhaktaram Majhi, a resident of Kalathjodi village, explained that the villagers used to sell their produce to a forest department-appointed trader. "We earned just Rs 3.2 per bundle. Another issue we faced was that the produce wasn't picked up from us regularly, which didn't guarantee a stable income," he said.

Under the new initiative, the villagers earn Rs 4 per bundle.

Majhi also stated that, despite requests, the traders frequently failed to collect from all areas. "They do not collect from all areas because their quota is met and they no longer require kendu leaves. But for us, regular collection is crucial for stable income," he explained.

As a result, the villagers reached an agreement and unanimously passed a resolution to bridge the gap and ensure the collection of kendu leaves from areas where the forest department or traders fail to extract them.

This move has directly benefited 6,000 people in these villages.

Dola Govind Philo of Kalyajodi village said he used to earn Rs 5,000 to 10,000 per month from selling kendu leaves. "But with the better rates offered by the Gram Sabha, my income has increased to between Rs 10,000 and Rs 15,000 per month," he stated. Sukra Krisani, secretary of the Gram Sabha Maha Sangha, said the communities have set the objective of collecting at least seven lakh bundles of kendu leaves within two weeks.

"This amount will bring in a lot of money for the block's underprivileged tribes. These Gram Sabhas intend to process and package the leaves to market them and form alliances with traders both within and outside Odisha," she explained. Krisani added that working together would increase the villagers' income capacity and enhance the overall well-being of the community.