# TATA STEEL: CSR AND SUSTAINABILITY ACTIVITIES

### MESSAGE



I am glad to know that Mining Engineers' Association of India (MEAI) is taking steps to promote sustainability and innovation in the mining sector by covering stories on sustainability and innovation initiatives of various mining companies in the Mining Engineers' Journal (MEJ). We are happy to be a part of this meaningful initiative and

contribute our perspective for the benefit of the mining industry.

With the rapid changes in external environment and everevolving needs of the communities, CSR and innovation is seen to be forming the basic foundation of business sustainability.

Sustainable mining demands the judicious use of technology at each stage of the mine's life. Technology and innovation can benefit the environment and people around by minimizing the impact of operations. The mining industry's current focus should be on digitalization and smart solutions aimed at creating sustainable future for our stakeholders.

At Tata Steel, our journey to make ourselves structurally and culturally stronger and future-ready, continues. We are impassioned to become more knowledgeable and an innovation and technology-intensive organisation not only in our operations but also in our services to the communities.

Our digital journey was well underway when COVID-19 struck. FY21 was an unprecedented year of anxiety and duress. However, it also brought an opportunity for the Company to reaffirm its commitment to communities through some innovative measures by making most of the CSR initiatives IT enabled and digitally connecting with the communities around our areas of operations. While on one hand, we adapted ourselves to the new dimensions of transformation happening around us, we continued to invest in our future while remaining committed to the long-term sustainability of our mining operations.

The innovative solutions for CSR brought in by the mining industry during COVID-19 can have the long-lasting impact on the communities. I am sure that strategic CSR driven by innovation will help develop a strong bond with the communities and will change the negative perception of the mining industry.

> D B Sundara Ramam Vice President (Raw Materials), Tata Steel

### CSR activities of 2020-2021 Story 1

# Co-creating solutions for community well-being in mining locations during the pandemic

Tata Steel Foundation combats COVID-19

Tata Steel Foundation (TSF), at the time of unprecedented duress brought on by the novel coronavirus outbreak, emphasized spending time with communities it works with in its mining locations including Jamadoba, Noamundi, West Bokaro and Joda. The absence of coherent information, propagation of misinformation, reverse migration, loss of income, food insecurity, stress and the need to boost public health systems were issues which would clearly play out in varying degrees of intensity in these operational locations.

Basis the assessment, the collective ability of our teams and deep sense of responsibility towards our relationships with our communities, a number of initiatives were taken up from March, 2020 to address information lacunae, to meet key deficits and to create robust systems that last beyond the lockdown period. In FY'21, the Foundation focused on interventions that would help communities hold their ground during the pandemic. Through various interventions under the #CombatCovid19 banner, the Foundation ran several programmes to cater the needs of community during the trying times reaching out to more than 1,12,000 lives.

During the initial period of the outbreak of the virus, the Foundation focused on mass awareness campaign and digital outreach. The digital campaign was a concerted effort to inform people on critical issues including lockdown, its requirement, dos and don'ts and precautionary steps, thereby helping prevent panic within the communities. This was actioned through a series of identified questions to the communities that brought to the table a set of queries, expectations and anticipation. All of this was collated and looped back to the district administration to ensure that there was a seamless flow of communication from the district to the grassroots. More than 64, 000 people were reached out through the #DigitalBridges initiative of the Foundation.

With an objective to support the vulnerable communities in the leasehold areas with food security, cooked food distribution was done. For over a month, around 5000 warm meals were provided on a daily basis across the mining locations. Also, ration was provided to households of migrant labourers.

Involving individuals and groups in an array of income generation activities like kitchen garden, wall writing, paper bag making etc was taken up with an aim for immediate income generation. As many as 1750 households were reached out in the mining locations. Distributed local capacity was built to make three-ply cloth masks to reach fraternities like frontline health workers who were the most exposed and in need of PPE. Many were also engaged in plantation drives and manual farm bunding.



Income generation through mask making by members

To ensure that access to healthcare services continued undeterred, a number of interventions were taken up in collaboration with Tata Steel Hospitals. Amidst lockdown, doorstep delivery medicine was also done. While the primary healthcare service centres were inaccessible during the lockdown period, the deficit was capped through Mobile Medical Units (MMU) run by the Foundation. Also, telephonic consultations were provided by doctors from hospitals run by Tata Steel.

During the time when quarantine centres were being setup during April to June, youngsters under the RISHTA project of the Foundation joined hands with the district administration to assist the government administration in cleaning and sanitization work. To augment the fight against COVID-19, face shields and masks were distributed among communities and workers across various sectors. Also, support was provided for essential infrastructure at COVID-19 centres including repair and renovation work.

During the last one year, the Foundation has engaged in catalysing interventions which lead to enhancement of farm-based livelihoods engendering positive changes vis-a-vis the modern methods of agriculture to generate employment among communities and enhance their livelihoods. Providing input support to the farmers in terms of seeds like paddy, wheat, and vegetables apart from organizing farmers' exposure visits and on field learning programmes in presence of experts from government line departments like Krishi Vigyan Kendra, district agriculture and allied department have been the major focus. Also, promoting modern methods of agriculture like system of root intensification (SRI) in paddy for increased yield were also taken up. The agri-allied sector was also focused upon where promotion of pisciculture in ponds and through biofloc were also taken up.



Sanitisation work in progress

In the non-farm sector, skill building of youth was done to enhance their employability skills. Youth from the communities were linked to short term training programs like spoken English, basic computer and IT skills, soft skills development in government polytechnic, provide coaching for entry into forces (uniformed services) to make them future ready.

Recalibrating efforts to adapt to the 'new normal'

The Foundation received early signs of vaccine paranoia from communities in the mining locations and launched #ApnoKiSuno with the start of FY'22, a collaborative movement designed to weave a network of informal, localized, and trust-based conversations to encourage people to register for and receive vaccines. Subsequently, vaccination drives have been launched across locations. In its efforts to combat COVID-19 and be future ready, the Foundation has also commissioned state-of-the-art Pressure Swing Adsorption (PSA) Oxygen Plant at all the mining locations. These plants are a step ahead in the direction of ensuring that there is no shortage of medical oxygen for patients and this has also significantly increased the number of oxygensupported beds in every hospital. Hospitals run by Tata Steel across mining have managed a large number of COVID-19 patients during the first and second waves as designated as COVID-19 dedicated centres, and have provided advanced medical care to community members. Efforts are also being taking towards income generation, skilling of youth and education of children.



**Community Vaccination** 



PSA Oxygen Plant

### Story 2

# Kitchen gardens show the way for sustainable living during lockdown

While most parts of the country were facing difficulties stocking up their ingredient inventory during the Coronavirus pandemic, the kitchen gardens came and a blessing. In a number of households across the operational areas of Tata Steel, kitchen gardens came as a boon for sustainable living. During the lockdown, not only did it boost the household's access to fresh food while keeping one at home, but also ensured a healthy diet that contains adequate amounts of essential nutrients by producing diverse kind of vegetables.

Tata Steel Foundation has facilitated setting up of more than 1500 such gardens in the proximate villages of its mining operations in the last one year. The nutritional garden model that is promoted by the Foundation can be implemented in a limited area and is completely organic. 21-year-old Suman Marandi, residing in the quaint Bhelatand area of Dhanbad, has become a popular face in her village. A number of people in the nearby households have come up to her for help while setting up their kitchen gardens. "My neighbours faced so much difficulty travelling to the markets fetching vegetables but we were relieved. When they noticed the same, they came up to me to help them setup their kitchen gardens.

While it is never too late to start something productive, it will take some time for their gardens to show results," she says.

Generally, the local communities here consume two to three types of vegetables in their diet. After introducing these nutritional gardens, they have started to grow and consume 12 types of vegetables including okra, leafy vegetables, pumpkin, tomatoes and radish among others.



Kitchen Garden

### Story 3 Ensuring access to healthcare for expectant mothers Fear and anxiety are casting a cloud over expectant mothers facing the outbreak of COVID-19 in the rural areas.

Tata Steel Foundation came up with a model to provide support to expectant mothers in the mining locations. With the help of the ASHA workers, a database of the expectant mothers was created to ensure that the community receives the help it requires and that issues both before and after delivery are identified and taken care of. Expectant mothers and their problems received full attention in the action plan that was drawn up by the CSR team and the data was tracked so that there were no fallouts. Apart from creating awareness and addressing misinformation, steps were also taken to improve communication between health providers and pregnant women thereby increasing the likelihood of positive pregnancy outcomes. Daily follow-ups with ASHA workers, along with the expectant mothers are being carried out by the health team.



Health check-up of expectant mothers

This apart, video and home calls are also being arranged for regular interaction with doctors. In-house doctors are coordinating with the government health centre doctors on phone and sharing their history of the patients to ensure that proper treatment and care are taken. Also, post birth regular interactions were done to ensure that the babies are vaccinated on time.

# Stories on sustainability Story 1

#### Agility in mining through Highwall Mining Initiative to double Highwall coal reserves

Highwall Mining technology extracts coal by underground means but no person works in humid, tiring, dusty working conditions. Highwall Operators sits in air-conditioned cabin in a surface coal mine. (Safe, economic, environment friendly).

Highwall miner extracts left out coal in Mine boundaries (earlier considered non-mineable coal), extracting coal without depleting the future coal reserves, increasing life of mine (Sustainable).

Quarry South Eastern (QSE) is an opencast coal mine of West Bokaro Division, Raw Materials, situated in Ramgarh district of Jharkhand (200 KM South East from Jamshedpur). QSE has been the first in India in introducing many breakthrough concepts and technologies, Highwall mining was the new major addition in this series.

Highwall mining method was a widely popular mining method in US coal mines but a new mining method for Indian Coal Mines. West Bokaro division geared up for the technological change and conducted the feasibility study in collaboration with scientific organization CIMFR. Highwall Mining operation was commenced at Q-SE in 2016.



Highwall Mining

Highwall Miner at QSE has set the international benchmark of producing 5.27 LT of raw coal in a year, national benchmark of producing 80 KT of raw coal in a month, working in low to medium coal seam height. QSE, Highwall miner has established national benchmark of driving longest single heading underground gallery of 284m.

With the successful and agile implementation of this technology, Tata Steel is now aiming to be the first among the world to start paste filling of the void created by Highwall mining. Once the voids are packed, the left coal in pillars of Highwall galleries will be mined out. This will double the Highwall coal reserves, a significant addition to the coal reserve baseline. This project is started in collaboration with Raw Material Technology Group and a Chinese company XCUMT. Tata Steel will be the first Company in the world to develop and implement this backfilling technology in Highwall.

# Story 2 Connecting to new networks

Tata Steel makes path-breaking steps in digitalization The global mining sector is reinventing itself, with the worldwide emphasis on cleaner, safer and more efficient mining processes. This has brought about fundamental shifts in the mining value chain as mining companies and miners are increasingly adopting digitalisation and data analytics to improve their cost competitiveness, operational excellence and risk management. The disruption due to COVID-19 has only accelerated this transformation.

Besides competitive pressures, a major factor driving digitalisation has been that the aging workforce and the challenges faced by companies it is hiring and retaining young talent, which is largely disinterested in working in the mining industry.

The use of high-end technology will allow miners to remotecontrol operations in the mines, which can be monitored from centralized locations for safer and more sustainable mining operations. Consequently, while managerial skills will continue to have their relevance, software and analytical skills would become important capabilities in new talent.

Mining companies are leveraging automation, robotics and operational hardware to achieve their objectives, especially because applications of automation and robotics in mining make mining operations safer and less hazardous. These applications include robotic dozing, excavation, hauling, robotic drilling, handling of explosives as well as robotic mapping and surveying.

Tata Steel has undertaken wide -ranging initiatives to automate and digitalise its mines, beneficiation plants as well as logistics.



Centralised Control Room

Important initiatives by Tata Steel to automate and digitise its mines:

- Improved bandwidth of LAN/WAN for digital communication and data transfer
- Digital data capturing and Integrated online reports for safety, production, quality and supply chain
- Automation/ sensorisation of plant equipment and mining equipment for automatic capturing of data using IOT or digital data transmission using OFC
- Remote controlled operations of equipment like conveyors and pumps
- Centralised monitoring of operations of plant and mine, Suraksha Card, video analytics, online safety management system, online safety management plan, and digital mine mapping using drone survey and GISbased technologies

### Story 3

#### **Innovation in mining**

# Tata Steel installs Solar Snake Repellent devices to keep them at bay

Tata Steel has installed Solar Snake Repellent devices at various Raw Material locations to prevent snakes from venturing into workplaces in the mines. The device was recently installed at Khondbond. The Snake Repellent device produces strong, powerful yet discreet vibrations via ultrasonic waves beneath the installed areas to signal danger. Snakes have very poor eyesight and they cannot hear sonic waves transmitted by the air. However, they sense danger via vibrations transmitted from the ground with their jowls. Thus, using the vibrating sound is a practical, and effective way to scare snakes away from a certain area.

The Snake Repellent generates unique and random vibrations and its strikes penetrate far underground, with snakes sensing them as signals of danger. This forewarns the snakes of possible danger and frightens them away. Each device covers an area of 650 sq metres and therefore devices are placed at intervals of 30 metres.



#### **Advantages**

- No maintenance & easy installation
- Works day & night constantly
- Easy to use
- Safe & Humane
- Solar powered

Snake Repellent Device

### Story 4

#### Setting a standard for responsible mining Tata Steel embarks on Geo Green Blanket initiative

Tata Steel has embarked on Geo Green Blanket initiative at West Bokaro Division. The Geo Green Blanket supports the seeds to grow in slope at mining area. As a first step site preparation was done and unwanted materials removed. Levelling dressing making slopes to work safely. After completion of first step, the team made bunds and garland trench on top of slope stabilisation area for anchoring the Geo coir mates and proper drainage system.



Geo Coir Matting - Before



Geo Coir Matting - After

Approx. 400 mm cushioning ensured with required media including top soil, manure, nutrient, pesticide. Benching of slope was also done to hold cushioning materials on slopes and coco fibre mat installed on slope. Now the slope is ready for plantation of suitable trees/Shrubs/Ground covers for complete vegetation/green cover development as per the recommendation of Ministry of Environment and Forest and Central Pollution Control Board. Out of total area, the team did the trial in 7000 square meters and is waiting for favourable conditions to go for plantation activities.

West Bokaro was operating three Quarries. The coal production from the Quarry E started in 1992 and continued till FY12. As per mine closure plan, reclamation of minedout areas was initiated at Quarry E (Pundi site). The team conducted feasibility study and found that vegetation on slope needs special technology to survive and zeroed on Geo Green Blanket.

#### Story 5

#### Breaking the glass ceiling

# Tata Steel recruits heavy machinery operators in its mines

Promoting diversity and inclusion as a way of life to ensure fair and equal opportunity for all employees, Tata Steel's West Bokaro collieries recently onboarded 16 women Heavy Earth Moving Machinery (HEMM) operators in all shifts.

Tata Steel's Women@Mines initiative intends to provide a wider career choice for women who wish to be a part of Tata Steel's growth story. The successful deployment of the first batch of 22 women at Noamundi iron mine in 2019 gave Tata Steel immense confidence to push for greater women participation in a sector that has been hitherto considered a male domain.



Women@Mines

These candidates are undergoing intensive training to hone their skills as HEMM operators. Post successful completion of their training, these women will be deployed as Operations Assistant to operate HEMM at Quarry SE, which includes dumper, dozer, shovel, excavator and drill. The 16-membered HEMM operators are also going through the industrial training at Larsen & Toubro (L&T) Construction & Mining Machinery at Central Training Centre (CTC), Kanchipuram, Tamil Nadu.



Women@Mines

Tata Steel has always provided career opportunities to the talented youth from the community. Focused on industrywide efforts to foster a diverse and inclusive culture, Tata Steel is making sure it provides a safe and an enabling environment to its workforce. Taking forward its Diversity and Inclusion (D&I) Policy, Tata Steel's West Bokaro Division is all geared up to recruit transgenders as HEMM operators. This landmark initiative not only aims to break the glass ceiling but also targets to mainstream transgenders in the society.

From formation of MOSAIC (D&I initiative of Tata Steel) in 2015 to participation in RISE – the largest job fair for LGBTQ+ in Asia, Tata Steel has not only evolved as a global torchbearer but has also encouraged others to be inclusive and accepting with the change in time.

#### Story 6

#### 3 MW Solar Power Plant at Tata Steel's Noamundi Iron Mine helping reduce carbon footprint

# 1<sup>st</sup> Solar PV Solar Power Plant in the iron ore mine in the country

With due consideration towards reducing carbon footprint, a 3 MW Solar Photovoltaic (PV) Power Plant was commissioned by Tata Steel at its Noamundi Iron Mine in the year 2017. This is the 1<sup>st</sup> Solar Power Plant in any iron ore mine in the country. The project, executed by Tata Power Solar is helping reduce CO2 emission by about 3000 tonnes per annum.

The Solar Power Plant is spread over 19 acres of land at an elevated reclaimed mining hill with ample undulations and a very rocky terrain. Solar lights have been used for boundary and area lighting around the solar plant. The selected site has a potential of 4.5 MW solar power generation.



Solar Power Plant at Noamundi

Set up at a cost of Rs 35 crore, the initiative is aimed at addressing climate change issues and other demands on natural resources for the Company's captive use around its mining locations. Synergy between three Tata companies, namely, Tata Steel, Tata Power Solar and Tata Power Trading Company was instrumental in shaping the project into reality. With Tata Steel as the sole buyer of all electricity at a contracted tariff, this partnership demonstrates Tata Steel's commitment to climate action and voice support for supporting a strong outcome at the UN Climate Change Conference Paris 2015 (COP 21). Solar modules convert the solar radiation into electricity which is converted through inverters to AC power at suitable voltage and then fed to the utility grid with net metering facility for accounting of the solar electricity. In case of complete outage of grid, the solar plant has the capability to synchronize with existing DG bus at processing plant Noamundi and continue operation.

#### Story 7

#### **Towards a Sustainable Tomorrow**

# Tata Steel conserving rainwater through Rainwater Harvesting Parks and Reservoirs at its mines

In the recent years, rainwater harvesting has emerged as one of the most sustainable ways to conserve rainwater that otherwise gets wasted by getting drained off. Installation of rainwater harvesting structure helps in channelizing precious rainwater to percolate down and replenish underground water table. As part of its commitment to environmental sustainability, Tata Steel has always given special emphasis to create such rain water harvesting structures in all its mining operations.

The rainwater harvesting parks and reservoirs created across raw material locations including Joda, Noamundi, Jharia and West Bokaro across Odisha and Jharkhand have the potential to store a total of 12.38 million cubic meters of water. Installation of these rainwater harvesting structures have helped in channelizing precious rainwater to percolate down and replenish underground water table.

A healthy aquatic life is an indicator of good water quality. In terms of biodiversity, the focus usually has been on terrestrial animals. Improving biodiversity in aquatic life through integrating rain water harvesting structure has also helped in contributing towards sustainable development goals.



Water Reservoir for Rainwater Conservation