ANNUAL REPORT 2020-21

BEST PRACTICES UNDER SUSTAINABLE DEVEMENT FRAMEWORK

TIRINGPAHAR IRON & MANGANESE MINE

Prepared By: Environment Management Department

MANGANESE GROUP OF MINES, FERRO ALLOYS & MINERALS DIVISION, TATA STEEL LMITED | At/P.O.: Bichhakundi, Via: Joda, Dist: Keonjhar Odisha – 758 034 Tel.: 9238101370, e-mail : mnminesadmin@tatasteel.comRegd.Office : Bombay House, 24 Homi Modi Street, Mumbai – 400 001 Tel 912266658282, Fax 912266657724Corporate Identity Number L27100MH1907PLC000260 website : www.tatasteel.com

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Executive summary

As a group, we commit to integrate sustainability considerations into all business decisions and key work processes, with the aim of creating value, mitigating future risks and maximizing opportunities. We believe Our policy will guide our thoughts and actions towards internalizing the principles of sustainability in the way we conduct our business. We will need to experience our commitment to improving the quality of life of communities across the globe.

Tata Steel takes several important step towards reaffirming it's commitment to being a responsible corporate citizen. As a group we have always done what we believed was inherently right. Not because the law demanded it nor because of any need to respond to peer pressure. We never waited for others but crafted our own path. All that we have achieved over the past 140 plus years is emblematic of our pioneering spirit and leadership with trust.

We believe that challenges associated with issues such as growing population, urbanization, and resource scarcity, compounded by the impact of climate change on the quality of life. Equally, there will be huge opportunities for innovation in our businesses, across spaces such as developing low carbon processes, deploying renewable energy solutions, creating smart city infrastructure, and using smart materials. We need to embrace a new model of growth, which is sustainable. It is for this reason that the Tata Sustainability Policy clearly outlines our principles and commitments.

Our sustainability philosophy emphasizes upon our commitment to integrate environmental, social and ethical principles into it's business which is central to improving the quality of life of the communities we serve globally and enhancing the long-term stakeholder value.

As per Our Policy, our principle shall be:

- To integrate sustainability considerations into all business decisions and key work processes, with the aim of creating value, mitigating future risks and maximizing opportunities.
- To Follow the highest standard of governance and transparency.
- To embody principles of product stewardship by enhancing health, safety, environment and social impacts of products and services across their life cycle.
- To provide employees and business associates with working condition that are clean, safe, healthy and fair.
- To strive to be neighbours of choice in the communities in which we operate and contribute to their equitable and inclusive development.

This Annual Report is prepared to in line with our approach through which we wish to develop a mechanism to monitor and review our core pillars of sustainability approach such as Governance, Material Issues, Sustainability Performance and Sustainability Disclosure. The company has established a process to publish and disclose relevant sustainability performance indices in the form of an Annual Integrated Report, but somehow site-specific projects implemented across different

downstream operational facilities or at raw material divisions still needs to be disseminated to the public. As a practice the company has started publishing all such projects having significance to the sustainability performance of the individual raw material units and this report would explicitly deal with the sustainability disclosure related aspects in respect of Tiringpahar Iron & Manganese Mines operated under the management control of Manganese Group of Mines of Ferro Alloys Mineral Division based at Joda valley in the district of Keonjhar Odisha.

This effort to disseminate information pertaining to business sustainability aspects such as our efforts in the direction of exploration techniques, mineral conservation strategies, mineral beneficiation techniques, Zero Waste Mining, Resource utilization and recovery, sustainable mining and mine closure activity, Reduction in carbon footprint, scientific methods for mine development and mineral conservation, etc.

Managing resources and relationships for the long-term

The six capitals represent the resources and relationships that we depend on to create value. Judiciously managing the capitals is key to meeting our strategic objectives.

Sustainability Disclosures Principles:

Tata Steel has been a pioneer in disclosing its sustainability performance transparently through various disclosure platforms. We have been publishing Sustainability Reports following the Global Reporting Initiative (GRI) Framework (first company in India) since 2001. In FY 2015-16 we were the first company in India to transition towards Integrated Reporting through the International Integrated Reporting Framework (IIRC). We have also been disclosing our sustainability performance to international and national platforms like world steel, Dow Jones Sustainability Index Assessment (DJSI), CDP and national level award applications amongst others.

BASIC INFORMATION ON MINE

Tiringpahar Iron and Manganese Mines of M/S Tata Steel has obtained the Environmental Clearance from the MoEF vide letter no. J-11015/87/2004-IA. II(M), Dt.17.11.2005 for Manganese Ore production of 0.85 LTPA. As per MoEF&CC Notification No, S.O. 1530(E), 6th Apr 2018, the company had submitted an online proposal for the ratification of the existing EC from EIA 1994 to EIA 2006 notification on 16th Sep 2018. The ministry had approved the TOR for the ratification of EC from EIA 1994 to EIA 2006 notification vide letter no IA-J-11015/117/2018- IA- II(M) dated 04.03.2021. However, the company has targeted a growth plan to enhance production of steel from 19 MTPA to 27 MTPA by 2025-26 and accordingly to meet the enhanced raw material requirements of the company, expansion has been envisaged for Tiringpahar Iron & Mn mines for enhanced production of manganese & iron ore from the existing lease area of 169 Ha.

The Tiringpahar mining lease is located at Palsha, Khondbond, Jadibahal and Guruda village at Barbil tahasil in Champua sub-division of Keonjhar district in Orissa. The deposit at Guruda block of Tiringpahar lease is located at about 25 km from Barbil town.

The area falls under survey of India Topo Sheet Nos. 73 G/5 (New Topo Sheet Nos. F 45N/5). It is bounded between Latitudes 21°54'00" N to 21°57'00" N & longitudes 85°23'00" E to 85°25'00" E. The project falls under Category A as per MoEF notification as the Mining lease is more than 50 ha. The deposit at Tiringpahar is located at about 25 km from Barbil town. Nearest railhead is at Banspani at a distance of 10 km which is connected by Tata Barbil branch line of South Eastern Railway at Padapahar.

Lease Details:

Tata Steel Limited (earlier Tata Iron & Steel Co. Ltd) was granted with a mining lease from the then Raja of Keonjhar State with effect from 01.03.1930 for 30 years over an area of 643.710 hectares in villages Palasa (Kha), Jadibahal, Khandbondh, Joruri, Jalahari, Jajanga and Baitarani Reserve Forest in Keonjhar District in the state of Odisha. The lease area is consisting with three discontinuous blocks as Guruda, Joruri and Tiringpahar. The first renewal was for a period of 20 years from 01.03.1960 to 29.02.1980 over the same area of 643.710 ha. The second renewal was for a period of 20 years from 01.03.1980 to 29.02.2000 over an area of 643.710 ha. The application for third renewal over a reduced area of 169.000 ha. was made on 31.12.1998. The mining operations area thus continuing & confined within the applied area of 169.000 ha. as per the provisions of Rule 24A (6) of MCR-1960.

Subsequent to enactment of the MMDR (Amendment) Act, 2015, the lease period was extended till 31.03.2030 vide extension order no. 3278/S&M/Bhubaneswar dt. 18.4.2015 and Supplementary lease deed was executed and registered on 08.05.2015. Subsequently, the Final Mine Closure Plan (FMCP) was submitted for 474.710 ha to IBM and approved vide letter no. FMCP/OTFM/09-ORI/BHU/2015-16, dated 01.09.2016. The process of surrender of the balance area of 474.710 Ha is under progress with the State Govt.

Status of Environment Clearance

The project has previously obtained the Environmental Clearance from the MoEF vide etter no. J-11015/87/2004-IA II(M) dt 17.11.2005 for production @ 85000 TPA of Manganese Ore as per the EIA notification 1994. The public hearing for the project was held on 29.09.2004.

Status of Forest Clearance

The forest land within the ML area of 169 Ha consists of 133.174 ha Forest Land and 35.826 ha Non-Forest Land. Stage –II Forest clearance over an area of 52.348 has been obtained vide MoEF, Govt. of India letter no. 8-80/2004-FC, Dt.28.03.2007 and Stage-I clearance for balance forest area 80.826 ha by MoEF&CC vide letter F.No. 8-01/2019-FC, dated 02.08.2019.

Consent to Operate

The project has also obtained the Consent to operate for production level at 85000 TPA of Manganese Ore under Air (Prevention and Control of Pollution) Act, 1981 & Water (Prevention and Control of Pollution) Act, 1974 from State Pollution Control Board, Orissa. (Consent Order No.115, valid up to 31.03.2022).

Method of Mining

Tiringpahar Iron & Manganese Mine lease is operated over Guruda A & B block. Overburden and ROM are being removed by using shovel-dumper combination. The benches are being planned with 6 - 8 m high with width of 8 – 10m. The haul road having width of 10 – 12m with gradient of 1:16 has been assumed for designing of pits. Haul roads are designed to be 3 to 4 times the width of the largest haulage unit (for 2-way traffic) with extra width employed on the curves.

The ROM excavated from quarry is shifted to sorting yard by dumpers. Dressing, sorting and sizing of ROM is carried out at sorting yard by manual means under the supervision of mining supervisors. After dressing and sorting, different grade ores are kept separately at sorting yard to prevent contamination. To improve the output from the manual sorting section, screening facility has been installed in pit heads to segregate the lumps from the fines in the run of mine (ROM). Subsequently, the oversize lumps are only given to the sorting section because of which the productivity of the section has increased from 1.59 t/manshift to 2.50 t/manshift.

Mineral Rejects generated during dressing and sorting are transported to separate place for its storage for future use. Mineral fines generated during dressing and sorting are kept at sorting yard for future disposal.

Lump ore is then shifted to stacking yard from sorting yard by dumpers for stacking the ore in regular geometrical shapes and samples are collected and analyzed at our NABL accredited laboratory. Removal permission for dispatch is obtained from Mining & Geology Department of State Government

after stack verification. Thereafter, the stacks are dispatched to designated place as mentioned in the ore removal permission obtained.

Miscellaneous operations in the mine includes levelling of dumping yard, preparation and maintenance of haul roads, dozing of boulders from the mine face, loading of trucks at stack yard etc.

The same method of mining will continue with enhancement in the capacity of the crushing and screening facility from present levels of 75 TPH to 250 TPH.

Transport of mineral

Entire ore production is being transported by dumpers from the lease to the siding. Subsequently the same is transported by closed railway wagons to the final destination.

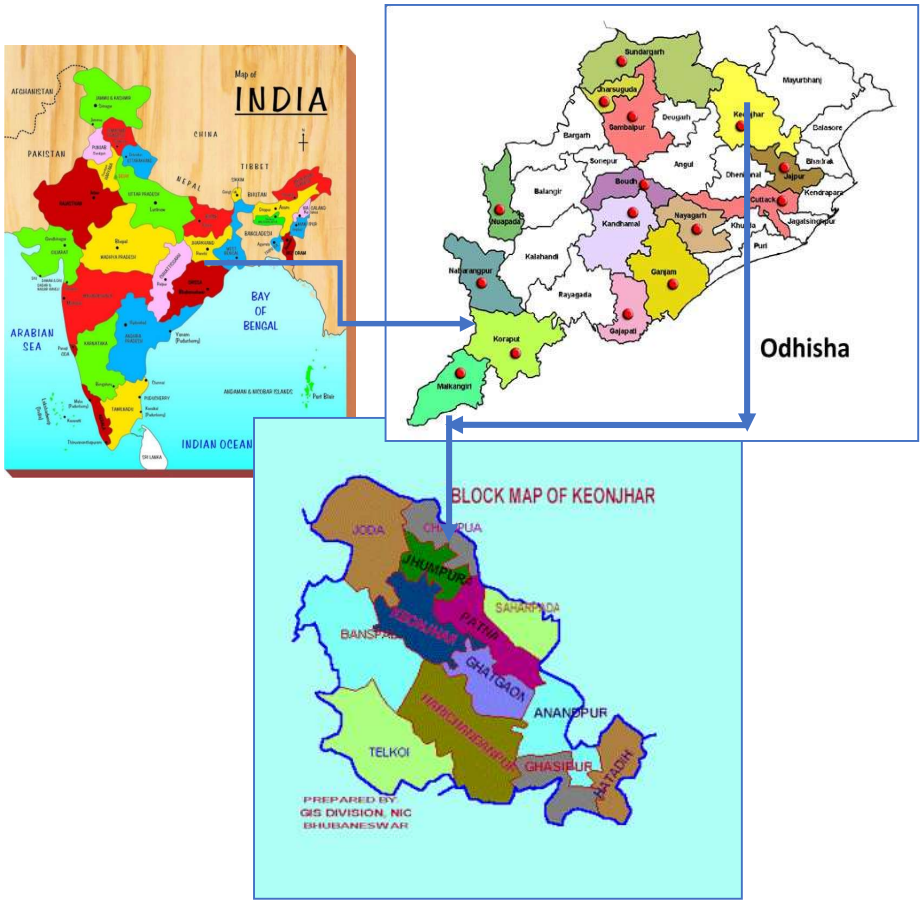
Abstract on Mine Impact:

The existing mining operations in the area have already brought about positive impact locally by way of employment generation, increase in income generation, creation of infrastructural facility, marked improvement in the life style and living standards of the entire tribal and scheduled caste population of the surrounding area. There will be continued substantial improvement in case of local population in living standards, receipt of per capita income, cultural patterns, living styles, educational standards, etc. The steel company has already carried out extensive beneficiary works, under its CSR responsibility. With the expansion in place, the activities related to CSR & environment will be further augmented and implemented for the benefit of the stakeholders in and around the mining lease area.

From the above it is evident that the project will continue to improve the social and physical infrastructural patterns in and around the mining leasehold area in its own way resulting in overall improvement in the quality of life of the stakeholders of the region.

Besides, the Central and State Government will also derive good financial benefits by way of receipt of DMF, GST, duties. In view of above aspects of the project, this expansion of the mine, can be said to be beneficial to the local community, the local region, the State and to the entire country overall.

Project Location:



Scientific Mining Process:

Drilling

Blasting

Ob and ore excavation

Loading

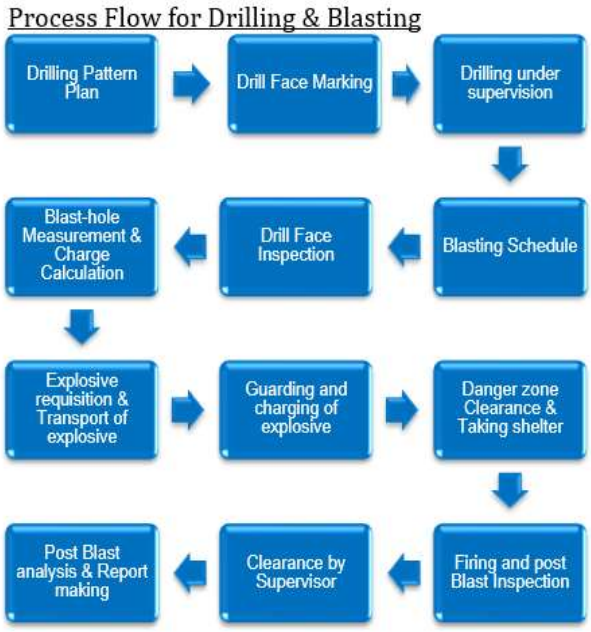
Sorting and sizing

Unloading

Stacking

Sample analysis

Controlled Blasting Practices



Drilling

1. Drill area entry point and edge barricading.
2. Wet drilling and dust collection provision in drill machine.
3. Drill hole covering by cut piece belt conveyor.
4. Helper less drill machine operation.

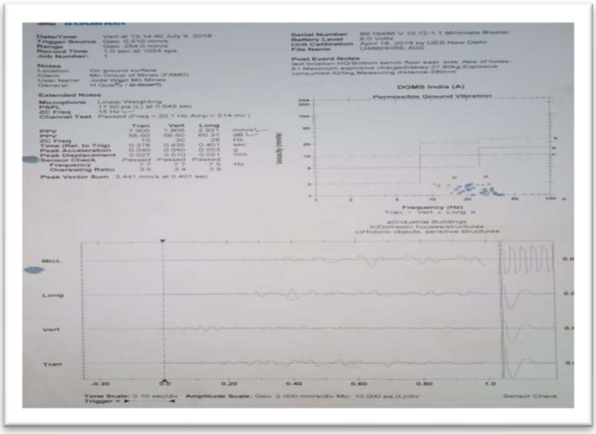
Blasting

1. Provision of separate vans for transport of explosive and detonator, Hooter, Mobile blasting Shelter, Vibrometer.
2. Muffled blasting by use of conveyor belt.
3. Deployment of armed security to ensure prohibition of florescent Jacket, any electronic gadget, unauthorized access in blasting area.
4. Engaged CIMFR for Blast Vibration study thrice in a year.
5. 24X7 security arrangement, CCTV surveillance, solar panel operated light, lightening arrestor etc in magazine.

Safety & Environmental Precautions During Drilling & Blasting

Ground Vibration Monitoring

Central Magazine for Storage of Explosive



Vibration Analysis

Blasting Shelter

Mining Machineries at Tiringpahar

2 Shovels of (Cap:1.6 m³ Volvo.)

13 Prima Dumper (Cap: 25 MT)

1 Front End Loader (Cap: 2.2 m³)

Drill with Inbuilt Water Injection

Best Management Practices:

Mine Haul Road

Mine Haul Road with Safety Berms

Effect of Regular Grading

Benches along Dump Slope

Key Features:

1. Strong Fencing (berm Beside Road)
2. Levelled road (Gradient 1 in 16)
3. Radius of curvature as per visibility, horizontal and vertical curve negotiation.
4. Provision of convex mirror at curve.
5. Road Signage has been provided throughout the road.

BEST ENVIRONMENTAL PRACTICES

Haul Road Dust Suppression Measures:

Grader for Haul Road

Grader for Haul Road

Fixed Sprinkling System

Mobile Mist Canon for Dust Suppression

Special Sustainable Projects (Central Facilities for Mn Group of Mines)

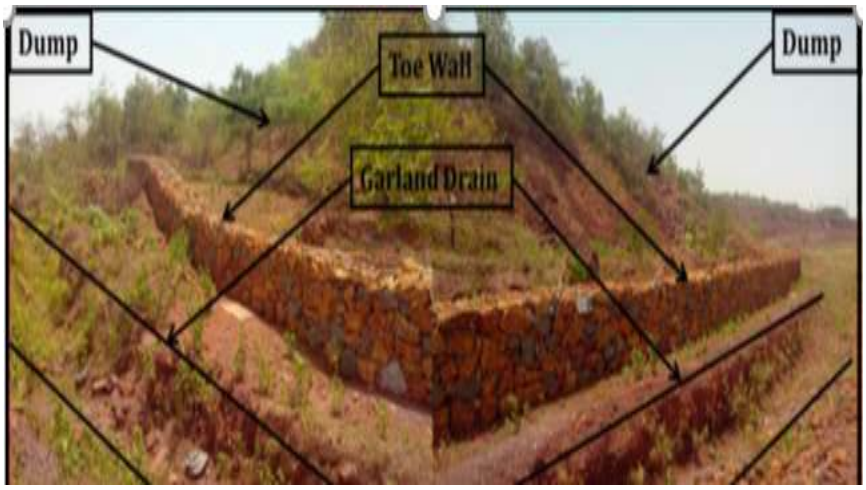
Vertiber Plantation-Slope

Solar Plant & Nursery

RWH-Pisciculture by SHG

Surface Runoff Management: Network of Garland Drains, Toe Wall & Rain Pass

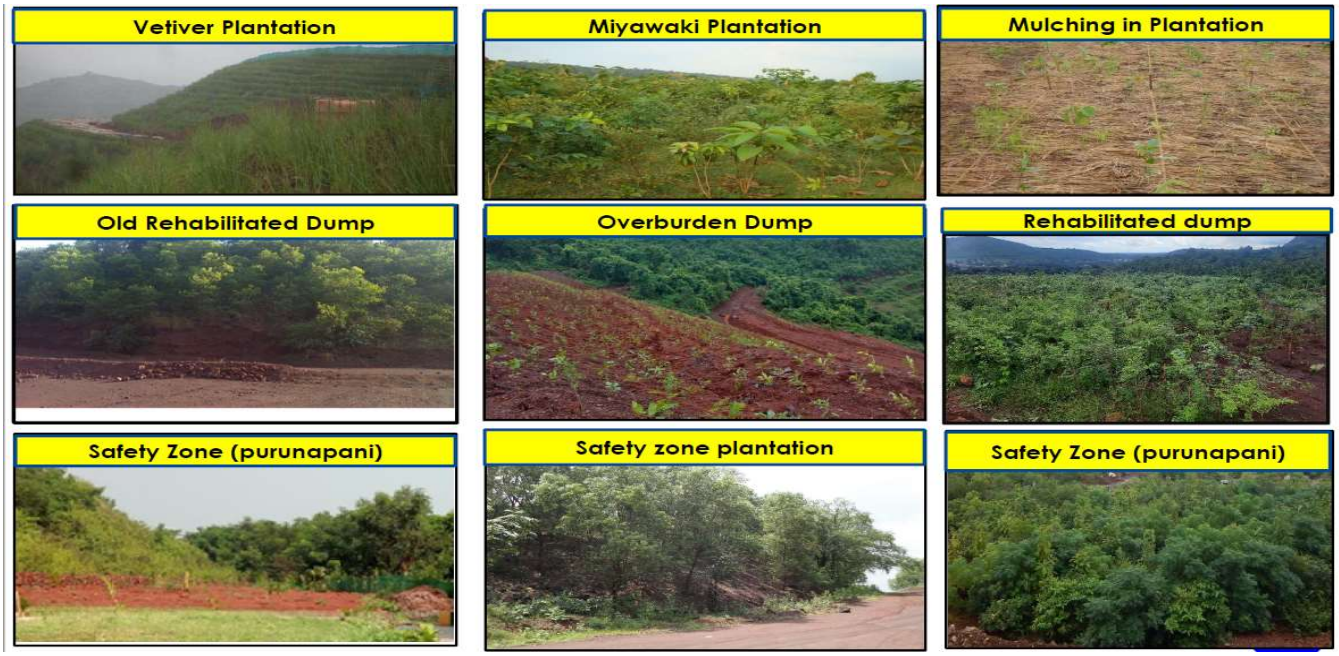


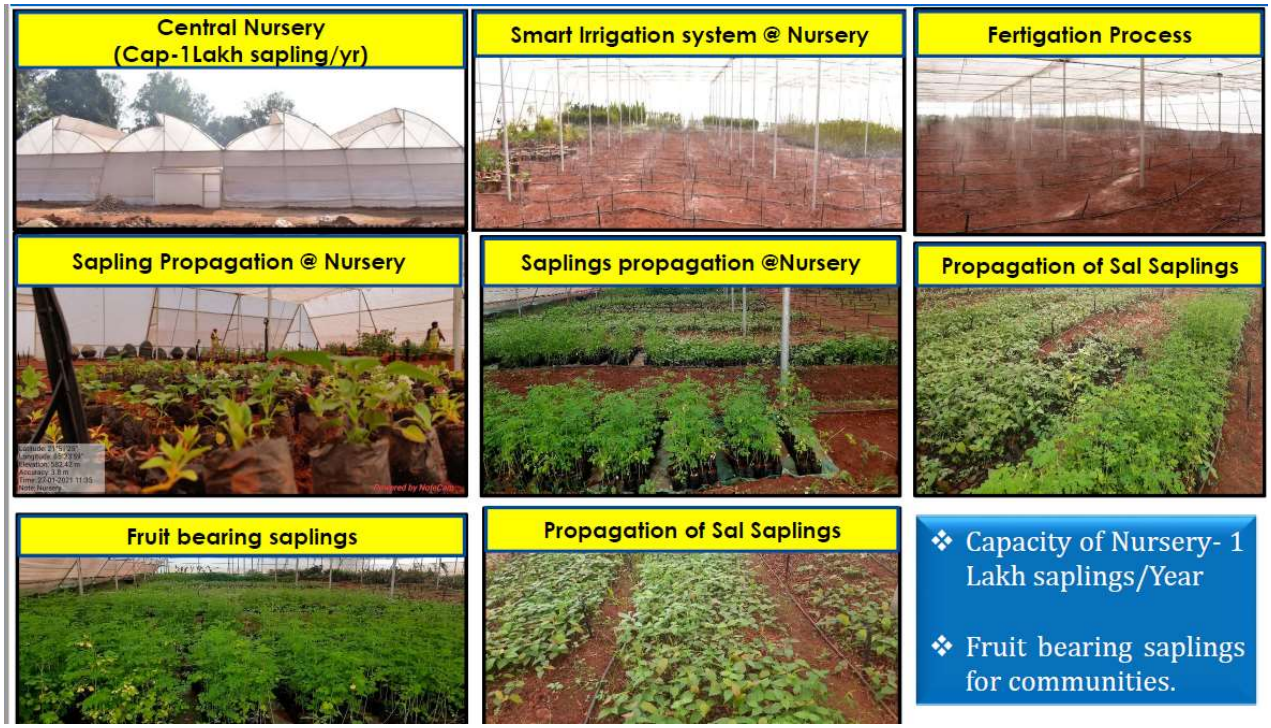

Toe Wall & Garland Drains for Runoff Management


Retention Wall & Rain Pass for Monsoon Preparedness

Greenbelt & Afforestation Measures:



Central Nursery at Mn Group of Mines



- Cost of Project: Rs.28.5Lacs
- Capacity of Propagation: 1 Lakh Saplings/Year
- Key Species under Propagation: Sal Trees
- Key Facilities: Automated Irrigation System
- Area under Nursery: 2000-Sq-mtr

Scientific Processes Adopted for Land Rehabilitation-Soil Condition

Lock-Key Arrangements

Lock-Key Arrangements

Mulching Arrangement

Leaf Mould Mulching

Seed Balls for Dump

Soil Nutrient Profile Assessment

CSR Footprint of the Project:

- **Mobile Medical health camps, Implementation of Maternal and Newborn Survival Initiative (MANSI)**
- **2 Residential BRIDGE Course (RBC) (133 Students) (1 boys RBC and 1 girls RBC)**
- **44 Learning Enhancement Programme LEP centers running under 1000 school project. Summer camp organized at 8 schools. (2767 students)**
- **Implementation of project RISHTA - Regional Initiative for Safe Sexual Health by Today's Adolescents, about 9311 young boys & girls get benefited.**
- **Development of toilets for >2000 people**
- **Construction of dug wells, bore wells, check dams benefits >20,000 people.**
- **Vocational training institutes: - There is a computer training centre running privately (NIITF) at Jurudi being sponsored by TSRDS.**

Solar Based Borewell

SRI and dryland farming

Football Tournaments

Drivina Trainina Center

Swachhta Awareness	MANASI Project
	
Agriculture Training	**Pisciculture @ Palsa**
	

----------End of Report----------