ENVIRONMENTAL BEST PRACTICES OF TATA STEEL LIMITED, JAMSHEDPUR

Sustainability is embedded in the business philosophy of Tata Group. India is a developing nation with relatively low geographical area and finite natural resources. As a result there are sustainability challenges associated with the current growth. Examining newer processes & technologies with green perspective before deciding business strategies, adoption of greener products, supply chain and services are part of the opportunities. Adoption of clean & green way of life is where future lies. This paradigm shift to green business offers an opportunity to review current practices and realign the way we live to ensure sustainable future. The Company has always focused on responsible environmental practices and responsible resource management while upgrading skills of workmen through training as technologies evolve. The completion of Jamshedpur Works’ brownfield expansion project will help Tata Steel add eco-efficient products to its portfolio while using fewer natural resources, less energy and less water per tonne of steel produced. To meet environmental standards, dust and other emission levels are monitored to ensure they stay within permissible
limits. The Company continues to invest in process and technologies that are more energy efficient and consequently CO$_2$ efficient. Tata Steel is committed to playing an active and constructive role in addressing climate change - both by reducing its own carbon footprint and by creating high-performance steels that will make it possible to produce lighter, more fuel-efficient vehicles and energy-efficient buildings. Having already halved the amount of energy needed to make a tonne of steel over the last 40 years, Tata Steel has set itself a target of reducing CO$_2$ emissions by a further 20% within the next decade.

**Rain Water Harvesting & Use of Renewable Energy**

Tata Steel has undertaken rainwater harvesting on an extensive scale at its Steel Works which would help the Works to utilize and conserve water in an eco-friendly
way. A total of 38 roof top rain water harvesting structures have been constructed so far in different buildings inside works for conserving and recharging rain water.

Renewable energy based lighting during 2013-14 included 300 LED lights installed resulting in savings of 15.2 KWH and ₹ 8 lakhs. 75 Solar street lights result in savings of 1.15 KWH. A rooftop Solar PV of 1 KW for the office and road lighting with LED lights to reduce electricity consumption by 4 KW were installed at the Jamshedpur Steel Works.

**Organic Composting Plant for canteen & Municipal waste**

Treated waste is collected from its 16 canteens, bio-mechanically, generates 400 Kg of mature compost per shift and is utilized for in-house
Greenery & Road Development in Tata Steel Works & Township

In FY 2013-14, approx. 11,000 nos. of trees were planted within Works.

- Reclamation of waste land in the Works area and greening of departments is being carried out regularly by Works Garden.
- Focus is on maintaining a balance between green and open areas with land used for human settlements.
• The Company imbibed the technology of using plastic waste in roads under Dr R Vasudevan Thiagarajar College of Engineering, Madurai. Plastic roads would be a boon for Jamshedpur's hot and extremely humid climate, where temperatures frequently cross 45°C and torrential rains create havoc.

**Implementation of Zero Waste Water Discharge**

The concept of zero effluent discharge aims at treating plant waste water, converting them to reusable quality and reusing them in the industrial process so that the fresh
water intake to industry is reduced and no waste water is discharged outside the industry boundary.

In Jamshedpur works, treated waste water is being discharged to the outside of plant boundary through five (5) major drains. The catch pit and recycling pump has been installed in 3 out of 5 major drains.

- Major part of collected effluent will be used for low end consumption after removal of suspended solid and oil/grease (both suspended and emulsified) and remaining part will be transferred to lower cooling pond
for further treatment in Common Effluent Treatment Plant (CETP).

- CETP to convert into clarified water with RO (Reverse Osmosis) and fed into the plant’s clarified water network. While developing the above scheme, due considerations have been given to meet the normal flow during non-monsoon season as well as to process the additional water during monsoon season.

- BOT treatment plant has been upgraded with latest technology i.e. AIS (Advent Integral system). Treatment Units consist of equalization and primary treatment, Biological and CN Treatment, Granular Media Filters and Granular Activated Carbon Columns.
Community Engagement

The importance of developing self-sufficiency on water was educated through community development wing of Tata Steel. Initial reluctance of the villagers was eliminated by educating them.

- About 1800 villagers trained every year regarding water conservation and scientific irrigation. Tata Steel has also educated nearby communities about the advantage of
drip irrigation system and helps them to adapt the same in an economical way. Over 800 villages have been covered so far by our CSR group.

- 6 no. check dam covering 29 acres have been developed in the hilly terrain to hold rain water for longer use. 54 irrigation wells covering 111 acres and 154 pond covering 1425 acres of area having 0.48 million cubic meter of water holding capacity have been maintained.

- Drinking water & sanitation facilities in the rural areas have been provided.

- Tata Steel has taken up initiatives to do Rain water harvesting in most of its housing
complex and schools within its township area and in 6 villages.

**Performance Highlights for 2013-14:**

**Air Pollution Control Performance**

Tighter specifications for Air Pollution Control Equipment have been adopted:

- New ESPs are designed for $\leq 30 \text{ mg/Nm}^3$
- New Bag Filters are designed for $\leq 10 \text{ mg/Nm}^3$
- All new equipment has been installed on stringent specification
- Work is in progress for up gradation of 58 existing Bag Filters and 12 existing ESPs to reduce particulate matter emissions.
Water Pollution Control Performance

- Water management infrastructure is under augmentation with the aim to achieve Zero Effluent Discharge. As of now, construction for catch pits and recycling infrastructure for 3 industrial effluent discharge points (out of total 5) have been completed.
- New wastewater treatment facility was installed and commissioned for new Coke Oven Battery in Coke Oven to treat organic & cyanide in wastewater with biological & chemical treatment.
- Rainwater Harvesting facilities installed in 8 Works buildings and at reclaimed waste
dump site in Jamshedpur (JMD) to supply water for green cover maintenance.

The effluent discharge has come down by 24% from 17.5 MGD in 2012-13 to 13.1 MGD in 2013-14.

Land Pollution Control through Waste Management

In 2013-14, the Online Slag Granulation facility at the Cast house of F Blast Furnace was replaced with modern technology for granulation, Mill Scale De-oiling facility has been commissioned to improve in-house waste utilization.
Surplus L.D. Slag is being stored in the new waste management facility operationalized in 2012 for future processing and usage. Work is in progress to setup processing infrastructure. The company continued to pursue

a. Collaborative initiatives with Cement companies for usage of L.D. Slag in cement making

b. Manufacturing of Paver Blocks using L.D. Slag to increase the utilization.

c. Waste utilization as percentage of waste generation increased from 86.7% in 2012-13 to 94% in 2013-14.

**Reporting & Participation**

- CSR as per GRI guidelines
- Participation in Carbon Disclosure Project
• New Energy and Industrial Technology Development Organization with aid from Govt. of Japan (GAP)
• Asia Pacific Partnership on Clean Development and Climate
• World steel Association
• IPCC
• National standard development Task Force etc.

Awards and Recognitions for 2013-14:

• Tata Steel won CII-ITC Sustainability Award in 2013
• Tata Steel has been adjudged the Best Performing Integrated Steel Plant in the country for the year 2011-12 under PM Trophy Award for Best Integrated Steel Plant
Tata Steel was declared “Climate Disclosure Leader” consecutively 2 years (2012 and 2013) by CDP based on the company’s disclosure score (85 in 2013, 73 in 2012 and 71 in 2010[1]). Tata Steel scored 85 in 2013 Climate Disclosure Leadership Index to be within top 20 companies from India.

• Recognition from World steel for five successive years as Climate Action Member

• Recognised by CDP as Climate Change Disclosure Leader