Supply Chain

Supply chain is a critical element in Tata Steel's value-creation process for ensuring on-time delivery of the right quality of raw materials, other goods and services to manufacturing locations, and finished products to the customers. Storage of semi-finished and finished products is a critical process with respect to timeliness of delivery, security and preserving quality.

Aiming for delivery compliance

Central warehouse at Jamshedpur

> 5,000
Supplier base

> 1,500
Number of local suppliers

Managing a Diverse Supply Chain

Supply Chain	SO2
KEY AREAS	• **Optimising inbound & outbound logistics network** • **Managing suppliers & channel partners**

Our major manufacturing locations are located in the eastern part of the country, in the states of Jharkhand and Odisha, while Profit Centres such as Wires Division, etc. and customer delivery points are located pan-India. To meet the delivery and quality requirements of customers, we have steel-processing centres and stockyards at strategic locations across the country to optimise the delivery time and cost. Our captive iron ore mines and collieries are located at sites around Jamshedpur and Kalinganagar.

- While railways are the most preferred mode of transportation in India from an environment point of view, it is wholly owned by the Government, which allocates the wagons to various agencies in the country. For the raw material segment, we are totally dependent on the Indian Railways for inbound transportation. We have closed-circuit rakes running between the captive mines, ports and manufacturing locations. We are one of the first in the steel industry to capitalise on incentives by the Indian Railways – Special Freight Train Operator (SFTO) Scheme and long-term tariff contract.

- The road conditions are not ideal for transportation of high-end steel products, which have to travel as far as 1,700 kms from the manufacturing locations to pan-India. Inland waterways in the country are in the early stages of development. Hence, it is not an open option at this stage, even though it is the most environment friendly mode.

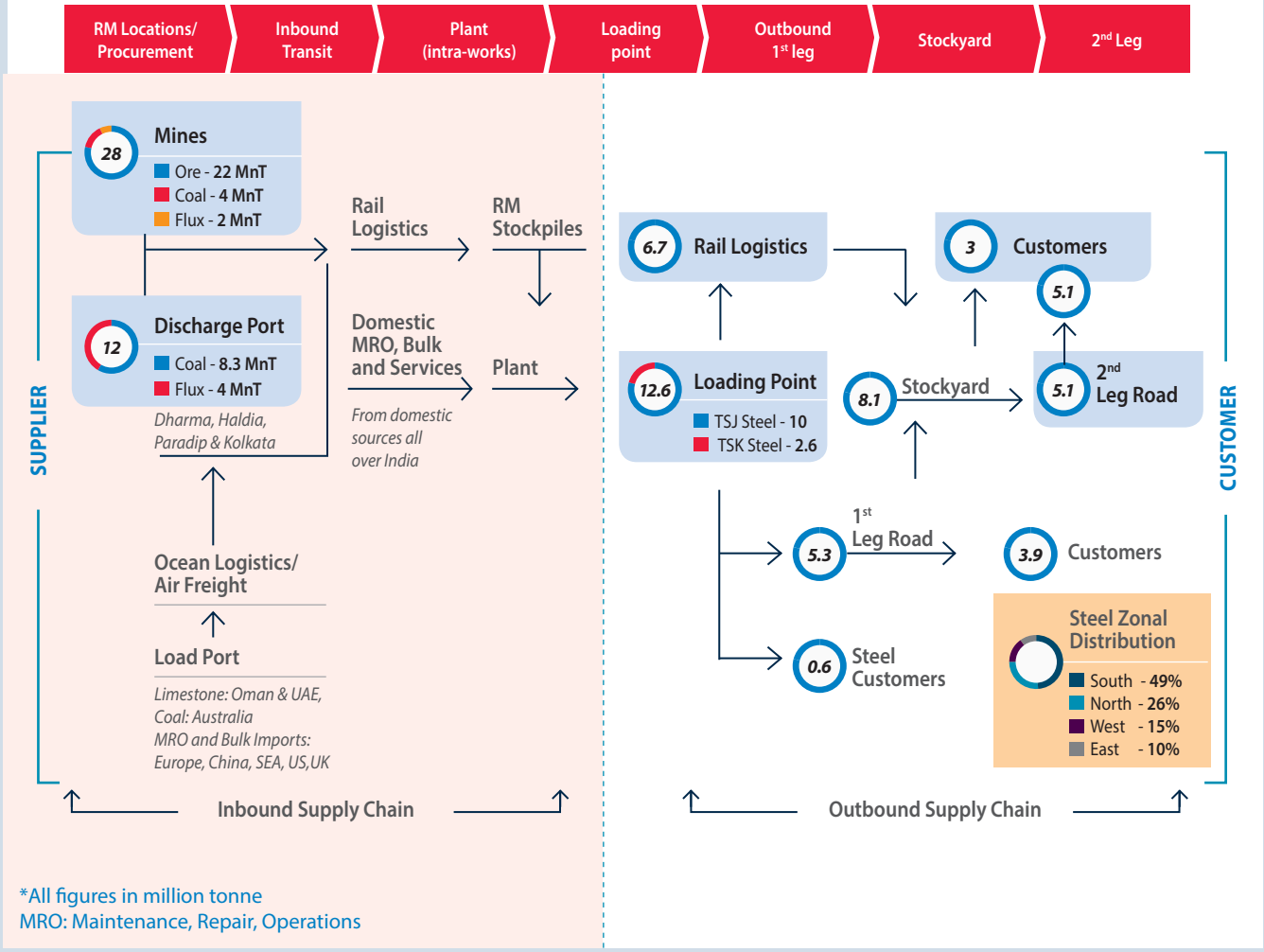
Therefore, we need to adopt multiple modes of transportation, taking into consideration the above constraints, aiming for the best possible delivery compliance and cost while taking utmost care of safety and the environment.

In FY 2017-18, Tata Steel imported almost 8.3 Million Tonnes (MnT) of coal from Australia, New Zealand, and North America, Canada/US and CIS; 4 MnT of fluxes were imported from the Middle East and Vietnam.

- Tata Steel plays a pivotal role in ensuring close co-ordination and planning between overseas miners, load ports, ship owners, port authorities in India, the Indian Railways and our plants receiving the raw materials. We are one of the first major steel manufacturers to initiate the deployment of energy-efficient and environment friendly vessels for ocean transportation.

With increasing focus on environment and on de-risking our supply chain from emerging regulatory and other climate change risks (Refer R3 and R6 on Page 30-31), we are now enhancing our focus on a Green Supply Chain and exploring the concepts of third-party logistics, modern state-of-the-art warehouses, use of energy-efficient and newer design eco-friendly ships, coastal shipping to reduce landside tonne miles and use of digital meals to simplify the cargo flow of raw materials and other bought-out goods (maintenance repair operations, bulk, etc.) and services. We ensure the implementation of Human Rights throughout the supply chain. The schematic depiction of our supply chain with the flow of materials is shown below:

For one tonne of finished goods, the total movement in the supply chain circuit is ~4 tonnes inclusive of raw material



*All figures in million tonne
MRO: Maintenance, Repair, Operations

Key Enablers and Initiatives*

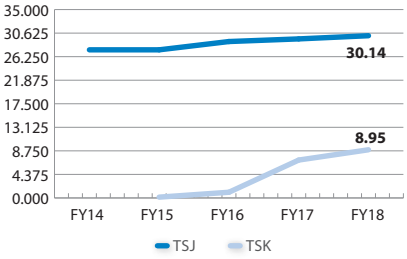
	PROJECT DESCRIPTION	IMPACT
1	**Reduction of carbon emissions by hiring at least 50% vessels with GHG emissions rating of class A to D**	Almost 65% vessels hired of GHG class A to D. Average grams of CO_2 emissions per tonne nautical mile for vessels hired by Tata Steel in FY 2017-18 was 4 gm as compared to the global average of 10.9. **
2	**Reduction in the consumption of wooden dunnage used in FG steel dispatch by introducing SFTO rakes with inbuilt saddles**	• Wood savings of 80,352 cu. ft. every year for ~8,498 number of coils by eliminating the use of wooden dunnage, thereby reducing adverse environmental impact. • Enhanced delivery quality and savings of ₹3.3 Cr. in FY18.
3	**Develop and increase business with underprivileged and DP (Displaced) Vendors**	Development of the few first-generation entrepreneurs from the underprivileged section of the society with a business volume of ~₹80 Cr.
4	**Implementation of the Solid State Interlocking (SSI) system to improve safety in rail network**	• Cabin-operated rail traffic through control panel. • This also resulted in savings of ~₹1 Cr. in manpower productivity and ~₹25 Cr. on rail penal charges
5	**Implementation of Engine on Load (EOL) concept in raw material circuit for the first time in the steel industry**	• Throughput of rolling stock increased by 40% ensuring raw material security • Avoidance of one-time Capital Expenditure (~ ₹80 Cr.) with recurring savings of ~₹15 Cr. through better loco fleet utilisation • Improved safety performance: (Zero Loss Time Injury (LTI) and Reduction in derailment by 50%)

Pan-India retailer reach and a network of service partners in key consumption centres provide a unique competitive advantage to the TSL market

Plant Warehouses	**Jamshedpur and Kalinganagar**
Hubs	**6 (Delhi, Faridabad, Kolkata, Nagpur, Vijayawada, Chennai)**
Stockyards	**18 (pan-India)**

Key Facts

- 100% fleet covered by vehicle tracking system
- Judicious mix of rail (~60%) and road (~40%) movement (cost effective and timeliness)
- 150 sales officers in 26 locations (customer account managers for relationship building and ensuring service)
- 193 distributors, 1,500 distributors' feet, 11,883 dealers (strong network across India) reaching out to ~650 districts (95% coverage)
- Theory of Constraints (TOC) supply chain implemented in all product categories for retail sales (central warehouse enabled)
- Local/ customised production enabled by 24 Steel Processing Centres (SPCs) across Steel and Profit Centres
- Company distributor owned service centres for last point processing

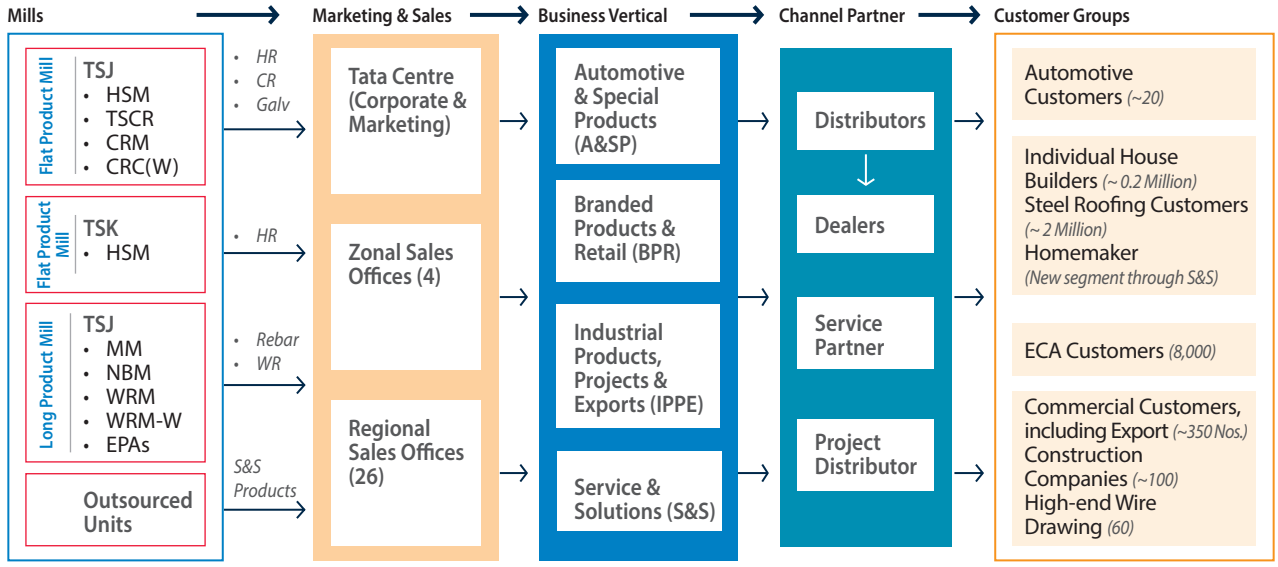


Raw Material handled (MnT)

* Selected projects. Not comprehensive.

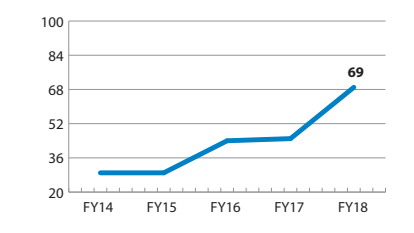
** Source: BIMCO (Baltic International Maritime Council) and Rightship – a Maritime Risk Management and Environmental Assessment Organisation.

Route to market has been designed to bring in user segment focus

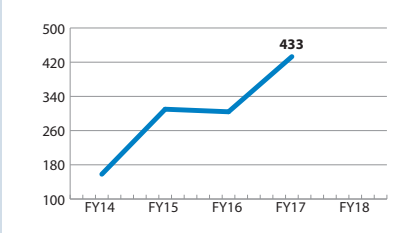


HSM: Hot Strip Mill **TSCR:** Thin Slab Caster and Rolling **CRM:** Cold Rolling Mill **CRC(W):** Cold Rolling Complex (West) **MM:** Merchant Mill
NBM: New Bar Mill **WRM:** Wire Rod Mill **HR:** Hot Rolled Steel **CR:** Cold Rolled Steel **GALV:** Galvanised Steel

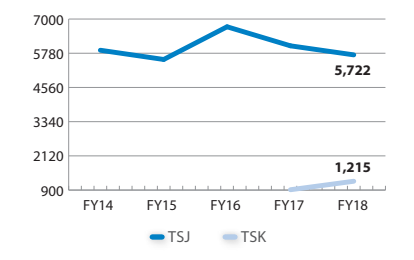
Our Performance



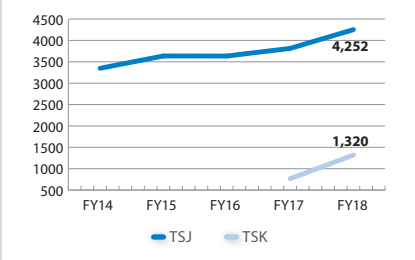
Number of underprivileged suppliers (Suppliers from the Scheduled Castes and Scheduled Tribes Community) (No.)



Suppliers trained through Vendor Capability Advancement Programme (VCAP) (No.)



Outbound despatch volumes: Rail (TSJ and TSK) (kT)



Outbound despatch volumes: Road (TSJ and TSK) (kT)

Supply Chain

Way Forward

- Network optimisation for improving the reliability and cost performance of the supply chain
- Asset-light and agile growth through utilisation of Private Freight Terminals (PFTs)
- Coastal steel shipping as a de-risking mechanism, for reduction in transport-related CO_2 emission and ensuring sustainable supplies for our customers in South and West India
- Connecting North-East India through barge transport on inland waterways from Kolkata/Haldia through Bangladesh – this route would avoid long-winding and expensive truck routes to North-East India
- Economic speed management of vessels whenever and wherever possible – close co-ordination by all entities in the supply chain