

# GROWTH AND SUSTAINABILITY OF STEEL INDUSTRIES IN THE STATE ODISHA

Sunita Routray<sup>1</sup> & R. Bhima Rao<sup>2</sup>

<sup>1</sup> Mechanical, C V Raman College of Engineering, Bhubaneswar, (India)

<sup>2</sup> Civil, Aryan Institutes of Engineering and Technology, Bhubaneswar, (India)

## ABSTRACT

*The paper deals with the challenges faced by different steel industries in the country and the favorable mineral reserve of the state Odisha, which attract many mining and metallurgical companies to set up steel industries. In this paper, some existing and future steel industries are discussed, which will help the country in its economic growth.*

**Keywords:** Steel Industries, State Odisha, RSP, NINL, Tata Steel, POSCO

## I. INTRODUCTION

The Indian steel industry is one of the most promising industries in the country and across the world. Consumption of steel is an important indicator of economic progress of any country; it increases with an increase in demand for infrastructure, automobiles, transportation, etc. India is blessed with a rich bed of iron ore and steel in mainly eastern parts of the country like Odisha and West Bengal, which contribute to more than 70% of the total steel production. In our country, the iron and steel industries face some of the major challenges for their sustainability.

Iron and steel industry requires large capital investment which a developing country like India cannot afford. Many of the public sector integrated steel plants have been established with the help of foreign aid. The per capita labour productivity in India is at 90-100 tonnes which is one of the lowest in the World. The labour productivity in Japan, Korea and some other major steel producing countries is about 600-700 tonnes per man per year. At Gallatin Steel a mini mill in the U.S. there are less than 300 employees to produce 1.2 million tonnes of hot rolled coils. A comparable facility in India employs 5,000 workers. Therefore, there is an urgent need to increase the productivity which requires retraining and redevelopment of the labour force. Most of the public sector units are plagued by inefficiency caused by heavy investment on social overheads, poor labour relations, inefficient management, underutilisation of capacity, etc. This hinders proper functioning of the steel

plants and results in heavy losses. The potential utilisation in iron and steel is very low. Rarely the potential utilisation exceeds 80 per cent. This is caused by several factors, like strikes, lockouts, scarcity of raw materials, energy crisis, inefficient administration, etc. Although India has huge deposits of high grade iron ore, her coal reserves, especially high grade cooking coal for smelting iron are limited. Many steel plants are forced to import metallurgical coal. Lack of modern technological and capital inputs and weak infrastructural facilities leads to a process of steel making which is more time consuming, expensive and yields inferior variety of goods. Such a situation forces us to import better quality steel from abroad. Thus there is urgent need to improve the situation and take the country out of desperate position.

The state Odisha (formerly known as Orissa), is situated on the eastern part of India. It is highly rich with mineral reserves, which constitute 28% Iron ore, 24% coal, 59% Bauxite and 98% Chromite of India's total deposits. Iron ore is the most important raw material of the steel making process comprising about 5% of earth's crust. The ore minerals do not occur in pure form, always being associated with varying amounts of silica, alumina, phosphorus, sulphur.

In Odisha the minimum iron content of ore that is being mined at present generally 58% and it is essentially hematite with minor proportions of goethite. The iron ore bodies are considered to be products of surface alterations of Banded Hematite Jasper (BHJ), the percolating surface and ground water leaching out the silica and fortifying the BHJ with additional iron. The iron ore deposits of the state occur in five distinct geographic zones: Bonai-Keonjhar, Gandhamardhan, Tomka-Daitari, Gorumahisani-Badampahar and Hirapur. Out of these zones the main iron ore deposits of the state are found along the classic Bonai-Keonjhar horse-shoe shaped iron ore synclinorium in which the tops of iron contain high grade deposits.<sup>[1,2]</sup>

Estimation of iron ore deposit in Odisha has so far been confined to hematite and goethite containing minimum 56% iron. The Odisha state has about 30% of the country's resources of hematite ore. The Keonjhar district is alone contributing 75% reserve of the state. Next is Sundergarh district with about 22% reserves of the State.<sup>3</sup>

Another most important raw material for steel making is iron and the state has two major coal bearing area which are currently being exploited, namely Talcher and the Ib valley.

The State's comparative advantage on this account has attracted the attention of many mining and metallurgical companies to set up steel industries.

## II. EXISTING STEEL PLANTS IN ODISHA

The Government has taken proactive measures to attract investments by creating the concept of “Team Odisha ” that encompasses the broad institutional framework of the Government which is engaged in industrial facilitation and investment promotion in all key areas of economic growth. IPICOL is the state level nodal agency for Investment Promotion. It also functions as the single window agency for clearance of investment proposals.

In addition to the existing steel plants at Rourkela (SAIL), Kalinga Nagar (NINL, JSL and MESCO) and Meramunduli (Bhushan Steel& Strips Ltd.), the State Government has signed MoUs with many National & International steel companies for establishment of new steel plants in the State. Some of the steel plants are shown in Fig 1.

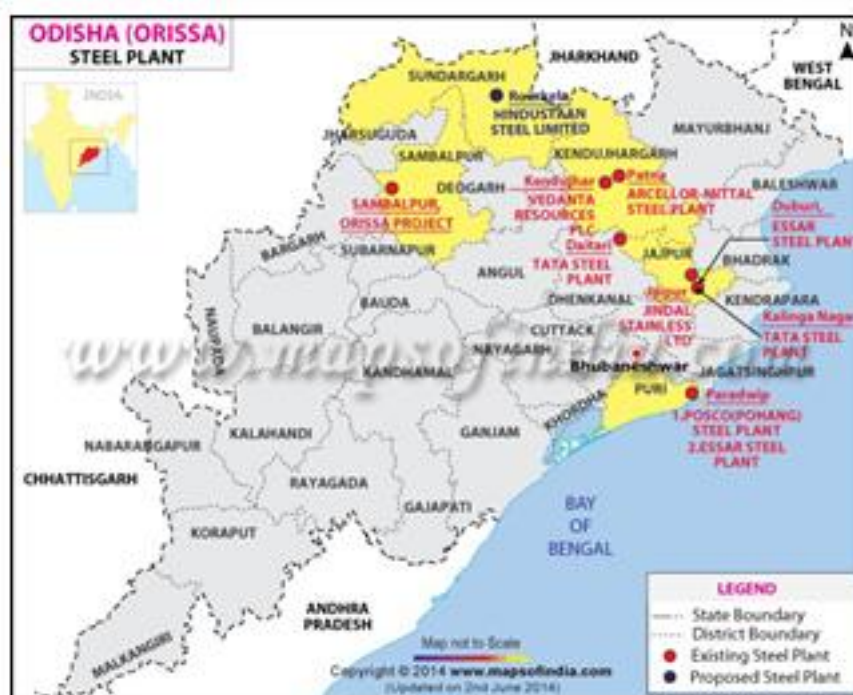


Fig 1. Some of the steel plants in the state Odisha <sup>[4]</sup>

Rourkela Steel Plant (RSP), the first integrated steel plant in the public sector in India, was set up with German collaboration with an installed capacity of 1 million tonnes. Presently it has the capacity to produce 2 million tonnes of hot metal, 1.9 million tonnes of crude steel and 1.67 million tonnes of saleable steel.<sup>[5]</sup>

Neelachal Ispat Nigam Limited (NINL), a company promoted by MMTC Ltd. and IPICOL has set up a 1.1 million ton Integrated iron and steel plant at Kalinganagar. Presently the main products are pig iron and LAM (Low Ash Metallurgical) coke along with nut coke, coke breeze, crude tar, ammonium sulphate and granulated

slag. The envisaged products in future are billets, bars and wire rods of different grades and sizes. NINL has its own captive power plant to meet the internal power requirement. It has become India's largest exporter of saleable pig iron since 2004-05.<sup>[6]</sup>

Jindal Stainless (JSL) at Jajpur is a fully integrated stainless steel plant. The plant has production facilities for 2,50,000 tpa Ferro Alloys, 4,30,000 tpa Coke Oven, 250MW Captive Power Plant, 1Mtpa stainless steel Melt Shop, 1.6Mtpa Hot Rolling Mill and 0.95 Mtpa Cold Rolling Mill and are in operation progressively since year 2005.<sup>[7]</sup>

Bhushan Steel& Strips Ltd at Meramunduli has the capacity to manufacture 2.0 MTPA of HR coils, 0.3 MTPA of billets and power generation capacity of 110 MW. This plant is a source for vivid variety of products such as Cold Rolled Closed Annealed, Galvanized Coil and Sheet, High Tensile Steel Strapping, Colour Coated Coils, Galume Sheets and Coils, Hardened & Tempered Steel Strips, Billets, Sponge Iron, Precision Tubes and HFW/ERW Pipe.<sup>[8]</sup>

### **III. GROWTH OF NEW STEEL PLANTS IN STATE**

In near future some of the new steel plants are going to be commissioned in Odisha.

#### **3.1 Tata Steel**

Tata Steel to commission first phase of Odisha plant by March 2015. The state-of-the-art, Kalinga nagar Project is being established in two modules of three million tonnes each. The plant, which boasts of the Blast Furnace of 4330 cum capacity, will roll out high-end flat products.

During the first phase, the Blast Furnace will have a capacity of 3.3 Million Tonnes Per Annum (MTPA) of hot metal and the Coke Plant will have a capacity of 1.65 MTPA (recovery type oven). While the Sinter plant will have a capacity of 4.91 MTPA, the Steel Melting Shop (SMS) and the Hot Strip Mill (HSM) will have capacity of 4.1 MTPA and 3.5 MTPA, respectively.

The project will have a 3X67.5 MW gas-based Captive Power Plant. New technologies like Granshot Systems & CAS OB (Composition Adjustment by Sealed argon bubbling with Oxygen Blowing) will be introduced in the plant for steelmaking. The plant is also designed for Zero Liquid Discharge, Waste Recycling Plant and Central Effluent Treatment Plant. The plant will be having its captive power generation, raw material handling facilities, railway lines, connectivity with port, etc.

While the civil work is almost completed, the structural and erection work is going on at an enviable pace. The project achieved major milestones during 2013. These included substantial handovers and completion of

civil work and new erection work in several areas. By March 2014, concreting of 12.60 lakh cubic metres, structural erection of 1.64 lakh metric tonnes, structural fabrication of 2.12 lakh metric tonnes and equipment erections of 48,400 metric tonnes were completed. All mission critical plants like power plant, coke oven, sinter plant, blast furnace, steel melting shop and hot strip mill are fast moving towards completion.

The designing of the plant has been done with an emphasis on recycling waste. While waste gas from the coke oven and blast furnace will be fuelling the power plants thereby reducing dependence on fossil fuels, slag from the blast furnace will be supplied as raw material to cement manufacturing units in the nearby areas. A zero liquid discharge plant, the waste water will be processed in an effluent treatment plant and recycled for use in the plant. <sup>[9]</sup> Fig. 2 shows the pictorial view of Kalinganagar project.



*Fig 2. Kalinganagar project , Odisha, India*

### **3.2 POSCO-India**

POSCO-India Private Limited is a subsidiary of POSCO, the world's fourth largest steel producer and one of the most competitive steel companies in the world.

POSCO signed a Memorandum of Understanding (MoU) with the Government of Odisha in June 2005, to set up a 12 MTPA green field steel plant near Paradip, Jagatsinghpur District, Odisha, with an estimated investment of USD 12 billion. But the project is yet to see the light of the day due to many outstanding issues.

After nine years, a ray of hope is seen after Prime Minister Narendra Modi assured to put the much delayed project on track. The Chief Minister of Odisha, Sri Naveen Patnaik also said that the government is doing its best to sort out the environment and rehabilitation problems to initiate the large projects in the state.

Hence, if the POSCO becomes operational, the state Odisha will increase its steel producing capacity by 4

million-tons per annum after the completion of first phase of project and by 12 million tons per annum after completion of final phase.<sup>[10]</sup>

#### **IV. FUTURE SCOPE**

Because of vast iron ore reserves and other dependent raw material availability, the future scope seems to be very bright for steel manufacturers in the state Odisha.

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