

Rating Methodology - NON - Ferrous Metals

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Industry Overview

Any kind of metal which does not contain Iron (Fe) is a Non-Ferrous Metal (NFM). Since it doesn't contain iron, it means most of the NFMs also have the characteristics of being Non-Magnetic and resistant to corrosion (rusting). The NFM industry largely comprises of base metals like Aluminium, Copper, Zinc, Lead, Nickel, Tin, and even precious metals like Gold & Silver. Furthermore, rare metals such as Cobalt, Mercury and Tungsten etc. are also a part of the NFM industry. This paper focuses on the four widely used base metals comprising Aluminium, Copper, Zinc and Lead.

Apart from being corrosion resistant, other distinguished characteristics like excellent thermal and electrical conductivity, high strength to weight ratio and qualities of being highly recyclable have over a period of time increased the usage of NFM. Increasing usage has resulted into a steady increase in the size of the industry, both globally and in the domestic market. While China leads globally in terms of production and consumption, India is not behind and has been progressively increasing its capacity for most of these metals. The Indian primary NFM combined capacity now stands above 6.0 million tonnes per annum (MTPA), which has not just resulted into India being self-sufficient in terms of NFM manufacturing capacity, but for some of these metals, India has now achieved the status of being a net exporter as well.

Although commonly referred to as base metals or NFM, these metals are quite distinct from each other having their own uniqueness when it comes to end-usage consumption. While aluminium & copper are widely used in electrical, automobiles, consumer durables and construction sectors, zinc is used for galvanizing and coating, whereas lead is majorly consumed for manufacturing batteries.

Each of these metals has their own demand-supply dynamics and cost of production leading to fundamental price discovery of these metals. However, unlike the steel industry, which is averse to exchange driven pricing, all the non-ferrous base metals prices are derived through the exchange traded mechanism. Globally, the London Metal Exchange (LME) is one of the oldest and highly traded exchange which derives the benchmark prices for most of these non-ferrous metals. Being globally traded and having higher standardization as compared to steel, the domestic prices of non-ferrous metals are directly linked to the global prices based on the landed-cost parity.

Non-ferrous metals are manufactured through two routes - primary and secondary. The secondary route means manufacturing from scrap, while the primary route refers to manufacturing from ore. The Indian, primary non-ferrous metals industry is highly concentrated with not more than three players each in aluminium and copper smelting and only one player manufacturing zinc and lead through the primary route. Despite having very few players in the primary market, the industry continues to remain the price taker owing to the globally traded nature of the business.

The industry remains of high importance to the economy due to the job opportunities it creates. Furthermore, it makes the economy reasonably self-sufficient and can potentially control the cost of production of its end-user industries.

Rating Methodology

The Rating Methodology emphasises on the approach followed by CARE Ratings (CARE) while rating entities engaged in the Primary NFM manufacturing industry. In addition to the criteria followed for manufacturing companies, this paper deliberates on the additional industry specific parameters impacting the credit profile of the primary NFM manufacturing companies. Such additional factors considered by CARE Ratings, along with their analytical implications, while arriving at the rating of a company engaged in the Primary NFM manufacturing have been discussed below.

A. Industry Risk:

As NFM is a globally traded commodity, it is highly sensitive to changes in the economic cycle. The industry is equally influenced by global, rather than just domestic dynamics. CARE Ratings' analysis of the industry risk focuses on the current global economic scenario, demand-supply situation; cyclicity associated with the industry, any regulatory policies and the trend in global prices for raw material and finished good products.

Non-ferrous metals find their application in households as well as in industrial activities. Owing to the globalized nature of the industry any change in the macroeconomic indicators domestically or globally directly influence the demand for the commodity and thereby the prices. Apart from the demand-supply factors, the sentiments of the market also lead to significant volatility in most of the NFM prices. Significant volatility in commodity prices is not good for any economy in the world; hence one has to also closely monitor any regulatory changes/ measures adopted by the governments in order to reduce/contain the impact of volatility in commodity prices on the economy.

For analysing the industry risk of the NFM industry, CARE Ratings monitors the following parameters at the global and domestic level

- Trade activity and economic cycle
- Demand-supply scenario
- Price trend for raw material and finished goods
- Inventory position
- Regulatory changes
- Substitution risk (if any)

B. Business Risk:

After analysing the industry risk, the business risk of the entity is assessed by CARE Ratings in order to understand its position within the industry. The business risk is a combined factor of the market position of the entity and its operating efficiencies vis-a-vis other players within the industry.

i. Market position:

CARE Ratings considers market position to be an important factor in the analysis of primary NFM manufacturing companies. The position and strength of the company as against other global NFM manufacturing companies are considered, since the commodity is traded across boundaries. In addition, CARE Ratings also considers the relative scale of operations and downstream product diversity, which would help counter competitive pressures exerted by other NFM manufacturing companies.

Size and Market Share:

Given the huge outlay required owing to the capital-intensive nature of the industry, having a widespread presence and large scale of operations is important as the scale and size determines a manufacturer's ability to distribute fixed costs over a larger base.

A significant market share ensures greater network efficiency, better utilization of assets and scale advantages.

CARE Ratings analyses the relative position of an entity including a peer group analysis. CARE Ratings also analyses the strategic initiatives undertaken by the entity to maintain/increase its market share. An entity's current market share and the trend in market share in the past are important indicators of the competitive strengths of the entity. A sustained dominant position leads to better revenue visibility and cash generation capability over the long term.

Geographical diversity:

Generally, the entities having geographical diversification are viewed favourably as it partially insulates them from regional economic cycles and demand-supply divergence. Entities having a balance of domestic & exports markets are in a better position to meet the challenges arising from decline in demand in a particular country, adverse changes in duty structure, imposition of trade restrictions or political instability in a particular region. CARE Ratings considers geographical diversification as credit strength for NFM manufacturing entities.

Downstream product diversity:

In the primary NFM manufacturing industry, product diversity majorly refers to downstream product diversity. It means manufacturing value-added products (flat products, extrusions, foils, wires, rods etc.) as required by the end-user industry as against manufacturing basic metal (ingots) which is highly commoditised. Downstream product manufacturing not only results into garnering higher Net Sales Realization (NSR), but also ensures significant volume off-take which is very crucial as it ensures optimum capacity utilization of the plant. Furthermore, manufacturing of value-added products not only ensures higher NSR, but also results into increase in profitability. Ability to manufacture various downstream products also enables such manufacturers to have a higher flexibility to adjust to the changes in the demand for various products. Such entities, with end-to-end control over the value chain are considered to be superior to others who manufacture merely the base metals.

ii. Operating Efficiencies:

Operational efficiency directly impacts the profitability of any entity and profitability is the key to long-term sustainability of all such entities involved in the manufacturing activity of highly commoditised products such as NFMs.

Operating efficiency and effective cost controls play as a differentiator while assessing the credit quality of a NFM manufacturing company. Being in price taker, cost of production and not realization determines the level of profitability for these manufacturers. Various factors that determine the cost of production for NFM manufacturing companies are as follows:

Raw material criticality

For each metal manufactured, there is a critical raw material which is required. Bauxite is required for aluminium, copper concentrate for copper and zinc ore for zinc. Besides basic ore, the manufacturing process also involves usage of various other raw materials, which form a part of the critical raw materials list.

Any primary metal manufacturing process involves significant heating activity, which results into melting of ore and extraction of refined metal. This process consumes significant energy resource and so for most of these metals, coal/gas or any energy fuel may also form a part of the critical materials required.

Companies with assured supply of critical raw materials, either in the form of captive mines or long-term supply contracts or having linkage agreements, are considered favourably by CARE Ratings. The availability of critical raw materials in a desired quality significantly impacts the overall cost of production for the company.

Energy cost

Power or energy cost accounts for around 10-35% of the total cost of production for manufacturing different NFM. Energy is virtually consumed in every stage of production, right from mining to beneficiation to transportation to refining to smelting and further to value addition. Aluminium production requires around 14,000-15,000 kWh of power to produce a tonne of the metal, similarly, zinc manufacturing consumes around 3,500 kWh of power. CARE Ratings views NFM manufacturers who not only have captive power plants (CPP) but also have captive energy source or linkage energy supply as superior to other manufacturers not having such CPP. CARE Ratings considers ability to keep power costs down as a critical parameter of operating efficiency.

Technology and asset quality

Production technology does play a vital role in containing the cost of producing the metal. Innovative technologies have emerged which have resulted into substantial improvement in the operating efficiencies of manufacturing companies, be it reduction in energy consumption, maintenance capex, reducing wastage, waste heat recovery, continuous process to value added products etc. This has resulted into cost reduction and hence improvement in profitability of the entities who have adopted/upgraded to these technological changes. In addition to the above, automation at the manufacturing unit has also resulted in improving the productivity by achieving higher operating rates which has resulted into reduction in the overall fixed cost of production. CARE Ratings views usage of modern technology/upgradation of the plant as a rating strength. Furthermore, state of the asset or the asset quality also remains a critical monitorable, since older plants/outdated technology may incur substantial replacement/modernisation cost.

Location of the plant

The modal mix of Indian logistics industry is significantly unfavourable and hence it is important to control the logistics' cost, which accounts for around 5-15% of the total cost of production for the NFM manufacturing companies. The higher the share of road/railway vis-à-vis waterways/pipelines may result into higher logistics cost.

To manufacture a tonne of aluminium around 7-8 tonnes of raw material is required (including 6 tonnes of bauxite). Same is the case for other NFM. The bulky nature of raw materials makes it imperative that the location of the plant is nearer to the source of the raw material, which will help reduce the logistics cost. Companies whose plants are close to the sources of raw material are likely to have an advantage in terms of transportation cost, lower wastage, inventory holding period and therefore the working capital cycle. CARE Ratings views favourably those companies who are able to minimise their cost of transporting of raw materials.

C. Promoter and Management Risk:

Primary NFM manufacturing is a highly capital-intensive sector and needs huge investments to fund any capex plans (greenfield/upgradation or modernisation/expansion). The capex activity typically has a longer gestation period of around 3-6 years, which given the global commoditized nature of the NFM industry may turn out to be highly crucial. Furthermore, any such capex activity requires a lot of regulatory approvals and environmental clearances, apart from being a highly technical and complex activity. This may result into significant time and cost over runs for completion of these projects. Thus, financial flexibility of promoters and the manner in which they fund the entire capex activity and any contingencies arising during the period is closely monitored by CARE Ratings.

The key management of the company is also assessed for its role in developing and implementing long-term strategies that provides the route map for a sustainable long-term competitive advantage. The management's role in terms of new product development/value-addition, cost reduction measures etc. plays a crucial role in determining the entity's medium to long-term competitiveness.

D. Financial Risk:

The financial analysis considers both historical and projected financial performance of the rated entity. Trend of the financial analysis over the last 3-5 years period are analysed and compared with the average industry trend. The projection period typically covers the tenure of the long-term debt. CARE Ratings' analysis is largely focused on the stability and sustainability of the earnings and the deriving cash flows from the core operating activities, ensuring the ability of the entity to repay its entire debt obligations.

CARE Ratings also analyses the future cash flows of the company under various adverse situations to analyse the financial flexibility of the company under various scenarios. Being highly capital intensive, ability of the company to generate sufficient internal cash flow to meet these capital requirements (both opex as well as capex) is considered to be a key factor that influences the credit quality of the company.

CARE Ratings follows the financial analysis for the NFM manufacturing companies as per the criteria on Financial Ratios- Non-Financial sector.

E. Key ratios

Keeping in mind the key characteristics of the sector, certain ratios as mentioned below are analysed in greater detail.

- Total cost/metric tonne (MT)
- Power cost/MT
- Kwh/MT (for power consumption)
- PBILDT/MT

- Total Debt/ Installed Capacity (per MT)
- Total Debt/PBILDT

F. Foreign exchange fluctuations risk

In addition to the financial risk, foreign exchange fluctuation risk may cause a serious concern to the NFM manufacturing companies operating in the domestic market. Being a globally traded commodity, while the cost of production is incurred in the local currency, the realizations are derived based on the landed cost parity of the international prices (generally LME exchange), plus the local market premium (if any). In certain metals apart from import of coal, even the critical raw material like the basic ore is also imported and any fluctuation in the forex rate may impact the cost of production of these companies as well. Furthermore, to take advantage of the lower interest cost, many of these companies' garner capex funding from the international markets. CARE Ratings believes that, in the absence of active hedging mechanism, steep fluctuation in exchange rates can adversely affect the earnings and cash flows of an entity and might as well result in significant increase in its foreign currency debt repayment obligations. CARE Ratings evaluates the hedging mechanism adopted by the entities.

G. Analysis of Environmental, Social and Governance Risk Factors:

The base metal manufacturing sector, together with its backward integration process (mining activity for raw material) will be perhaps ranked amongst the top sectors when it comes to risk emanating from the Environmental & Social factors (E&S). Over the past few years, CARE Ratings has been keenly examining the impact of several ESG factors on the overall sustainability of business operations and the monetary impact of the same on several organizations across the value chains. In addition to the impact of ESG factors, CARE Ratings has also been monitoring the steps taken towards mitigating these risks in future.

There are challenges when it comes to understanding the actual impact of ESG Risk on the credit assessment of any entity. Some of these challenges are lack of common disclosures, higher volume of data, dependence on self-disclosures made by the company, sector specific associations, government agencies etc. Furthermore, especially when it comes to Social and Governance Risk, most of the factors to S&G are subjective in nature and arriving at a common consensus in scoring the same has remained a challenge. Currently, while it's difficult to quantify or evaluate the ESG risk factors and its possible impact on the credit rating, CARE Ratings continues to monitor these factors to understand the possible future impact of these factors on the credit profile of the entity.

Environmental and Social Risk:

Mining is a key to produce base-metals and post the mining activity, the mined ore to be transformed to a base metal requires enormous utilization of energy. Both mining and energy generation (largely through burning of fossil fuels) activity is exposed towards considerable environmental and social risks. Significant amount of opex as well as capex cost is required in terms of complying to different Environmental guidelines, which also vary from location to location. As far as energy consumption is concerned, most of the larger base metal manufacturing companies have already lined-up their plans in terms of moving away from thermal coal and increasing the share of renewable energy in overall energy consumption. Furthermore, there has also been a re-look upon the manufacturing activity like instead of a blast furnace, there is likely to be increasing usage of Electric Arc Furnaces in future, thereby reducing the overall energy consumption requirements etc.

Social risk too emanates from the mining and production activity when it comes to the health and safety of the miners as well as the employees involved in the production activities. Both the processes require utmost safety measures given the higher categorization of hardship required and hostile working conditions owing to the nature of activity either inside the mine or close to a furnace. While the number of accidents/casualties have reduced, the destruction caused by the mining activity and the impact caused in the nearby areas, require well strategized CSR activities addressing the issues of the local community.

Governance Risk:

As compared to the Environmental and Social risk factors, which are emanating more from the external factors or the industry, the Governance risk may be considered more from the business risk or rather being internal risk factor. Governance refers to how effectively an entity is controlled and run in a way that it is safeguarding the interests of all the stakeholders. Governance also involves utmost transparency and independence to freely express their views across the workforce.

Some of the common ESG Factors are tabulated below:

Environmental	Social	Governance
Natural resources use	Labour - Human capital	Management
Energy consumption	Community	Shareholders
Renewable usage	Product responsibility	CSR activity
Air/ Water/Land quality	Human Rights	Board strategy & decision making
Waste generation		Transparency

While there is no standard scale in terms of evaluating each ESG Risk factors, and it has been more so subjective than quantitative, CARE Ratings keep on evaluating and adopting to all the possible risk factors in terms of improving the ESG rating criteria.

Conclusion

The rating process is ultimately an assessment of the fundamentals and the probabilities of change in the fundamentals. CARE Ratings analyses each of the above factors and their inter-linkages to arrive at the overall assessment of credit quality. The methodology encompasses comprehensive analysis of industry, business, management and financial parameters before arriving at the credit rating of an entity involved in the manufacturing of NFM. Rating determination is a matter of experienced and holistic judgment, based on the relevant quantitative and qualitative factors affecting the credit quality of the issuer.

[For previous version please refer 'Rating Methodology – Non Ferrous Metals' issued in [July 2020](#)]

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