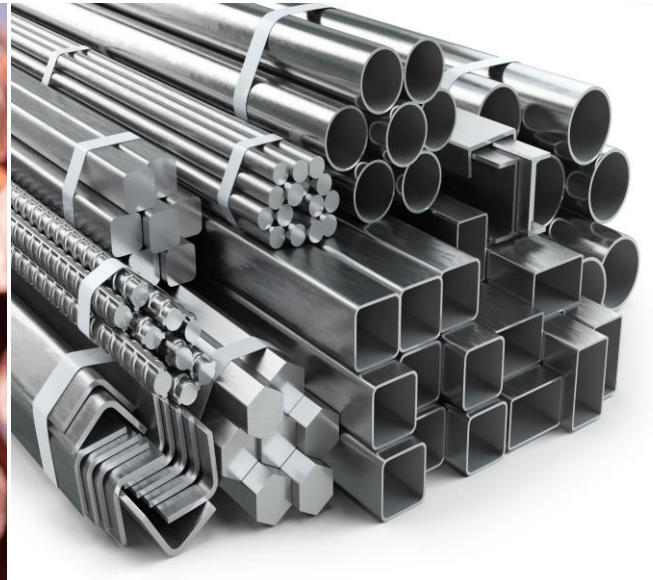
SECTOR STUDY . DECEMBER 2023

Together. Creating Value.

METALS



Research Team

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Metals

Metals

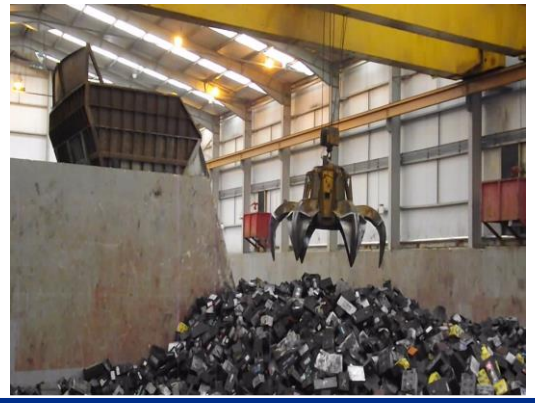
Lead | Introduction

- Lead is a dense and heavy metal, soft and malleable with a low melting point. Initially shiny gray with a touch of blue when freshly cut, it turns dull gray when exposed to air. Despite having the highest atomic number among stable elements, lead is toxic, even in small quantities.
- Lead finds extensive use in car batteries, ammunition, pigments, cable sheathing, and radiation protection. Additionally, it's employed in weightlifting weights, diving belts, lead crystal glass. Lead is also favored for storing corrosive liquids.

Recycling Process of Lead

1. Collection: Products made of lead are collected by metal dealers, recycling businesses and car workshops and sent to smelters.
2. Processing: The collected products are broken and scrap lead is safely separated from other components. Afterwards, lead components are systematically smelted and refined.
3. Use in Production: Refined lead is then used in the production new of lead-acid batteries, building construction material, cable sheathing and for various other applications.

Collection



Processing

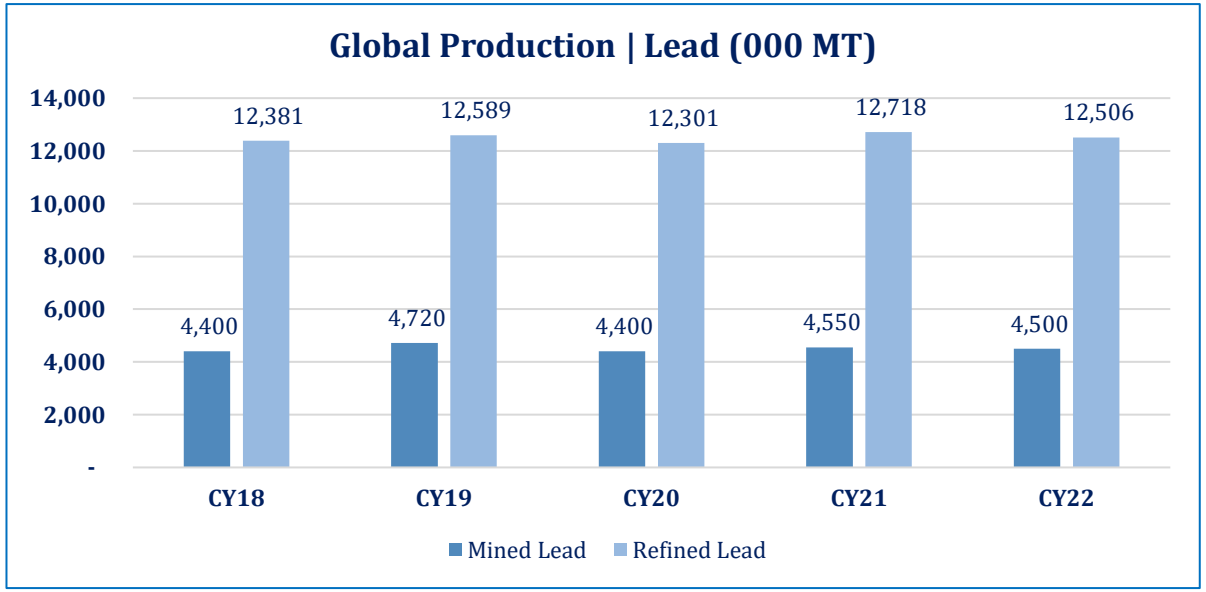
Use in Production

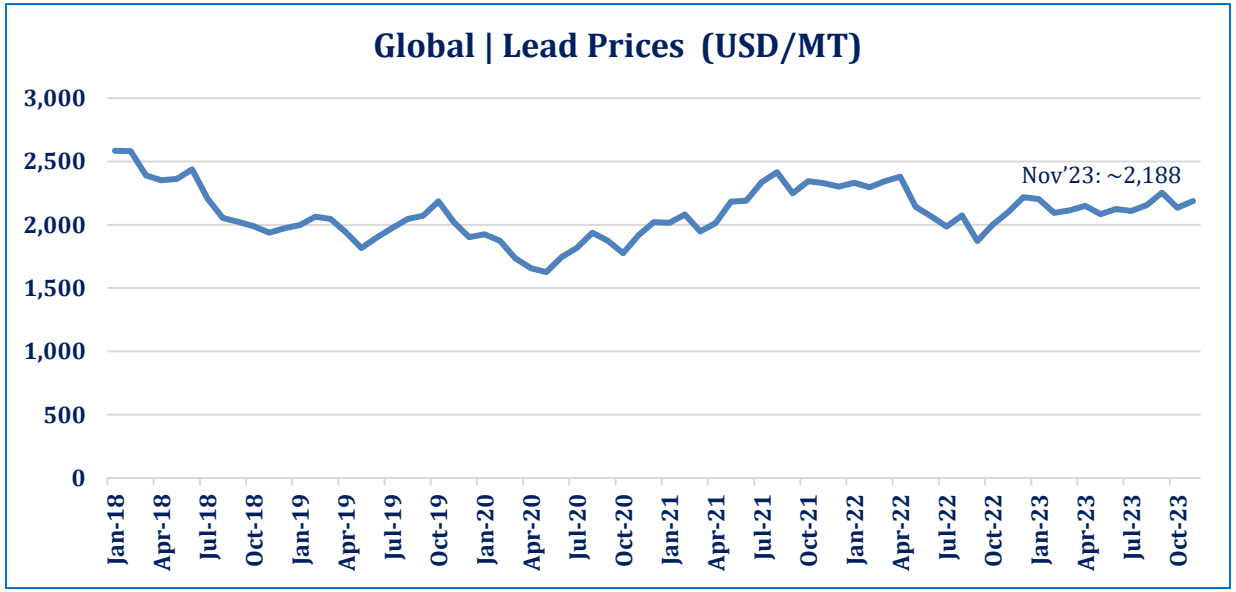
Source: Royal society of Chemistry

Metals

Lead | Prices

- The global production of refined lead declined by ~1.7% YoY in CY22, however, it is expected to record at ~12.8mln MT in CY23, increasing by ~2.1% YoY. The batteries industry stands as the primary consumer of lead, utilizing ~80% of annual production of primary (or mined) and secondary lead (or recycled). Meanwhile, the most common application of these batteries are in automobiles. Other demand drivers of lead include cable sheathing, alloys and pigments, amongst others.
- Global production of lead from mines, on the other hand, amounted to ~4.5mln MT in CY22, a YoY decline of ~1.1%. The world's leading primary lead producer is China, accounting for ~44.4% of total production in CY22 (SPLY: ~43.1%). Other major producers in CY22 were Australia (~9.8%), USA (~6.2%), Mexico (~6.0%) and Peru (~5.6%).
- On a YoY basis, lead prices were up ~2.7% in FY23, averaging at USD~2,084.1/MT. During 5MFY24, the increasing trend in prices has continued, with these rising ~4.1% YoY, averaging at USD~2,167.5/MT (SPLY: USD~2,005.6/MT).





***Note**: CY23 data for refined lead is prorated on the basis of 10M data.*

Source: Business Insider, Lead & Zinc Study Group, WB

Metals

Copper | Introduction

- Copper, a chemical element, is an extremely ductile metal with a reddish hue that is a great conductor of electricity and heat. Copper is commercially produced through the process of smelting. The majority of copper produced in the world is used by electrical industries and the remaining is largely used to form alloys by combining with other metals, such as brass and bronze. Common applications for copper and copper alloys are for making electrical wiring, building construction and industrial machinery.
- There are two copper mines located in Pakistan, the Reko Diq mine and the Saindaq mine, both of which are located in the province of Balochistan. Saindak and Rekodiq deposits have reserves of ~4.5bln MT of copper. The total estimated recoverable mineral reserves from the Saindak deposits include ~1.7mln MT of copper, ~2.24 mln ounces of gold, and ~2.5mln ounces of silver.
- Construction of Reko Diq is scheduled to start in CY25 targeting first production in CY28. Reko Diq will rank among the world's top 10 copper producers when it reaches full production.

Source: U.S. Geological Survey, Mineral Commodity Summaries, Barrick Gold Corp.

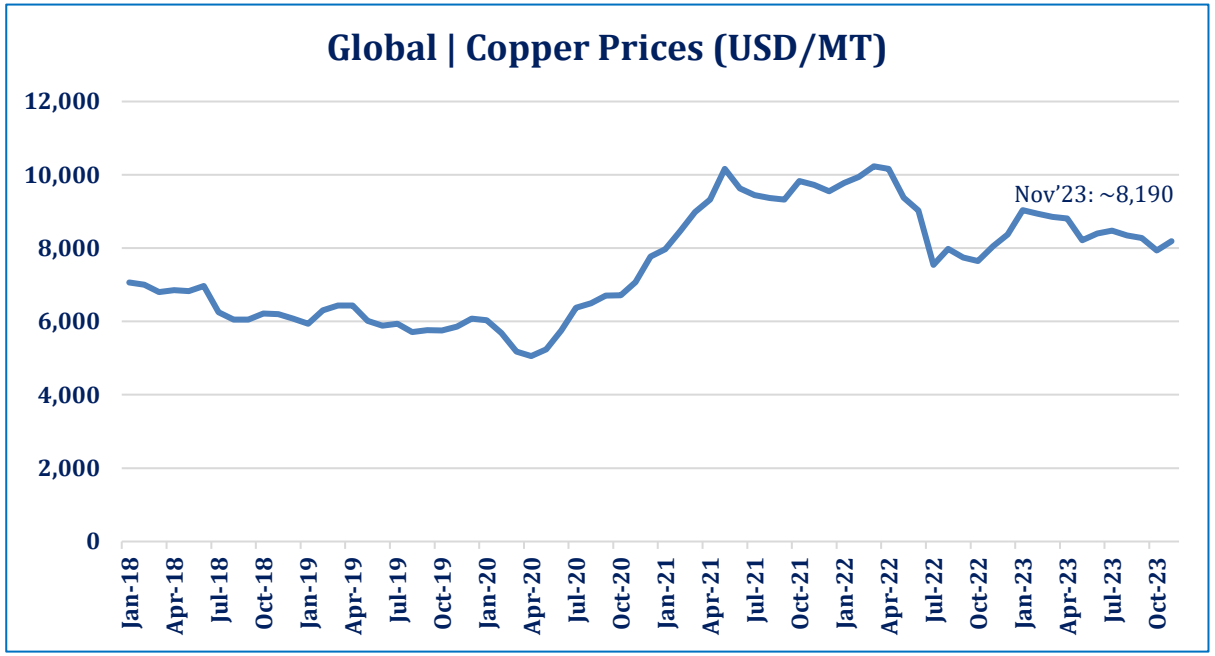
Metals

Copper | Prices

- Global production of copper from mines amounted to ~22mln MT in CY22, a YoY increase of ~3.8%. Meanwhile, the production of refined copper, through process of smelting, stood at ~26mln MT during CY22, as compared to ~25.3mln MT in CY21. The world's leading copper producer is Chile, producing ~23.6% of global mined copper during CY22 (SPLY: ~26.4%), owing to presence of the world's largest copper mine in the country. Other major producers are Peru, China, Congo and the United States.

- In CY23, prices of refined copper fell ~3.7% YoY, averaging at USD~8,498.5/MT as global supply of Copper increased amid weak demand in advanced economies. While these may have picked up pace, reaching USD~8,190/MT as of Nov'23, prices are forecast to remain stable in FY24 on the back of consistent supply.

Country	Mined Copper (000 MT)			Refined Copper (000 MT)		
	CY20	CY21	CY22	CY20	CY21	CY22
United States	1,200	1,200	1,300	910	971	1,000
Chile	5,730	5,600	5,200	2,400	2,270	2,100
China	1,720	1,800	1,900	9,800	10,500	11,000
Congo	1,600	1,800	2,200	1,100	1,450	1,700
Peru	2,150	2,300	2,200	330	336	290
Rest	8,200	8,500	9,200	10,460	9,773	9,910
Total	**20,600**	**21,200**	**22,000**	**25,000**	**25,300**	**26,000**



***Note**: Prices of Refined Copper are reflective of WB data.*

Source: U.S. Geological Survey, Mineral Commodity Summaries

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Aluminum | Introduction

- Aluminium is a light-weight silvery white metal which is the most widely used non-ferrous metal. Aluminium is added in small amounts to certain other metals to improve their properties for other uses.
- Aluminium and its alloys are used extensively for producing aircrafts, building material, household appliances and utensils, electrical conductors and other equipment. It is a ductile and highly malleable metal which can be drawn into wires or rolled into thin foils.
- During CY22, the global production of aluminium stood at ~69.0mln MT as compared to ~67.5mln MT during CY21. The largest producer of aluminium, on a global level, is China, with the country recording aluminum production at ~40.0mln MT in CY22 (CY21: ~38.9mln MT).

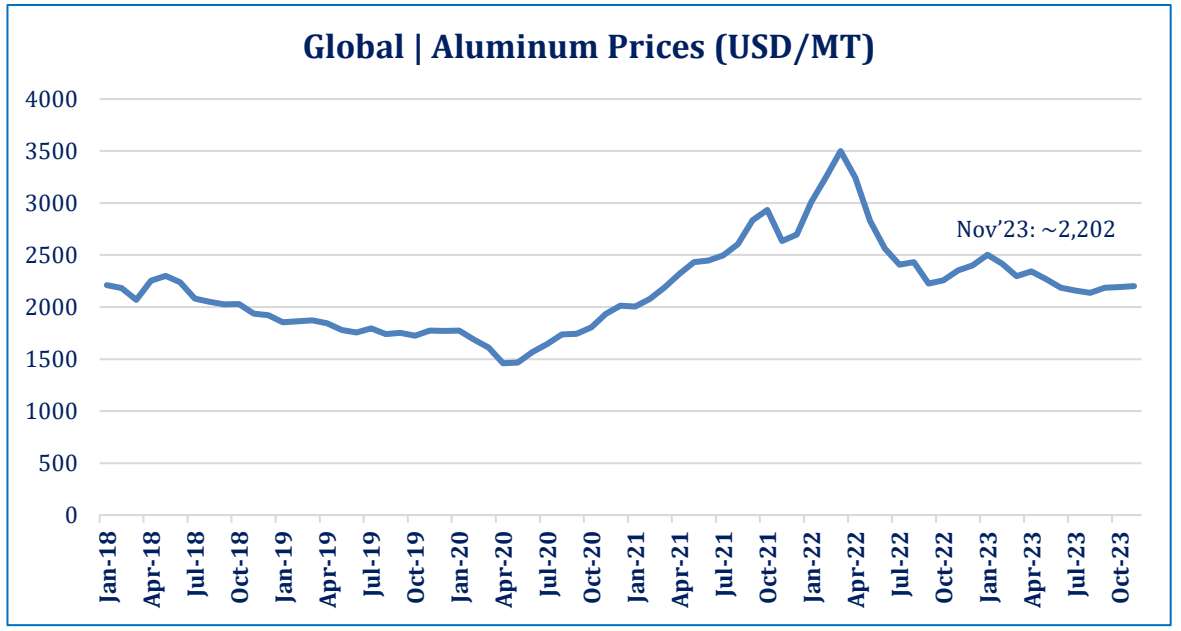
Source: U.S. Geological Survey, Mineral Commodity Summaries

Metals

Aluminum | Prices

- During CY22, global production of refined aluminium increased ~2.2% YoY, with China as the largest producer (~57.9% share) in global aluminium production (CY21: ~57.6%). Other major producers of Aluminium are Canada, Australia, India, Norway, Russia and UAE, accounting for ~4.3%, ~2.2%, ~5.8%, ~2.0%, ~5.3% and ~3.9% of the total aluminum production in CY22,
- Global aluminum prices have exhibited a rising trend since Apr'20, when these recorded a low of USD~1,446/MT, likely due to global economic slowdown during COVID-19. These later peaked in Mar'22 at USD~3,498/MT, on the back of energy crisis in Europe which led to a slowdown in production. However, soon after, prices cooled down due to dimmed demand. owing to zero-Covid policies across most countries, and during 2HCY22, exhibited little volatility on the back of global recessionary fears.
- By End-CY23, aluminium prices are expected to fall by ~16.4% YoY in CY23, averaging at USD~2,262.4/MT on the back of improved supply. Meanwhile, with prices recording at USD~2,202/MT in Nov'23, the outlook for CY24 entails rangebound prices due to consistent supply levels.

Refined Aluminum (000 MT)					
Country	**CY18**	**CY19**	**CY20**	**CY21**	**CY22**
Australia	1,600	1,570	1,600	1,570	1,500
Canada	2,900	2,850	3,100	3,140	3,000
China	33,000	35,000	37,000	38,900	40,000
India	3,700	3,640	3,600	3,970	4,000
Norway	1,300	1,400	1,400	1,400	1,400
Russia	3,700	3,640	3,600	3,640	3,700
UAE	2,600	2,600	2,600	2,540	2,700
ROW	11,200	12,500	12,300	12,340	12,700
Total	**60,000**	**63,200**	**65,200**	**67,500**	**69,000**



Source: U.S. Geological Survey, Mineral Commodity Summaries

Metals

Local | Overview

- The local lead recycling market is dominated by two players, having a total average capacity of ~136,400 MT. Both players are private-limited companies, engaged primarily in the business of recycling & disposal of used lead acid batteries, lead plates, and other lead articles.
- Their products also include Re-melted Lead, Refined Lead, Antimonial Lead Alloy and Calcium Lead Alloy. Malik MIJ Chunxing has a strong clientele in Pakistan as well as a wide network of resources and clientage through its associated companies' strong positions in leading markets all around the world. Moving forward MMC (Malik Mij Chunxing) also has an expansion plan to enhance its capacities from ~50,000 MT to ~75,000 MT over the period of three years.
- Lead has major uses in Batteries, Construction Material, Cable Sheathing, and Radiation Sheathing.
- The local copper and aluminum market comprises ~4 major players. They are involved in products like copper & aluminum scrap, ingots, billets, rods and strips.
- Copper and aluminum products, in turn, have multiple uses, as they are employed in wiring, building material, industrial machinery, household appliances and utensils, among others.

Lead Recycling	
Players	**Annual Capacity (MT)**
Malik Mij Chunxing Resources Recycling Co. Ltd	~50,000
International Metal Industries (Pvt.) Ltd.	~86,400

Copper & Aluminum	
Players	**Description**
Allah Tawaqal Metals (Pvt) Limited	Converts copper & aluminium scrap into ingots. Capacity of ~30,000MT per annum.
KBS Metals	Converts copper scrap into products such as wires, strips, rods and billets.
Cannon Metals	Deals in the recycling/ processing of various metals including aluminium, copper, lead etc.
BR Metals	Deals in the recycling/ processing of various metals in scrap form including aluminium and copper.

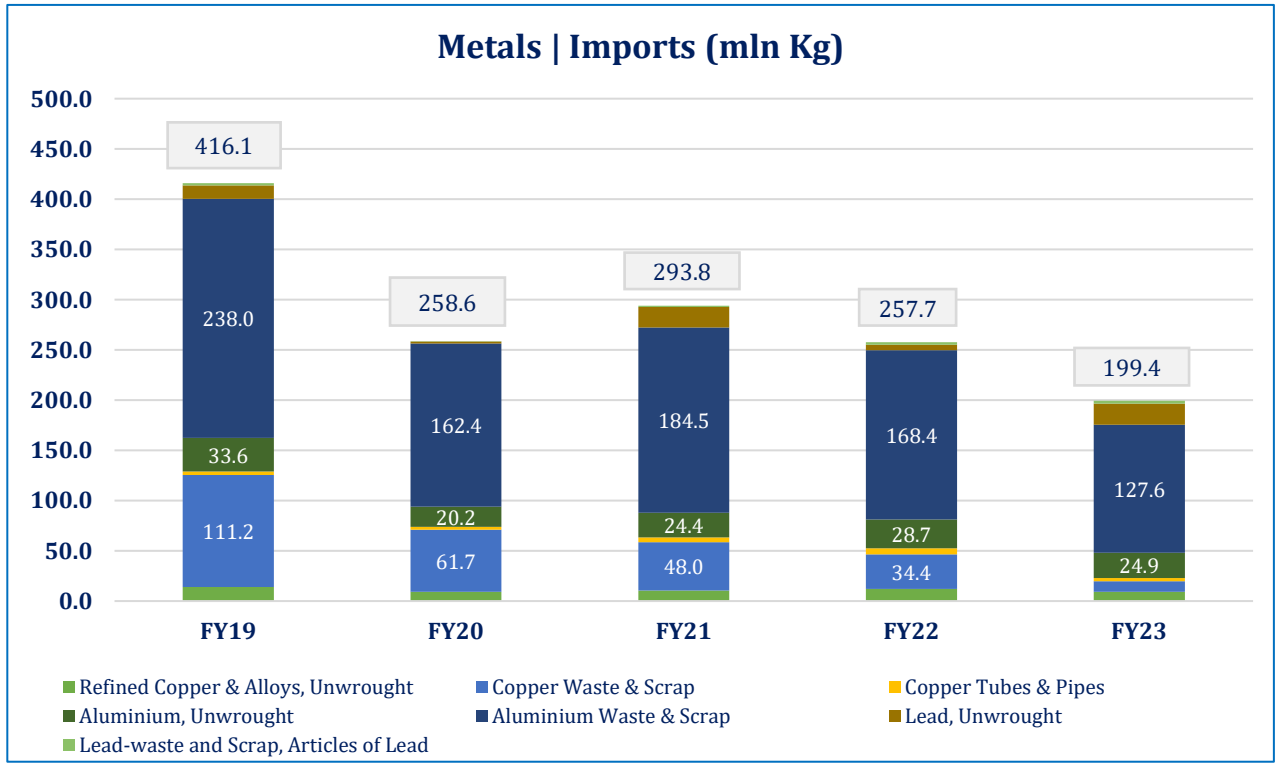
***Note**: Capacity numbers pertain to FY22.*

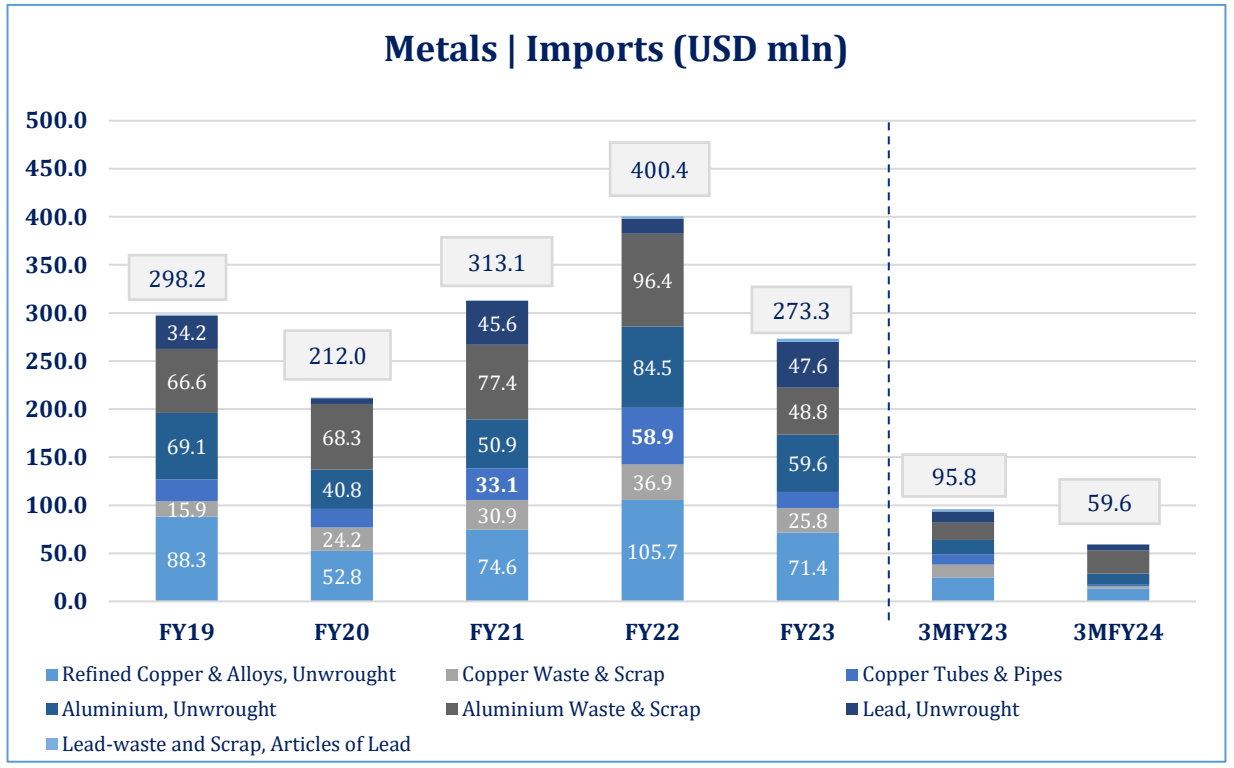
Source: PACRA Database

Metals

Copper & Aluminum | Imports

- Pakistan's copper, lead and aluminum imports, during FY19-22, exhibited a CAGR of ~7.6%. In FY23, imports across these dipped, in value terms, by ~182.6%, ~43.5% and ~40.1% YoY, respectively (FY22: ~-61.0%, ~45.3% and ~41.1% growth, respectively). Cumulatively, these formed ~0.5% of country's total import bill in FY23 (SPLY: ~0.6%). During 3MFY24, nearly all imported metal segments witnessed a decreasing trend (in value terms) as compared to the same period last year, except Aluminum Waste & Scrap , which increased by ~32.9% YoY.
- In value terms, primary import destinations for lead include UAE and Saudi Arabia, while Zambia, China, and Singapore account for significant copper imports. The country largely imports aluminum from South Korea, China, USA, and Ivory Coast.





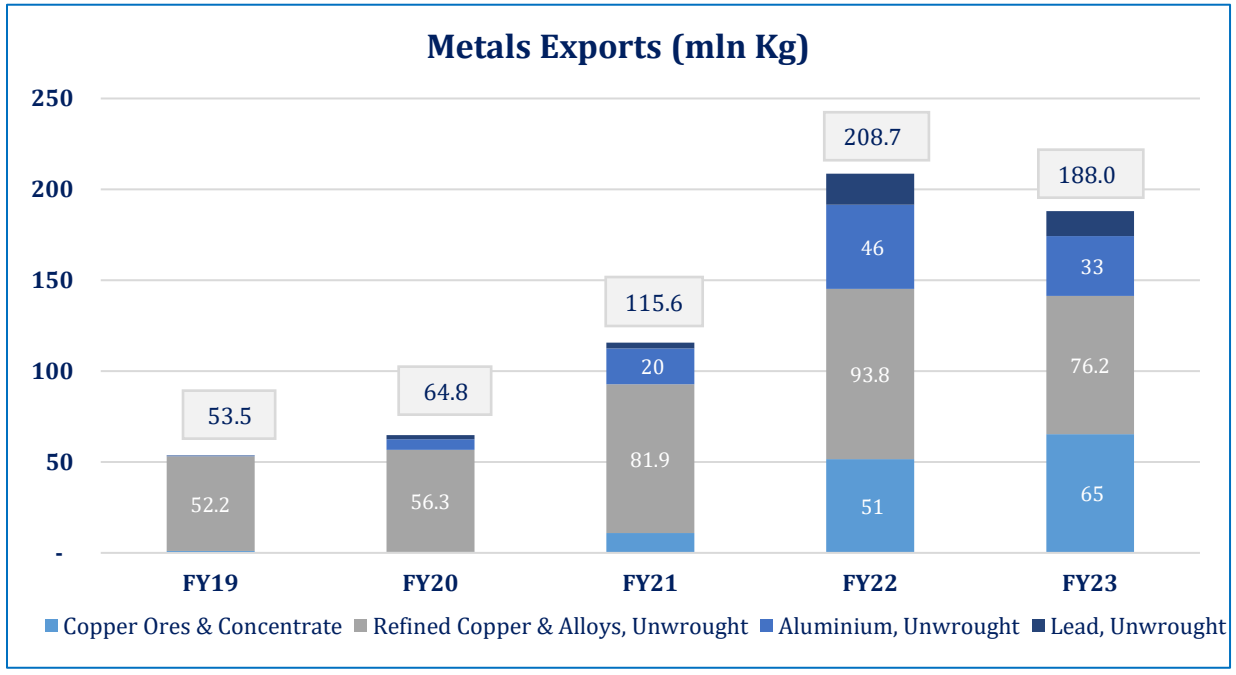
***Note**: HS codes for three Segments include, for Lead (7801, 7802 & 7806), Copper (7403,7404 & 7411), Aluminum (7601 & 7602). Volumetric data is the latest available.*

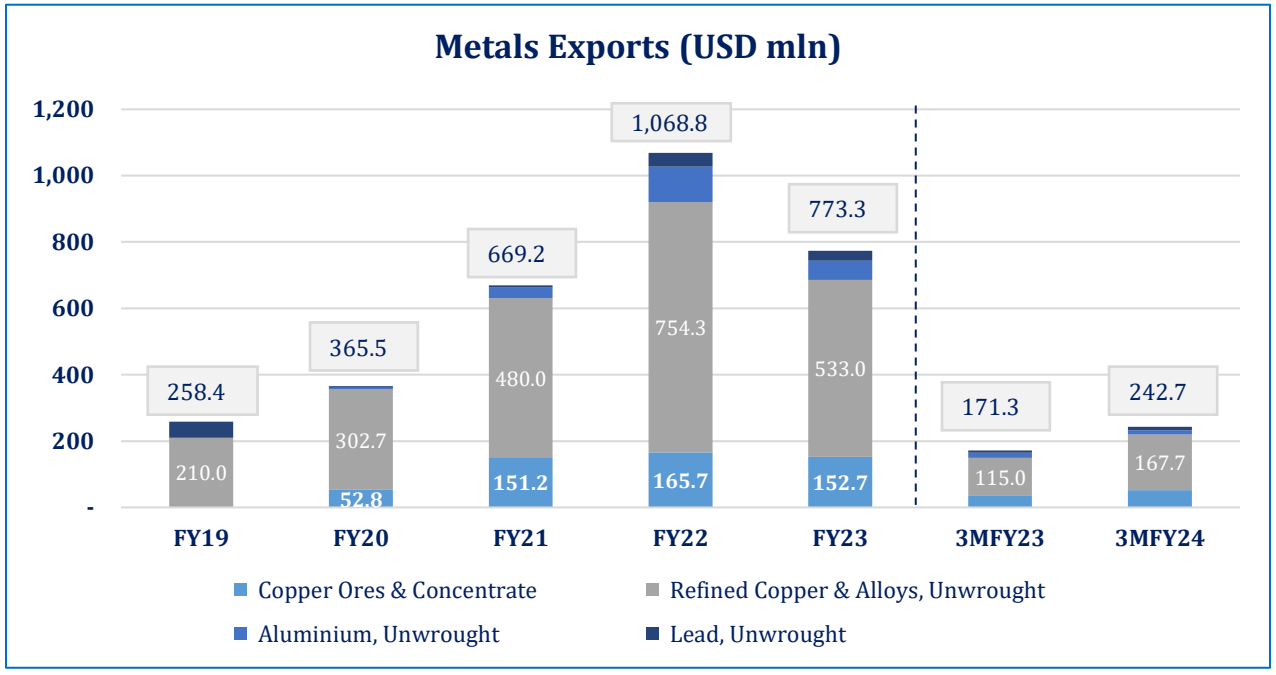
Source: SBP

Metals

Copper & Aluminum | Exports

- Pakistan's exports of Lead, Copper and Aluminium recorded a continuous upward trend during FY19-22 at a CAGR of ~42.6%. China is the largest export destination for refined copper, copper alloys and unwrought aluminium. However, in FY23, Lead, Copper and Aluminium exports slumped by ~27.7% YoY in value terms. Metal exports, as described below, formed ~2.8% of the total exports in FY23 while in FY22, this stood at ~3.3%.
- Commodity-wise, during the same year, exports of Unwrought Aluminium were down ~46.3%, while those of Refined Copper & Alloys declined by ~29.3%. Meanwhile, exports of Copper ores and Concentrate, Lead Refined and Unrefined Lead, were down ~7.9%, ~12.0% and ~62.9% YoY in FY23.
- During 3MFY24, majorly exported copper commodities, as depicted below, recorded an increase of ~47.5% YoY and stood at USD~220.3mln, while those for Unwrought Aluminium declined by ~19.2% YoY, recording at USD~12.5mln during the same period.





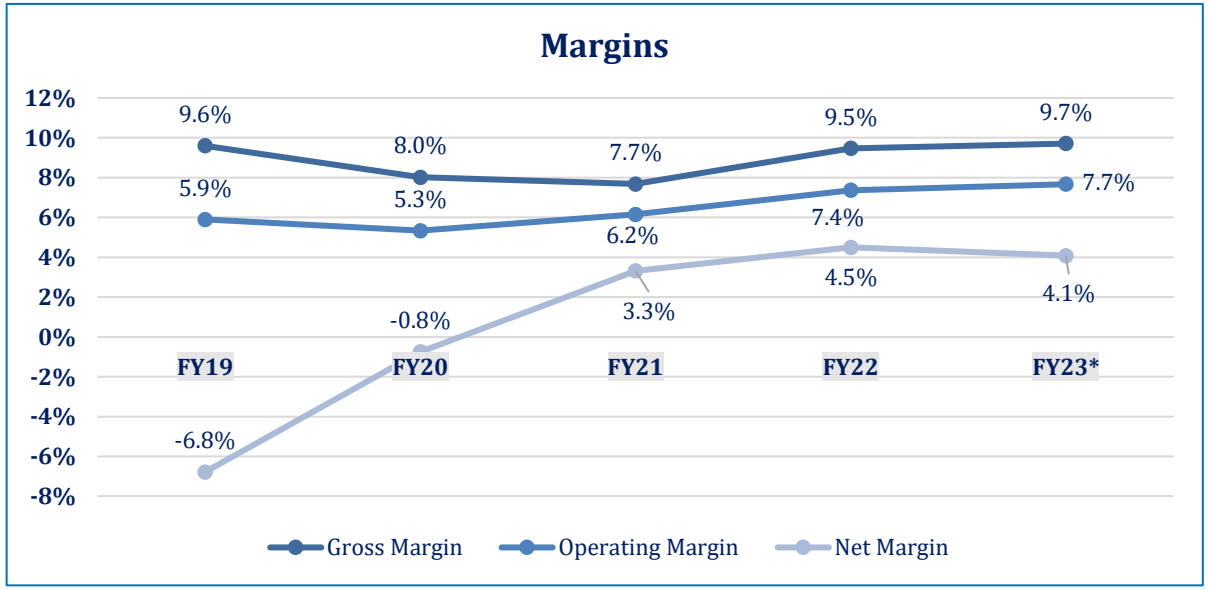
***Note**: HS codes for three Segments include, for Lead (7801-1000, 7801-9100), Copper (2603, 7403), Aluminum (7601). Volumetric data is the latest available.*

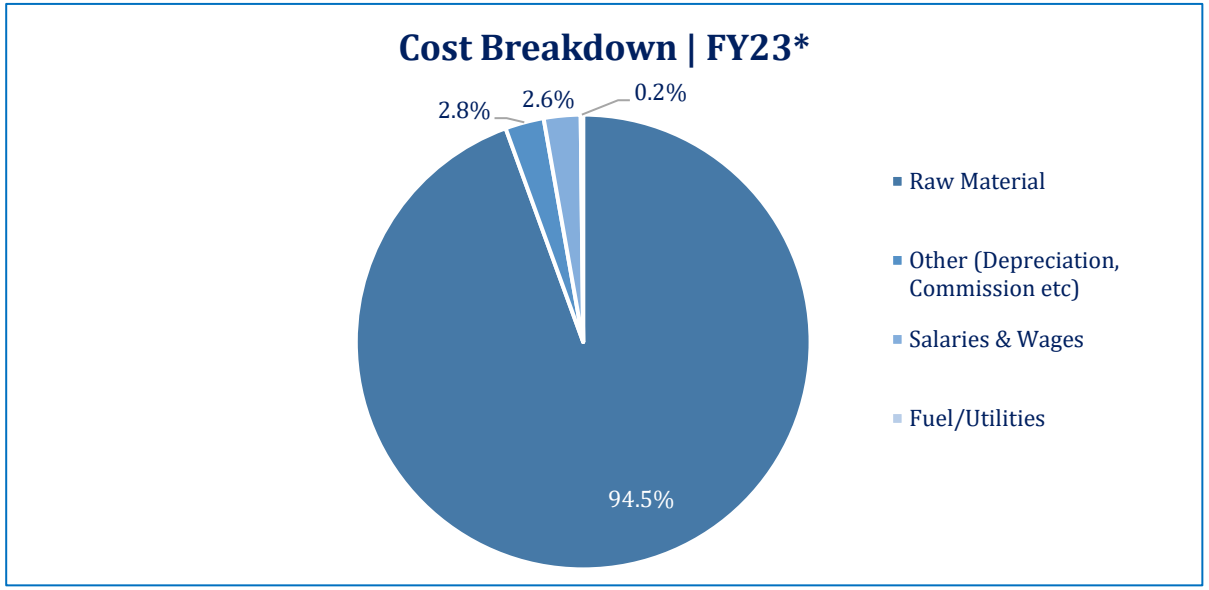
Source: SBP, UN ComTrade

Metals

Lead Recycling | Margins & Cost Structure

- During FY23, the segment experienced a marginal uptick in margins. The gross margin registered a slight increase to ~9.7% from ~9.5% in FY22. Operating margins also improved, rising by ~0.3% to reach ~7.7%, stemming from the impact of the improved gross margin and effective management of operational costs. Moreover, sales revenue also increased ~20.9% YoY in FY23 (FY22: ~92.4%). However, the net margin slightly declined to ~4.1% in FY23 from ~4.5% in FY22 due to ~23.0% rise in finance costs, attributed to policy rate hikes during FY23.
- The largest component in the lead recycling segment's direct costs are the raw materials which comprised ~94.4% to total direct costs in FY23, majorly comprising used lead products.





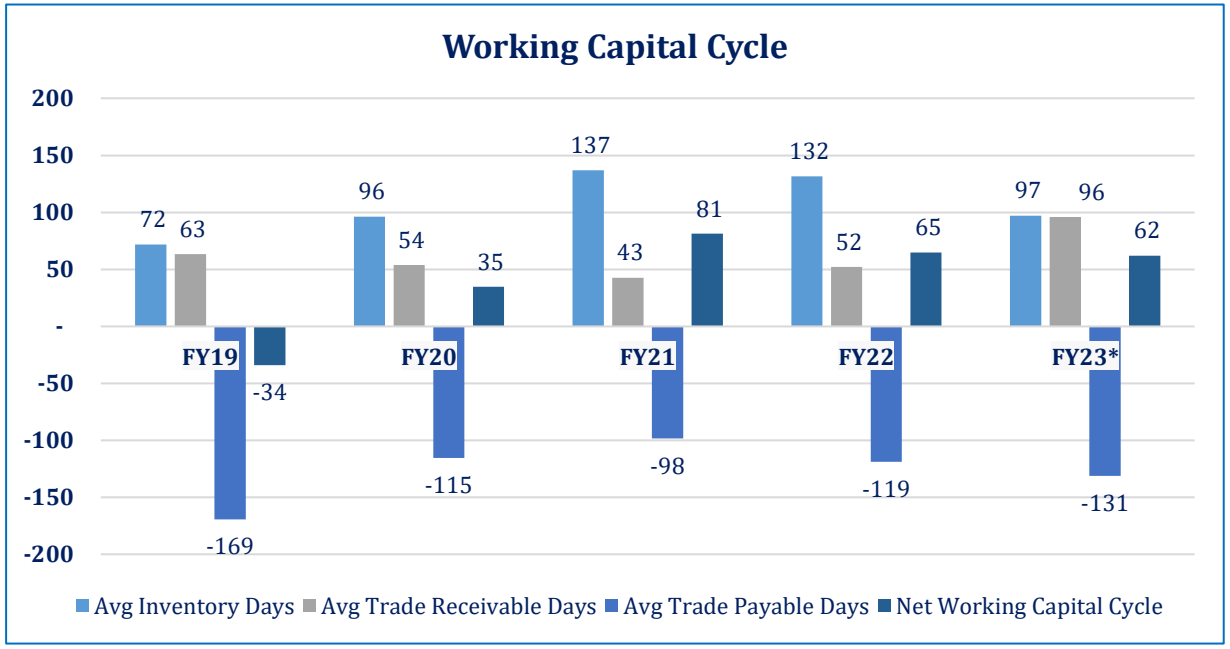
***Note**: Margins and cost break up are reflective of ~1 listed/ rated player belonging to lead recycling segment.*
**Calculated based on 6M latest available data.*

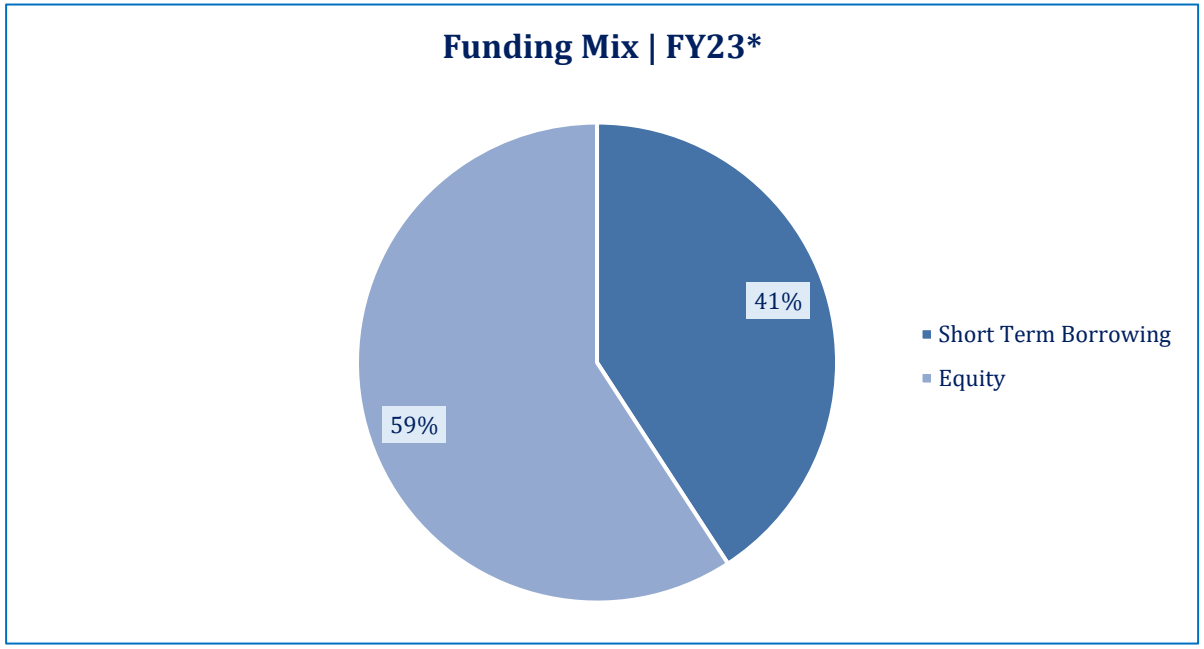
Source: PACRA Database

Metals

Lead Recycling | Financial Risk

- The Segment's working capital cycle is predominantly a function of its inventory and trade receivable days. Working capital days recorded an improvement in FY23, averaging at ~62 days compared with ~65 days in FY22, and can be attributed to a significant decline ~35 days YoY) in inventory days. This, in turn, could likely be due to enhanced inventory management practices or more efficient inventory turnover processes implemented during that period.
- The funding mix of the Segment, as of FY23, comprised ~40.8% short-term borrowings that registered an increase of ~14.6% YoY. The segment relies on short-term borrowings to finance its working capital needs. During the year, the segment appears to have relied entirely on short-term borrowings, which constituted ~100% of the total borrowings.





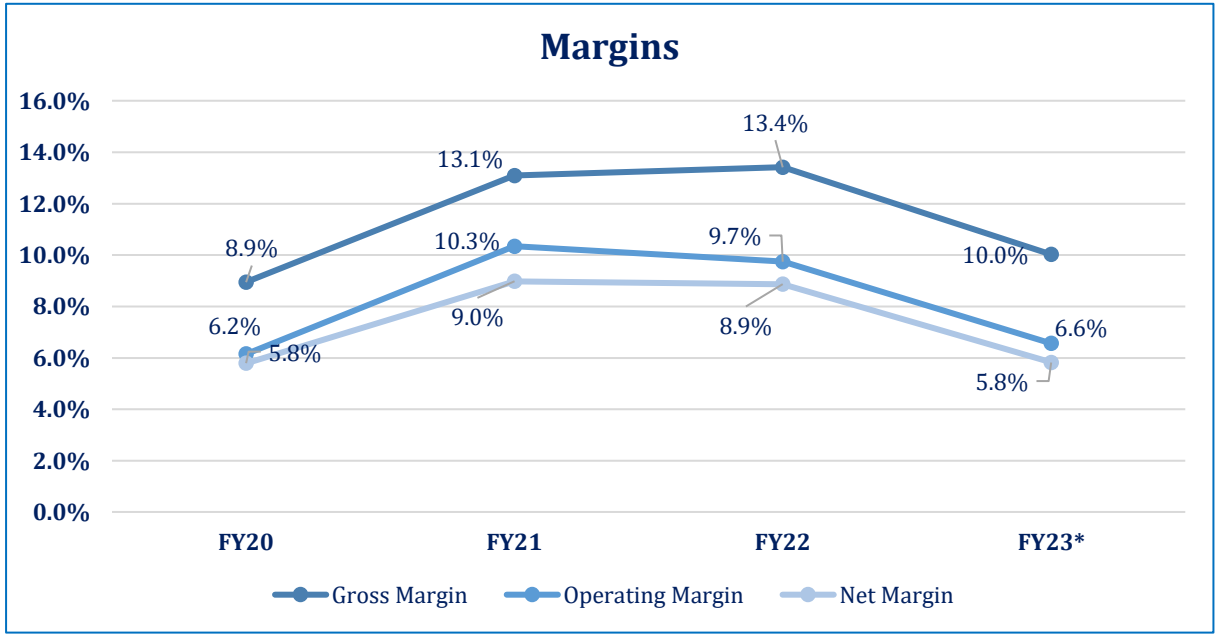
***Note**: Working Capital and Fund Mix are reflective of ~1 listed/ rated player belonging to lead recycling segment.*
**Calculated based on 6M latest available data.*

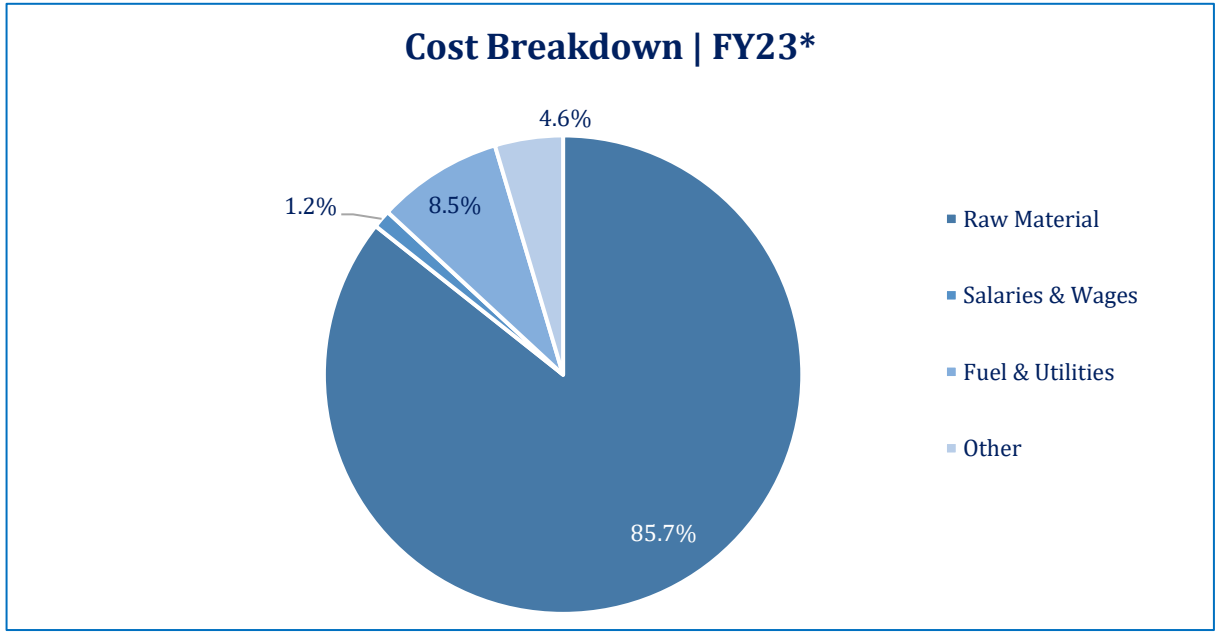
Source: PACRA Database

Metals

Copper & Aluminum | Margins & Cost Structure

- The copper and aluminum segment recorded a contraction in margins during FY23, with the gross margin declining to ~10.0% from ~13.4% in the preceding year. Despite a revenue increase of ~26.4% in FY23, there was a substantial rise in the cost of goods sold of ~27.6% during the same period, exerting downward pressure on the margins. Simultaneously, operating margins also declined, recording at ~6.6% in FY23 compared to ~9.7% in FY22. Moreover, there was a significant decline in net margins in FY23, which dropped to ~5.8% from ~8.9% in the same period last year due to ~7.5% YoY increase in finance cost.
- The segment's direct costs majorly comprises raw material cost (~85.7% during FY23), which consists of copper in form of scrap material and aluminium in form of raw material.





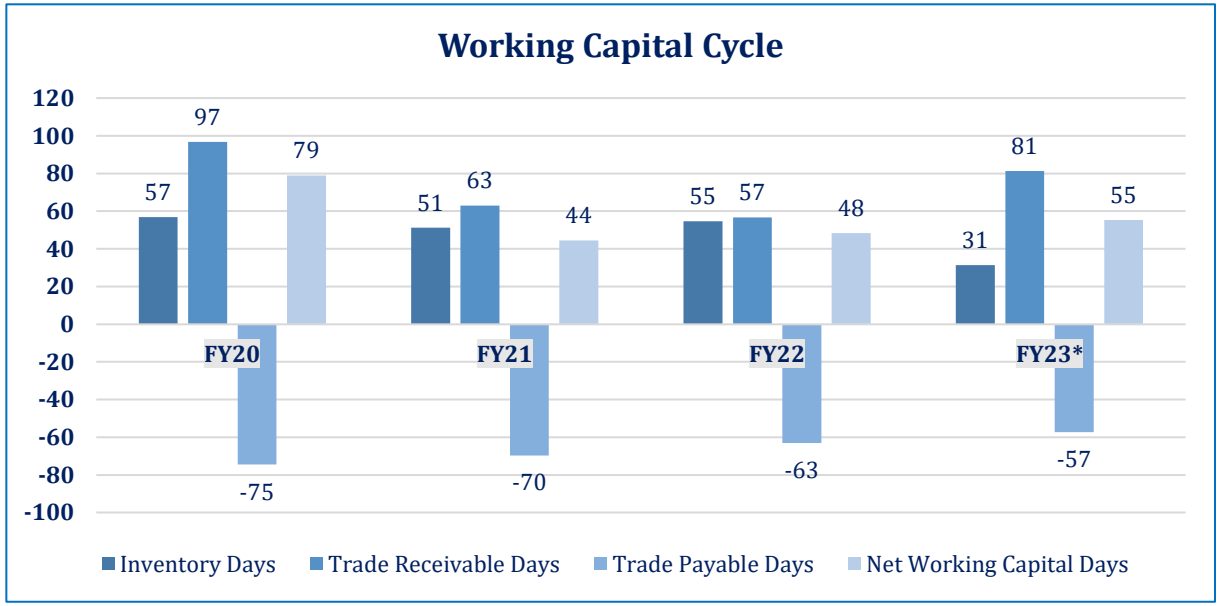
***Note**: Margins and cost break up are reflective of ~1 player belonging to the copper & aluminium segment.*
**Calculated based on 9M latest available data.*

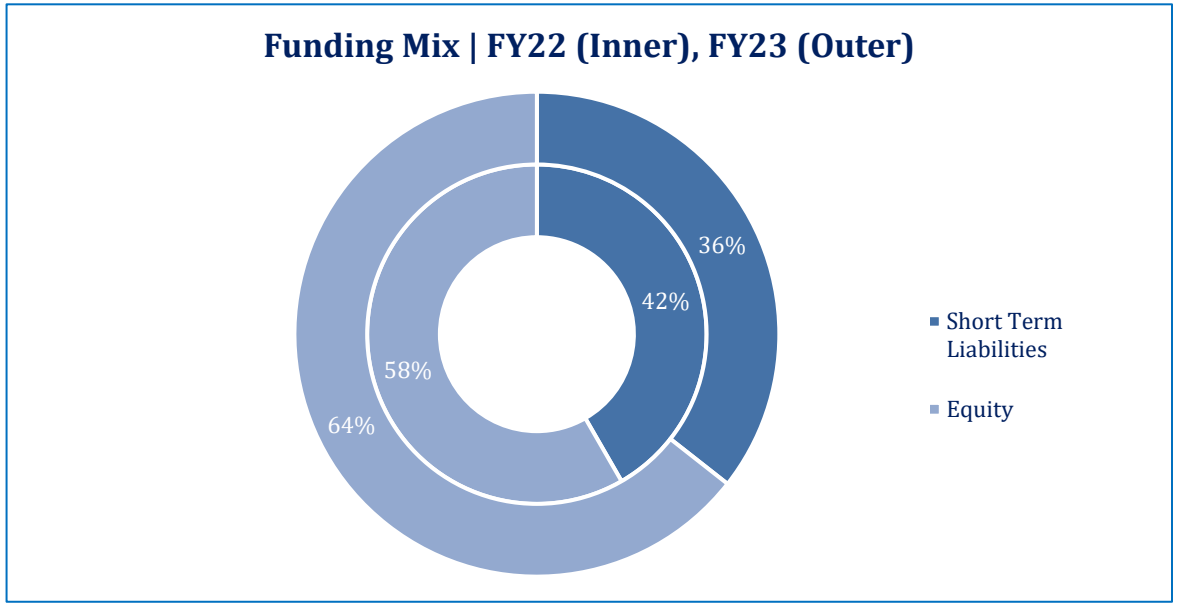
Source: PACRA Database

Metals

Copper & Aluminum | Financial Risk

- The average working capital cycle is a function of inventory, trade receivables and trade payables. Inventory consists largely of raw material and finished goods, with little work-in-process inventory due to a short production process.
- During FY23, the working capital cycle stood at ~55 days (FY22: ~48 days). Inventory days decreased to ~31 from ~55 days in FY22, trade payable days also decreased to ~57 days (FY22: ~63 days). Meanwhile, receivable days increased to ~81 from ~57 days in FY22. The copper and aluminium segment recorded a moderate level leveraging of ~35.6% in FY23 (FY22: ~41.7%).
- Meanwhile, the borrowing mix entirely consists of short-term borrowings, which registered a decline of ~11.5% YoY.





***Note**: Working capital cycle, borrowing mix and leverage is reflective of ~1 rated player belonging to copper and aluminium segment*

Source: PACRA Database

Metals

Duty Structure

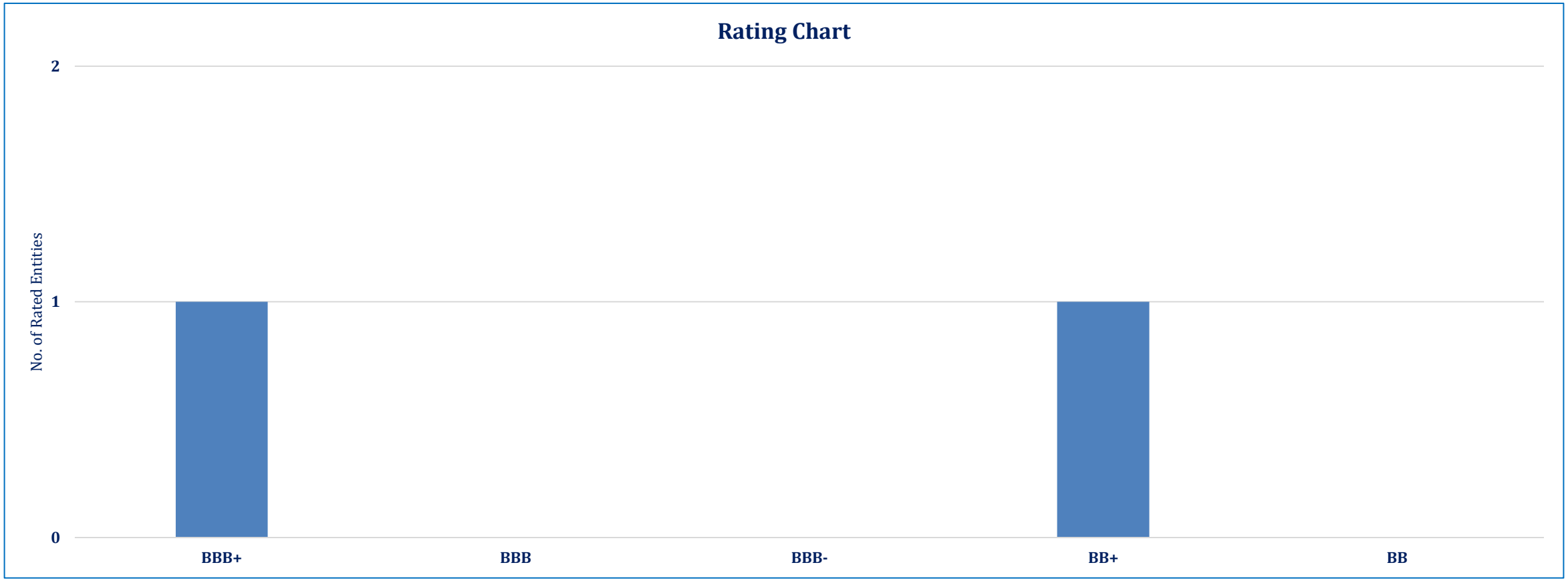
PCT Code	Description	Custom Duty		Additional Custom Duty		Total	
		FY23	FY24	FY23	FY24	FY23	FY24
26.03	Copper Ores & Concentrates	0%	0%	2%	2%	**2%**	**2%**
26.06	Aluminum Ores & Concentrates	0%	0%	2%	2%	**2%**	**2%**
26.07	Lead Ores and Concentrates	0%	0%	2%	2%	**2%**	**2%**
78.01	Unwrought Lead (including refined lead)	0%	0%	2%	2%	**2%**	**2%**
78.02	Lead waste and scrap	0%	0%	2%	2%	**2%**	**2%**
78.04	Lead plates, sheets, strip, foil, powders and flakes	16%	16%	4%	4%	**20%**	**20%**
74.01 - 74.07	Copper Mattes, Unrefined Copper, Refined Copper & Alloys, Copper Waste & Scrap, Copper Bars & Rods etc.	0%	0%-3%	2%	2%	**0%**	**5%**
74.08 - 74.12	Copper wire, plates, sheets, foil, tubes and pipes	0-16%	0%-16%	0-11%	0-4%	**0-27%**	**0-20%**
76.01 - 76.03	Unwrought aluminum, waste or scrap, powders and flakes	0%	0%-30	2%	2%-7%	**2%**	**0-37%**
76.04 - 76.09	Aluminum bars, rods, wires, plates, sheets, tubes and pipes	0-20%	0%-20%	2-6%	2%-6%	**2-26%**	**2-26%**

Note: For HS Codes 7801, 7802, and 7804, there is also an Export Regulatory Duty set at 25% during FY24. For HS Codes 7601.1000, an Import Regulatory Duty of 10% has been implemented during the same period.

Metals

Rating Curve

- PACRA rates 1 player in the lead recycling segment with a long-term rating of BBB+ and 1 player in the copper and aluminium segment with a long-term rating of BB+.



Source: PACRA Database

Metals

Outlook: STABLE

- Pakistan's economy posted a real GDP contraction of ~0.17% in FY23 (FY22: ~6.1%), while the LSM declined by ~10.3% (FY22: ~11.8%), owing majorly to supply-chain disruptions which resulted from SBP-imposed import restrictions and consequent sluggish demand across major industrial sectors of the country. However, the economy is projected to stabilize in FY24, with the IMF forecasting a GDP growth rate of ~2.5%. FY23 also posed considerable challenges in the form of supply-chain disruptions (caused by SBP-imposed import restrictions), substantial PKR devaluation of ~39.5%, persistently high inflation and increasing fuel prices, all of which served to hamper demand.

- Metal imports recorded a continuous increase since FY19-22, with a CAGR of ~7.6%, however these declined by ~31.8% YoY to USD~273.3mln in FY23 (FY22: USD~400.4mln). The sector's exports have also, during FY19-22, exhibited a CAGR of ~42.6%, with a YoY decrease in FY23 by ~27.7% and a value of USD~773.3mln (FY22: USD~1,069mln).

- Margins of the lead segment slightly improved as gross margins increased from ~9.5% in FY22 to ~9.7% in FY23. Meanwhile, sales increased by ~20.1% in FY23. Net margins for the segment reduced by ~0.3%, indicating high finance costs and lower international prices. The copper and aluminium segment, on the other hand, remained in red zone as all margins moving in downward trajectory, as gross margins dipped to ~10.0%, Operating margin decreased to ~6.6% and net margin down to ~5.8% in FY23. International aluminium and copper prices have witnessed a downward trend which may be indicative of an economic recession.

- Going forward, the sector is expected to remain stable with PKR recording improvement against the greenback since Sep'23 and lifting of import restrictions in Jun'23. Though imports were down ~37.5% in 3MFY24, there is a notable improvement of ~42.1% in exports for the same period. With snail-paced economic recovery in LSM of ~0.68%, continued lower demand of Lead, Copper and Aluminum in 3MFY24, the Sector's performance is likely to stay rangebound.

Source: PBS, SBP

Metals

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- UN ComTrade
- Bloomberg

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