SECTOR STUDY . FEBRUARY 2025

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METALS

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Metals

Metals

Introduction

- Metals are elements characterized by their high electrical conductivity, malleability, ductility, and ability to reflect light. These properties make them indispensable in various industries, from construction and manufacturing to electronics and transportation.
- Among the vast array of metals, certain ones stand out due to their unique properties and wide-ranging applications in various industries. These include Iron, Aluminum, Copper, Lead, Silver, Zinc, Titanium, Lithium, Platinum, and Chromium, to name a few.

Iron

- Known for Strong, abundant and highly durable. Primarily used in the production of steel, which is vital for construction, transportation, and machinery.

Lithium

- Soft, light metal, highly reactive, and flammable. Vital for rechargeable batteries (especially in electric vehicles) and in some chemical industries.

Silver

- It is considered an excellent conductor, malleable, and resistant to corrosion. It is mainly used in electronics, jewelry, photography, and as an industrial catalyst.

Titanium

- It is lightweight and high strength. It is used in aerospace, medical implants, sports equipment, and high-performance alloys.

Zinc

- Zinc has a low melting point and is corrosion resistant. Widely used in electronics, jewelry, photography, and as an industrial catalyst.

Chromium

- Hard, corrosion-resistant, and shiny. Widely used in the production of stainless steel and various alloys, as well as in the automotive industry and for decorative coatings.

- ***This Sector Study covers the Lead, Copper, and Aluminum segments.***

Source: Science Direct, IEA

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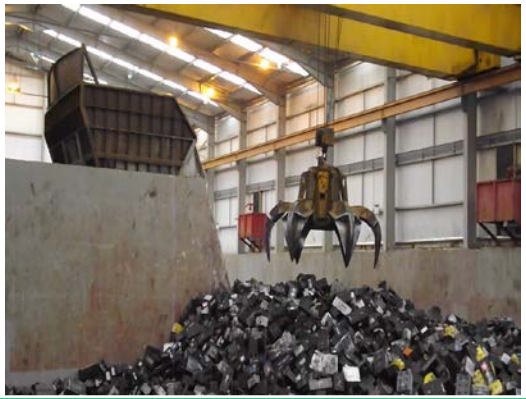
Lead | Overview

- 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 is used in weightlifting weights, diving belts, and 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. Afterward, lead components are systematically smelted and refined.
3. Uses in Production: Refined lead is then used in the production of lead-acid batteries, building construction material, and cable sheathing along with various other applications.



Collection → **Processing** → **Uses in Production**

Source: International Lead Association

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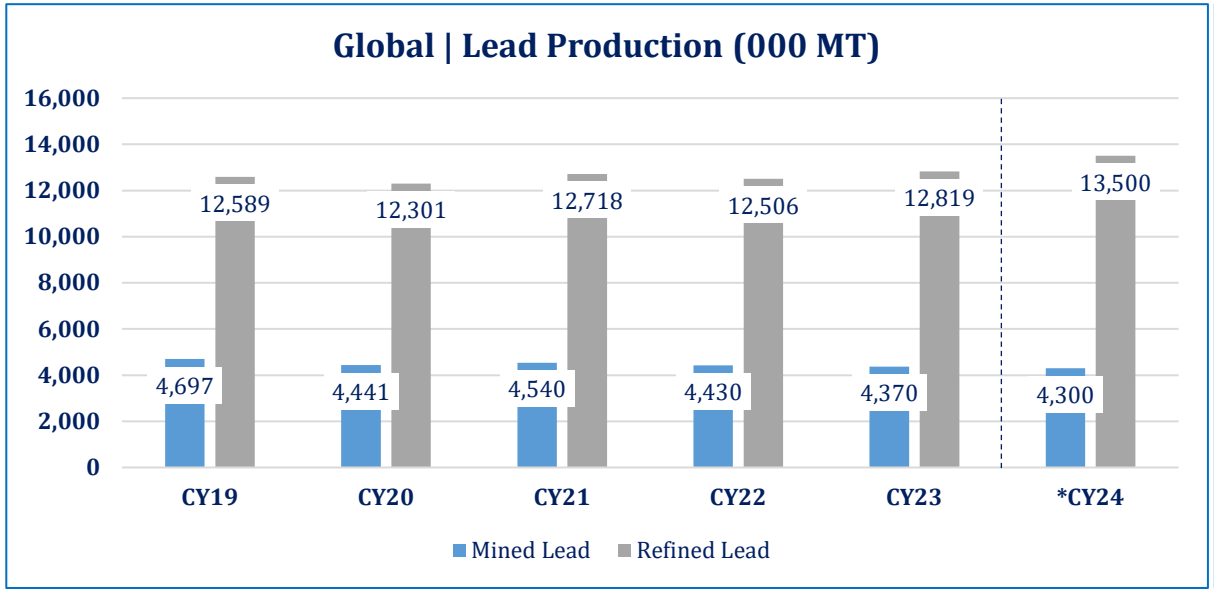
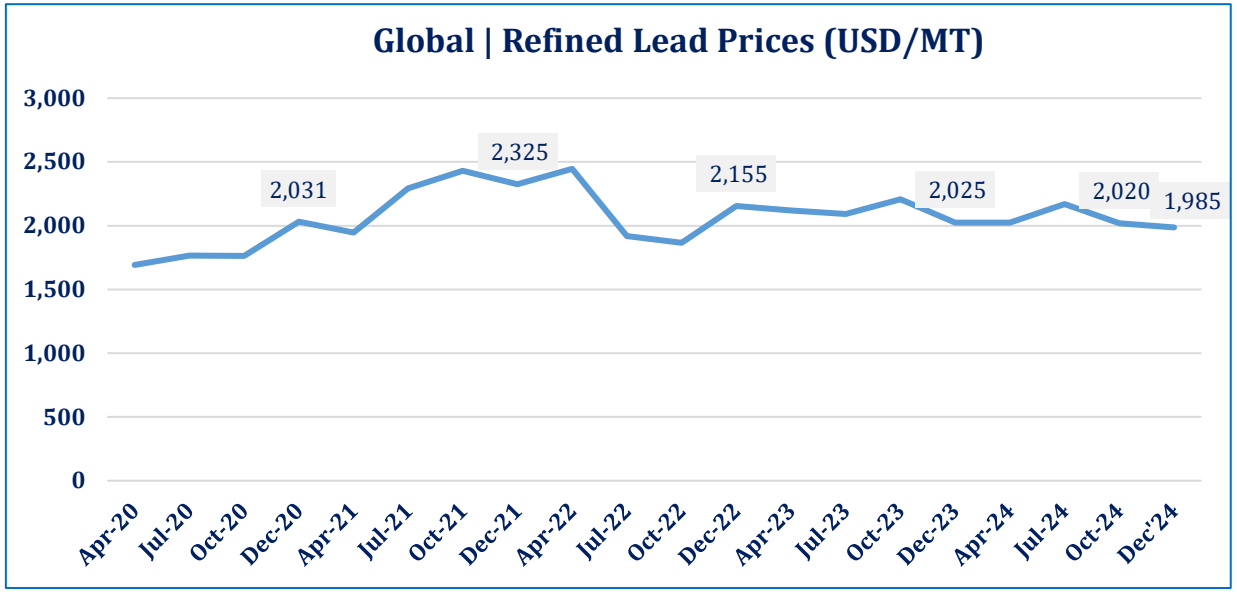
Global | Lead Dynamics

- The global production of refined lead increased by ~2.5% YoY in CY23. However, it is estimated to clock in at ~13.5mln MT in CY24, increasing by ~4.6% YoY. The batteries sector stands as the primary consumer of refined lead, utilizing ~80.0% of its annual production. Meanwhile, the most common application of these batteries is found in automobiles. Other demand drivers of lead include cable sheathing, alloys, and pigments, amongst others.
- Global production of mined lead, on the other hand, amounted to ~4.4mln MT in CY23, down ~1.4% YoY. The world's leading refined lead producer is China, accounting for ~44.8% of total global production during CY23 (SPLY: ~43.7%). Other major producers in CY23 were Australia (~9.8%), Peru (~6.2%) and USA (~6.1%).
- Refined lead prices were down ~2.9% YoY in CY24, averaging at USD~2,050/MT. This was attributable to signs of slowing industrial activity across major economies, notably China, along with increased base metal production earlier in the year. As of End-Dec'24, these recorded at USD~1,985/MT, while going forward, are expected to further decline due to increased production of lead, technological shift, and weak demand from China, one of the largest consumers of the metal.





**CY24 figures are estimates.*

Source: Lead & Zinc Study Group, WB

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Copper | Overview

- 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.

Recycling Process of copper

1. Mining & Extraction: The ore is first mined, then crushed and ground into a fine powder.
2. Concentration: The ground ore is mixed with water and chemicals that cause the copper minerals to float, while the waste materials (gangue) sink. The copper-rich froth is skimmed off, while the waste is discarded.
3. Smelting: The concentrated copper ore is then heated in a furnace, usually with a flux (like limestone) to remove impurities.
4. Blister Copper: The matte is further processed in a furnace (typically a converter) where air is blown through it, oxidizing the impurities and forming blister copper. This is copper that is about 98-99% pure.
5. Electrolytic Refining: A high-purity copper cathode is used as the cathode, and when an electric current is passed through the solution, copper ions from the anode dissolve and then plate onto the cathode, leaving behind impurities which either remain in the solution or settle at the bottom as sludge.
6. Refined Copper: The copper cathodes produced from electrorefining are then removed, cleaned, and melted down to form copper products, like wires, sheets, or other industrial forms.

Source: USGS, Mineral Commodity Summaries, Barrick Gold Corp.

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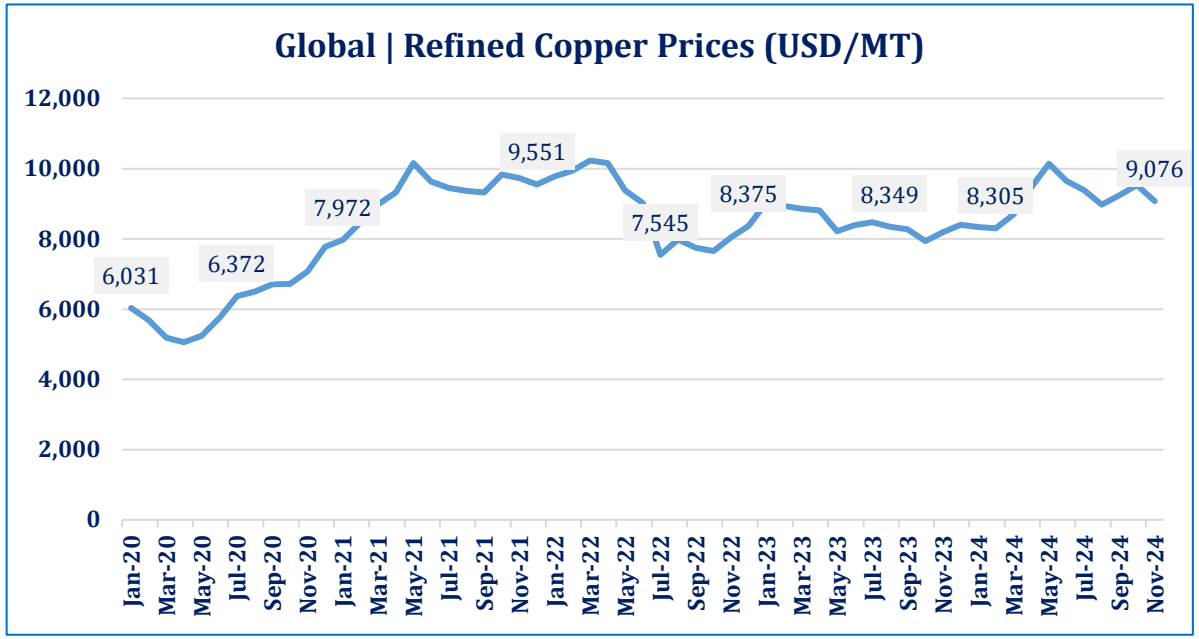
Global | Copper Dynamics

- Global production of mined copper amounted to ~22.0mln MT in CY23, up ~0.4% YoY, while that of refined copper, produced through the process of smelting, stood at ~27.0mln MT during the same year, up ~4.2%. YoY.
- The world's leading producer of mined copper was Chile, accounting for ~22.7% of global mined copper in CY23 (CY22: ~24.3%), owing to the presence of the world's largest copper mine (the Chuquicamata mine). Other major producers during the year were Peru (~11.8%), the Republic of Congo ("Congo") (~11.3%), China (~7.7%), and the United States (~5.0%).
- In CY24, average global prices of refined copper increased ~7.9% YoY, recording USD~9,163/MT, as global demand increased in advanced economies owing to the green energy transition. While these may have picked up pace, recording at USD~9,076/MT as of Nov'24, prices are forecast to remain stable in CY25 on the back of consistent supply.

Country	Mined Copper ('000' MT)			Country	Refined Copper ('000' MT)		
	CY21	CY22	CY23		CY21	CY22	CY23
Chile	5,600	5,330	5,000	China	10,500	11,100	12,000
Peru	2,300	2,450	2,600	Chile	2,270	2,150	2,000
Congo	1,800	2,350	2,500	Congo	1,450	1,770	1,900
China	1,800	1,940	1,700	USA	971	952	890
USA	1,200	1,230	1,100	Peru	336	391	400
ROW	8,500	8,600	9,100	ROW	9,773	9,537	9,810
Total	21,200	21,900	22,000	Total	25,300	25,900	27,000



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

Source: USGS, WB

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Aluminum | Overview

- Aluminum is a lightweight silvery-white metal that 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.
- Aluminum and its alloys are used extensively for producing aircraft, building materials, household appliances and utensils, electrical conductors, and other equipment. It is a ductile and highly malleable metal that can be drawn into wires or rolled into thin foils.
- The leading use of aluminum in high-income countries is usually observed in the transportation sector. In low and middle-income countries, the metal is used mainly in the production of electrical systems and the construction sector.
- During CY23, the global production of aluminum stood at ~70.0mln MT as compared with ~68.4mln MT recorded during CY22.
- Going forward, global aluminum demand is expected to increase by ~40.0% by CY30, where the sector players will need to produce an additional ~33.3mln MT to meet demand growth across all industrial sectors to amount to ~119.5mln MT by CY30.
- Growth in demand is expected to be driven mainly from China, which will require ~12.3mln MT, and the rest of Asia adding a further ~8.6mln MT, North America (~5.1mln MT), and Europe (~4.8mln MT). Together, these four regions alone will account for more than ~90.0% of the additional aluminum required globally.

Source: USGS, Mineral Commodity Summaries

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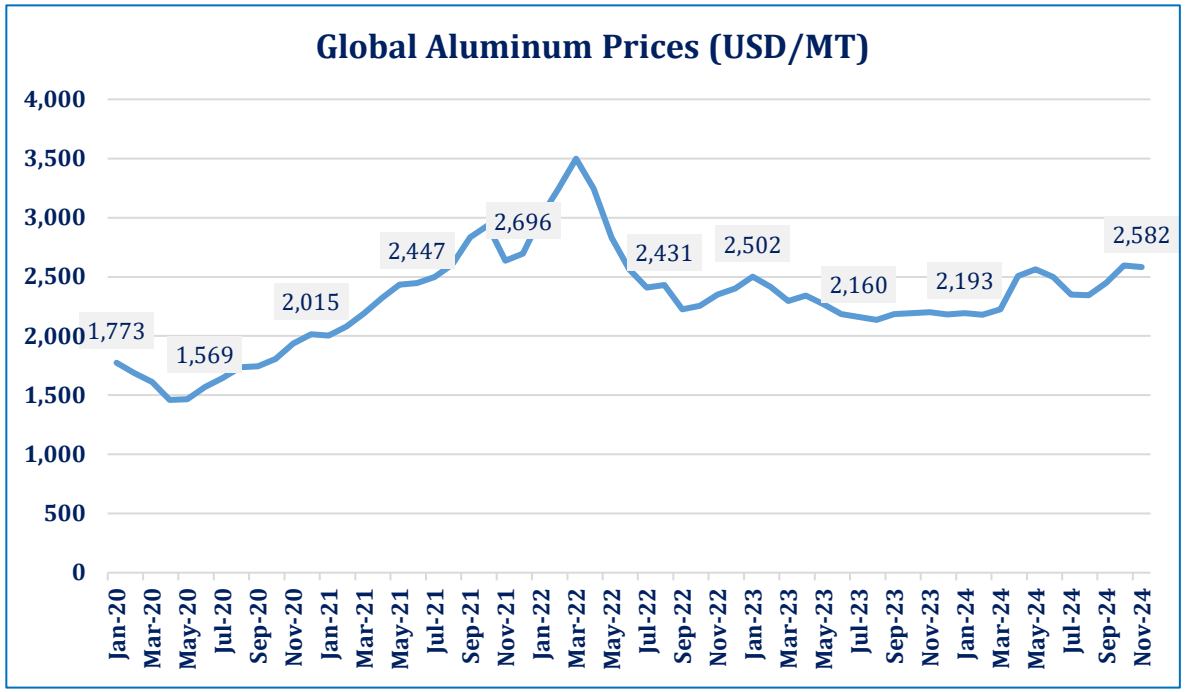
Global | Aluminum Dynamics

- During CY23, global production of refined aluminum increased ~2.3% YoY, with China accounting for ~58.6% of the global production (CY22: ~58.7%). Other major producers of aluminum were India (~5.9%), Russia (~5.4%), Canada (~4.3%), and UAE (~3.9%) in CY23.
- In 11MCY24, global average prices of aluminum increased ~6.7% YoY, averaging at USD~2,408/MT, as global demand increased due to the growing need for aluminum in the renewable energy sector, particularly in solar panel manufacturing. As of Nov'24, these were recorded at USD~2,582/MT (SPLY: USD~2,202/MT).
- The USA is one of the largest aluminum importers (68.0%) In CY25, the USA imposed ~25.0% tariff on the country's Steel and Aluminum imports. However, owing to stable demand from Germany, Mexico, and France, global aluminum prices are expected to remain stable on the back of consistent supply from China.

Country-wise Aluminum Production (000 MT)

Country	CY19	CY20	CY21	CY22	CY23	
					Volume	% Share
China	35,000	37,000	38,900	40,200	41,000	58.6%
India	3,640	3,600	3,970	4,100	4,100	5.9%
Russia	3,640	3,600	3,640	3,720	3,800	5.4%
Canada	2,850	3,100	3,140	2,770	3,000	4.3%
UAE	2,600	2,600	2,540	2,650	2,700	3.9%
ROW	12,270	13,300	13,010	14,960	15,400	22.0%
Total	**60,000**	**63,200**	**65,200**	**68,400**	**70,000**	**100.0%**



Source: USGS, Mineral Commodity Summaries, WB

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Local | Overview

- The local lead recycling market is led by two players, having a total average capacity of ~136,400 MT as of FY24. 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 clientele through its associated companies' strong positions in leading markets all around the world. MMC (Malik Mij Chunxing) also has an expansion plan to enhance its capacities from ~50,000 MT to ~75,000 MT.
- Lead has major uses in Batteries, Construction Materials, Cable Sheathing, and Radiation Sheathing.
- The local copper and aluminum markets can be broadly described as unregulated with numerous small players. These are involved in the production of copper & aluminum scrap, ingots, billets, rods, and strips.
- Copper and aluminum products, in turn, have multiple uses, as they are employed in wiring, building materials, 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 ~43,000MT 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.

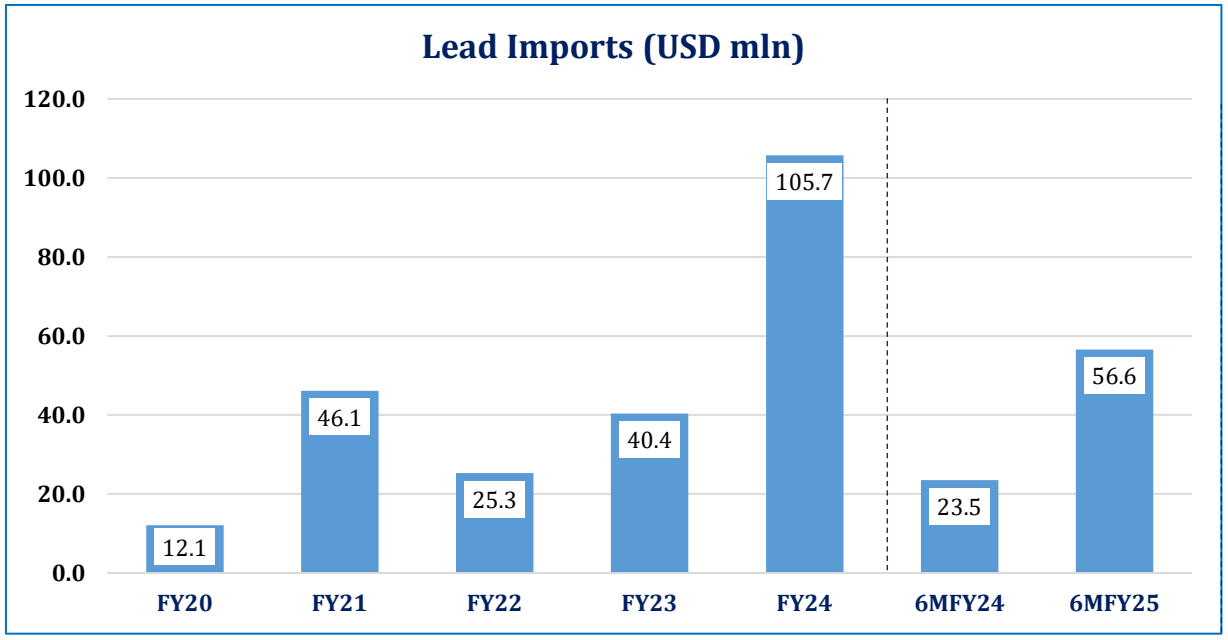
Source: PACRA Database

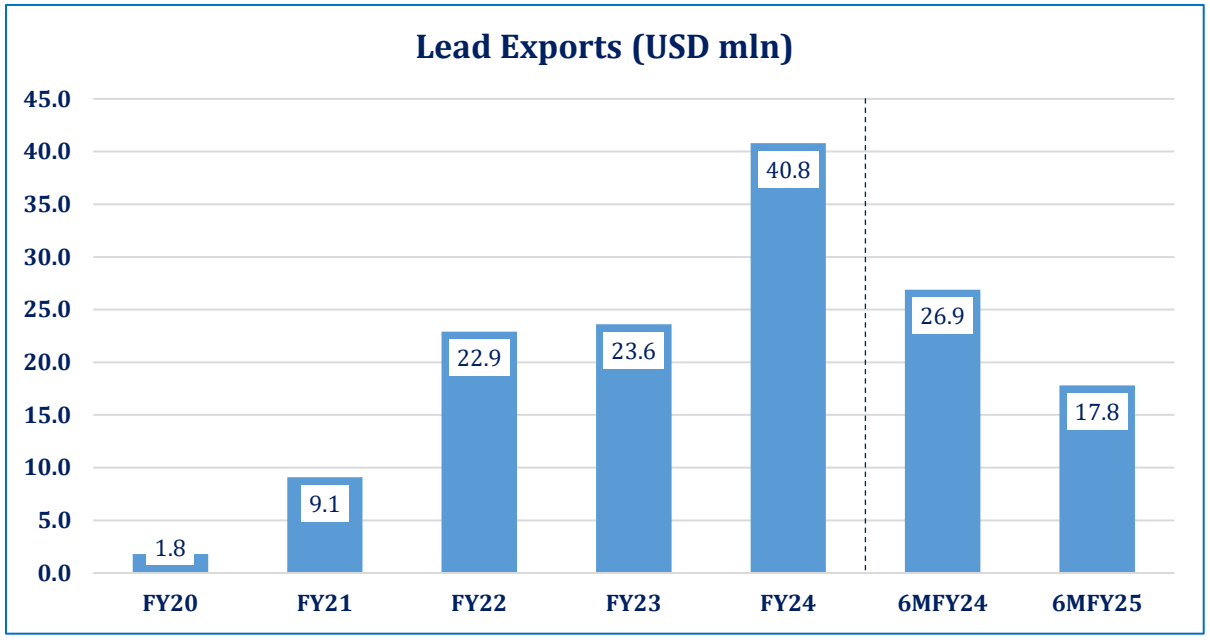
Metals

Local | Trade in Lead

- Pakistan's lead imports, during FY24, clocked in at USD~105.7mln (FY23: USD~40.4mln), a YoY increase of ~161.6%, likely owing to the removal of import restrictions by the SBP as of End-FY23. Pakistan imported lead products majorly from the Middle East (~82.1% share; FY23: ~85.9%), with ~58.2% imported from the UAE, ~14.1% from Saudia Arabia, and ~5.6% from Oman during the year. During 6MFY25, lead imports improved by ~140.8% YoY due to an increase in imports from Saudia Arabia (~252.1% YoY) and UAE (~89.1% YoY), respectively.

- During FY24, the country's lead product exports clocked in at USD~40.8mln (FY23: USD~23.6mln), up ~72.8% YoY. Pakistan exported ~35.1% of lead to China, while ~26.9% was exported to Italy during the year. During 6MFY25, lead exports were down ~33.8% YoY on the back of ~100.0% and ~66.7% lower exports towards Italy and the UAE, respectively.





***Note**: HS codes for Segment Lead includes (7801, 7802 & 7806).*

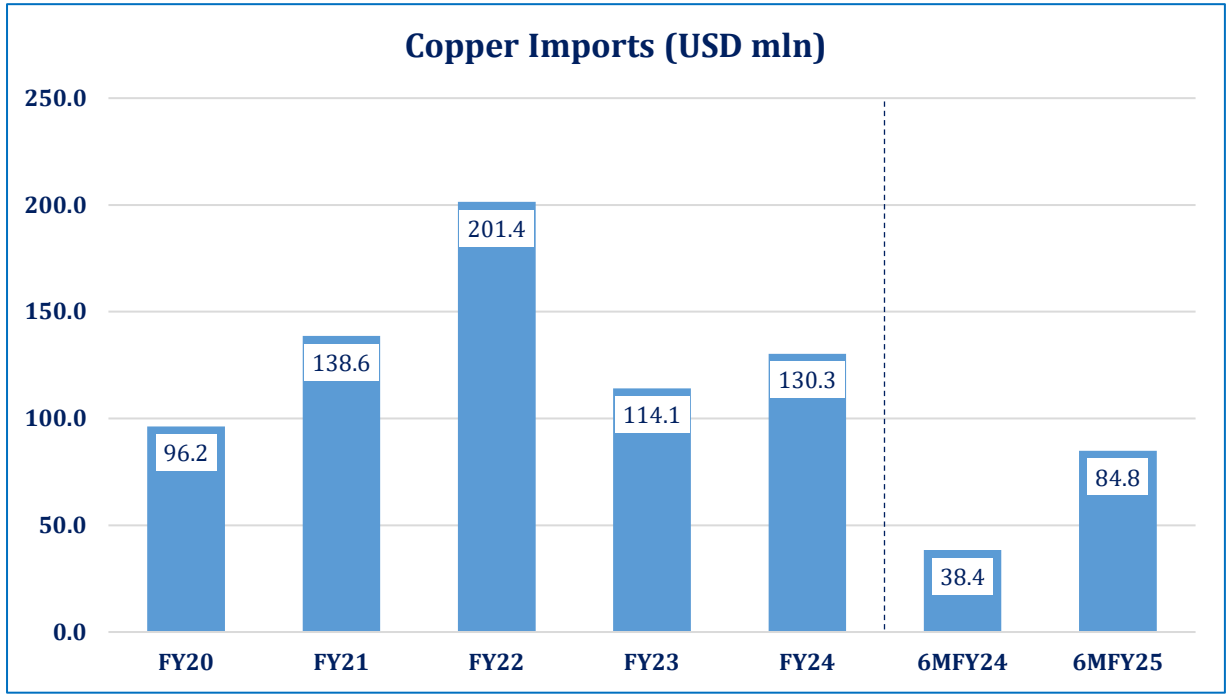
Source: SBP

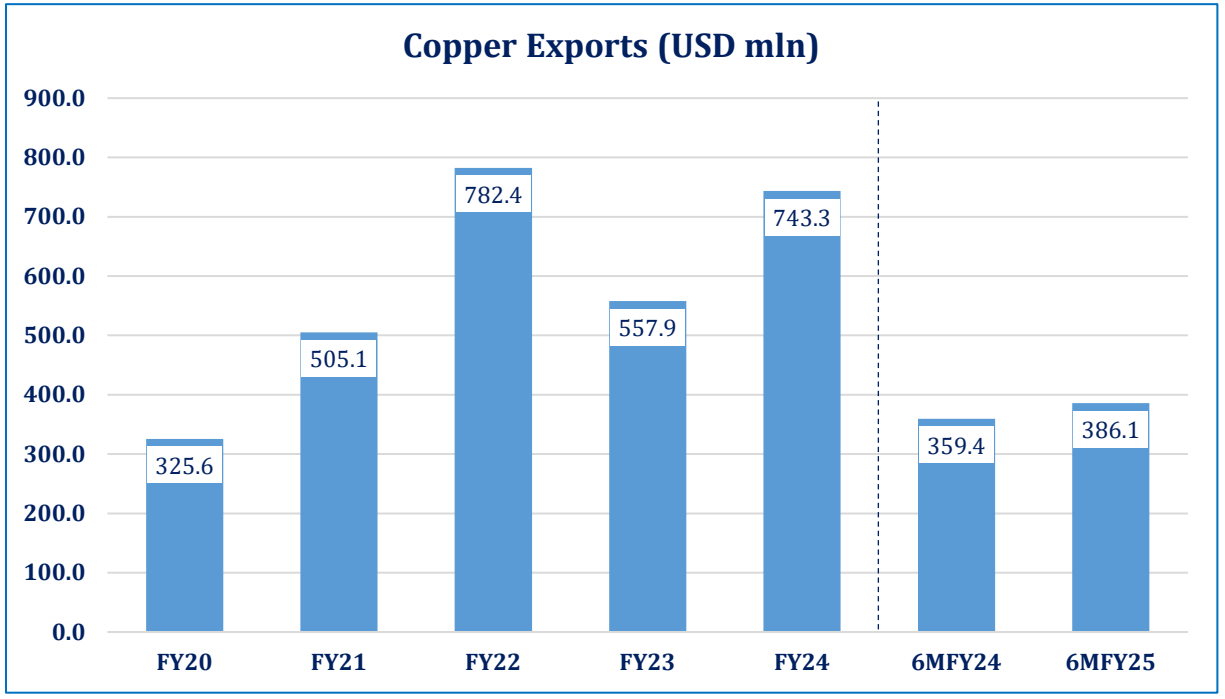
Metals

Local | Trade in Copper

- Pakistan's copper imports, during FY24, clocked in at USD~130.3mln, a YoY increase of ~14.2%. Pakistan imports its copper majorly from Zambia, China, Congo, and Australia with import shares of ~39.3%, ~15.7%, ~13.9%, and ~7.6% respectively during FY24**.** During 6MFY25, copper imports increased by ~120.8% YoY on the back of ~178.1% YoY higher imports from China.

- During FY24, Pakistan's copper exports clocked in at USD~743.3mln (FY23: USD~557.9mln), a YoY increase of ~33.2%. In FY24, Pakistan exported ~92.8% of the copper to China. Copper exports improved during 6MFY25 by ~7.4% YoY, on the back of a ~152.7% increase in exports (in value terms) toward Hong Kong. Additionally, currency parity was recorded at USD~278.2/PKR in 6MFY25 (SPLY: USD~287.3/MT).





***Note**: HS codes for Segment Copper includes (7403, 7404 & 7411)*

Source: SBP, PACRA Database

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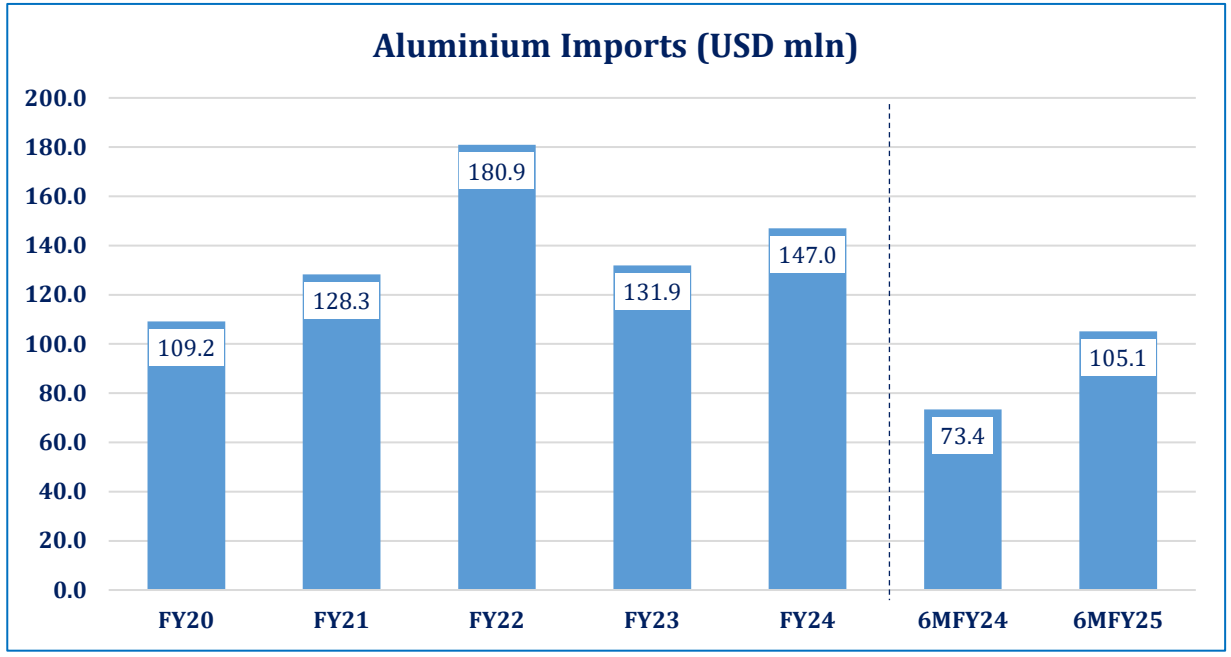
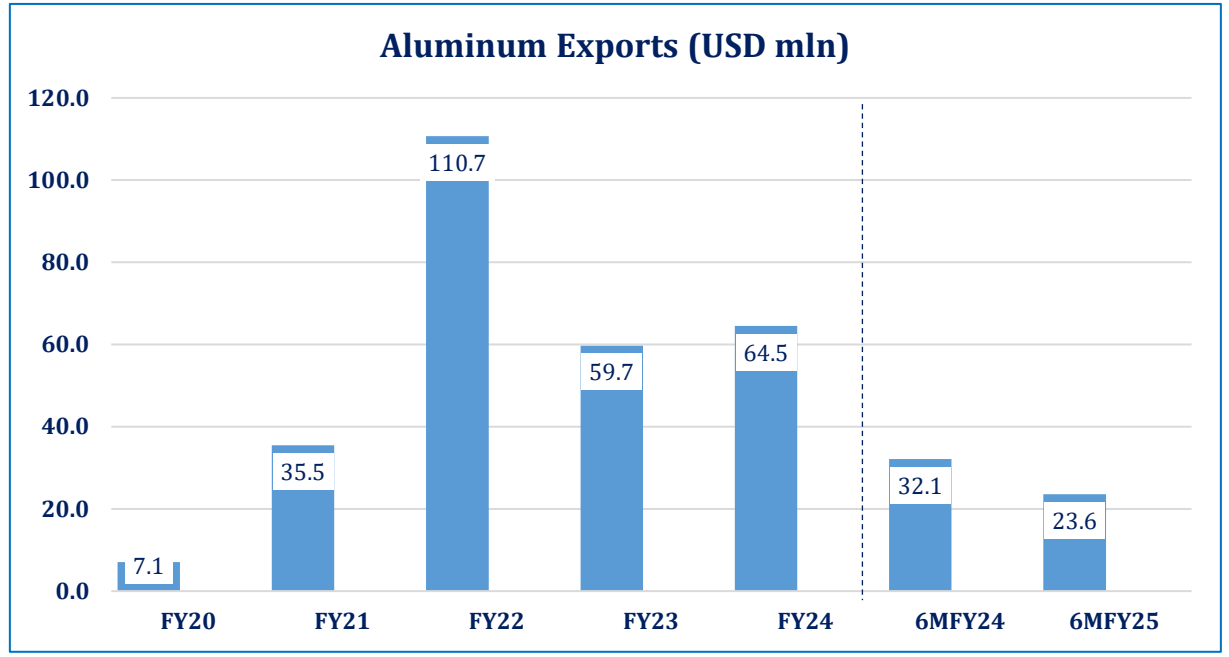
Local | Trade in Aluminum

- Pakistan's aluminum imports, during FY24, clocked in at USD~147.0mln (FY23: USD~131.9mln), up ~11.4% YoY. Pakistan imported aluminum majorly from the Middle East (~86.3%), with ~26.5% imported from UAE, ~24.7% from Oman, and ~14.1% from Saudia Arabia, respectively, during the year. During 6MFY24, aluminum imports rose ~43.1% YoY on the back of an increase in imports from Australia and Bahrain (~204.2% and ~185.6% YoY, respectively).

- During FY24, the country's aluminum exports clocked in at USD~64.5mln (FY23: USD~59.7mln), up ~8.1% YoY. Of the total aluminum exports, ~80.9% were exported to China, while ~12.9% were exported to UAE during FY24 (SPLY: ~83.9% and ~13.1%, respectively). During 6MFY25, aluminum exports declined by ~36.0% YoY on the back of ~37.5% lower exports to China.





***Note**: HS codes for Segment Aluminum includes (7601 & 7602).*

Source: SBP

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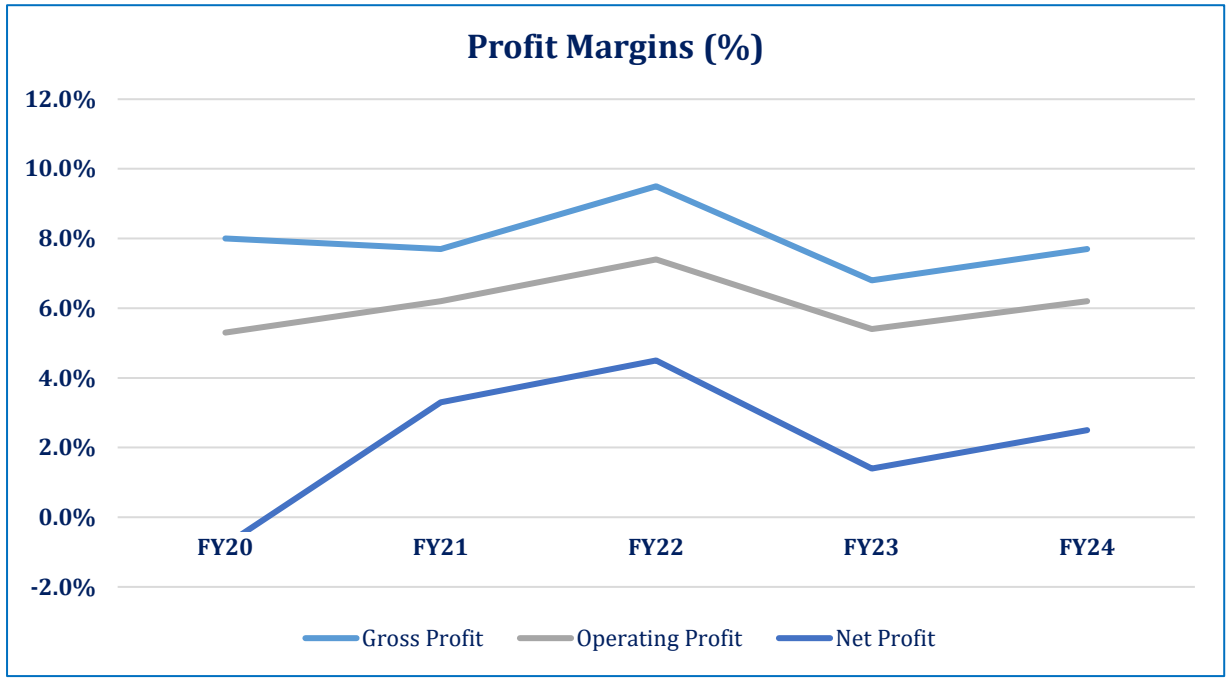
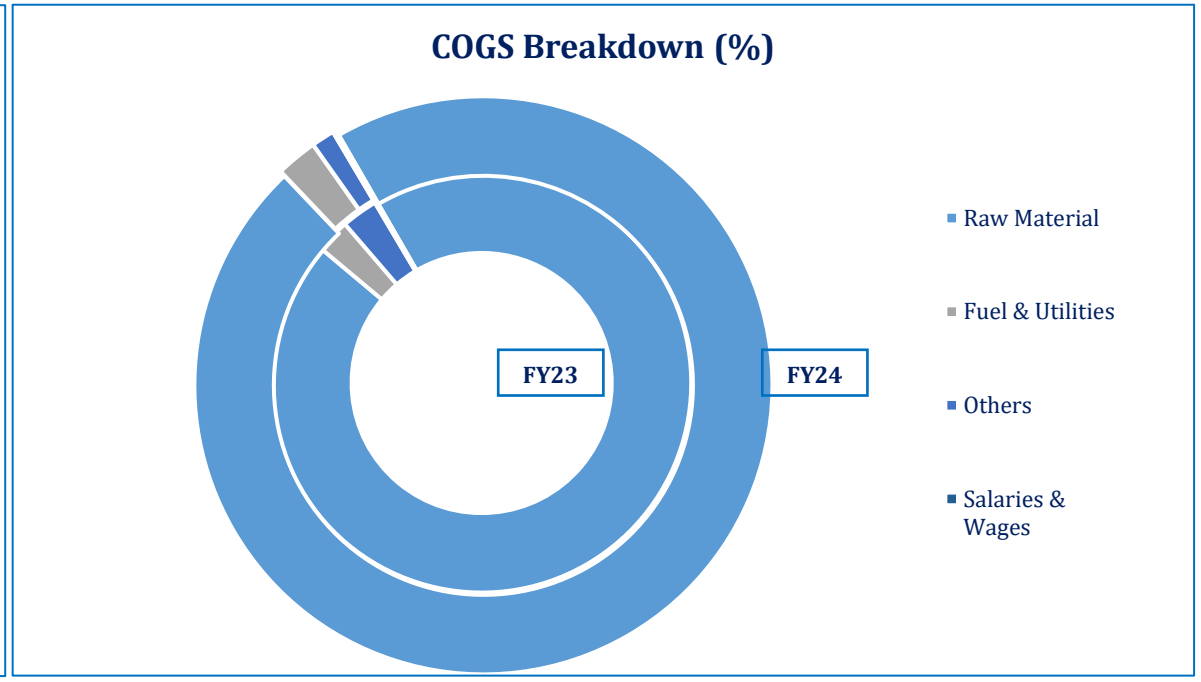
Business Risk | Lead

- During FY24, the segment's gross revenue increased by ~5.6% YoY (FY23: ~21.1% YoY), resulting in gross profits increase by ~19.4% YoY in FY24 (FY23: ~-12.8%). Therefore, average gross margins improved to ~7.7% during the year.
- Moreover, operating profit increased by ~22.9% YoY in FY24 (FY23: ~-12.1%), while the net profit registered ~91.6% YoY growth resulting in average net margins improving to ~2.5% in FY24. During the year, the sector's finance costs rose by ~20.1% YoY, while other income was up ~128.8% YoY due to higher return on investments as policy rates were increased by SBP to ~22.0% during Jun'23-Apr'24. Since Jun'24, the SBP has consecutively eased interest rates, with the same recording at ~12.0% as of Jan'25.
- The largest component in the lead recycling segment's direct costs are the raw materials which comprised ~96.2% of total direct costs in FY24, majorly comprising used lead products.





***Note**: Margins and cost break up are reflective of ~1 listed/ rated player belonging to lead recycling segment.*

Source: PACRA Database

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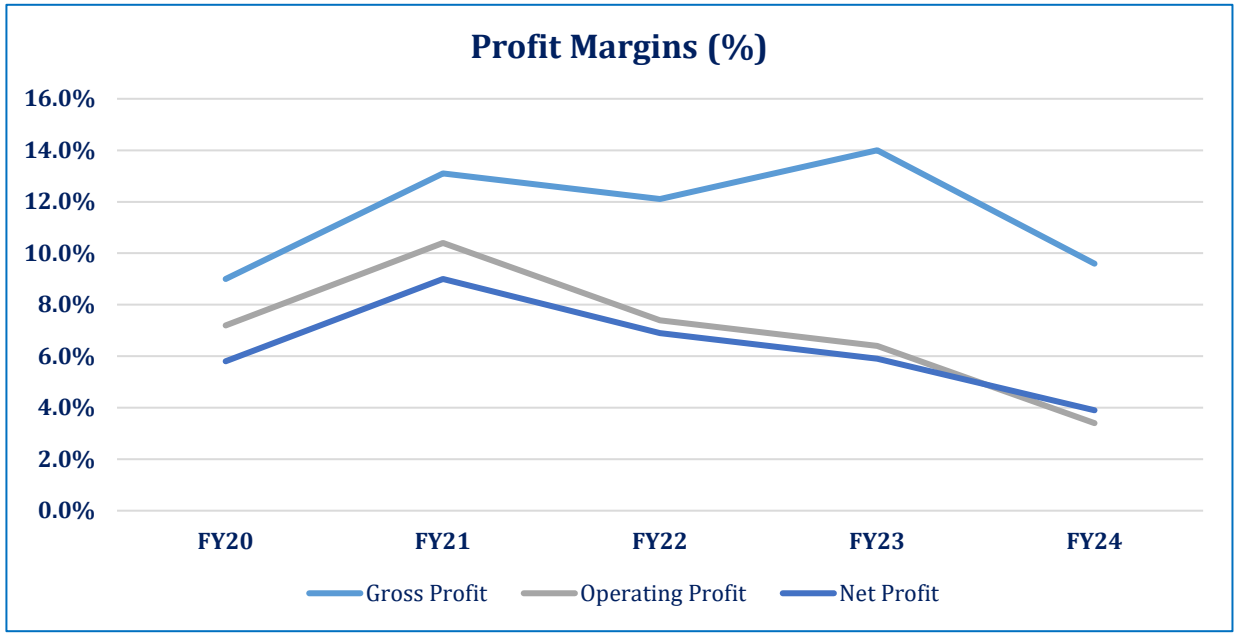
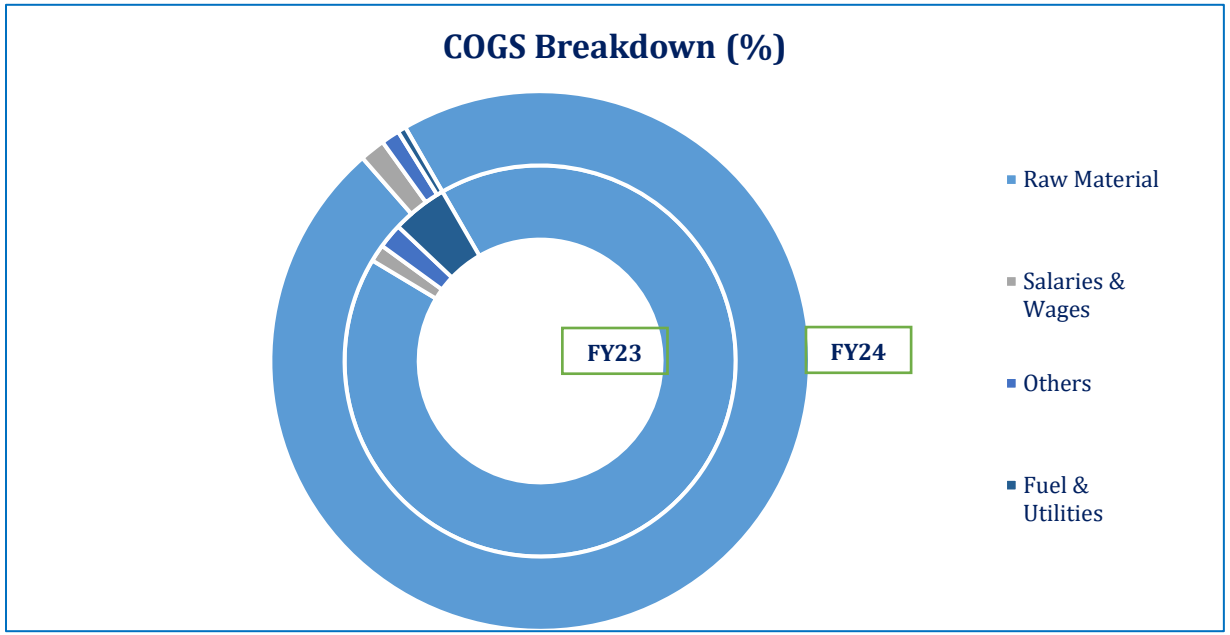
Business Risk | Copper & Aluminum

- During FY24, the segment's gross revenue decreased by ~9.6% YoY (FY23: ~28.2% YoY), resulting in gross profits decrease by ~21.7% YoY in FY24 (FY23: ~17.8%). Meanwhile, cost of sales also decreased by ~8.2% YoY, resulting in average gross margins declining to ~9.6% during FY24.

- Moreover, operating profit was down ~51.4% YoY in FY24 (FY23: ~11.3%), while the net profit registered ~39.3% YoY decline. This resulted in average net margins declining to ~3.9% in FY24 (FY23: ~6.4%). During the year, the segment's finance costs rose by ~3.5% YoY, owing to high interest rates in FY24 (~22.0%), while other income declined by ~40.0% YoY. However, finance costs are likely to decline in FY25 on the back of consistent policy rate cuts by the SBP (MPR as of Jan'25: ~12.0%).

- The segment's direct costs majorly comprised raw material cost ~96.9% during FY24 which, in turn, consists of copper in the form of scrap material and aluminum in the form of raw material.





***Note**: Margins and cost break up are reflective of ~1 player belonging to the copper & aluminium segment.*

Source: PACRA Database

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Local | Duty Structure

PCT Code	Description	Custom Duty		Additional Custom Duty		Total	
		FY24	FY25	FY24	FY25	FY24	FY25
2603.00	Copper Ores & Concentrates	0%	0%	2%	2%	**2%**	**2%**
2606.00	Aluminum Ores & Concentrates	0%	0%	2%	2%	**2%**	**2%**
2607.00	Lead Ores and Concentrates	0%	0%	2%	2%	**2%**	**2%**
7801.10	Unwrought Lead (including refined lead)	0%	0%	2%	2%	**2%**	**2%**
7802.00	Lead waste and scrap	0%	0%	2%	2%	**2%**	**2%**
7804.19	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%	2%	2%	**0%**	**2%**
74.08 - 74.12	Copper wire, plates, sheets, foil, tubes and pipes	0-16%	0-16%	0-4%	0-4%	**0-20%**	**0-20%**
76.01 - 76.03	Unwrought aluminum, waste or scrap, powders and flakes	0-30%	0-30%	2-7%	2-7%	**0-37%**	**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 25.0% during FY25. For HS Codes 7601.1000, an Import Regulatory Duty of 10% has been implemented during the same period.

Source: FBR

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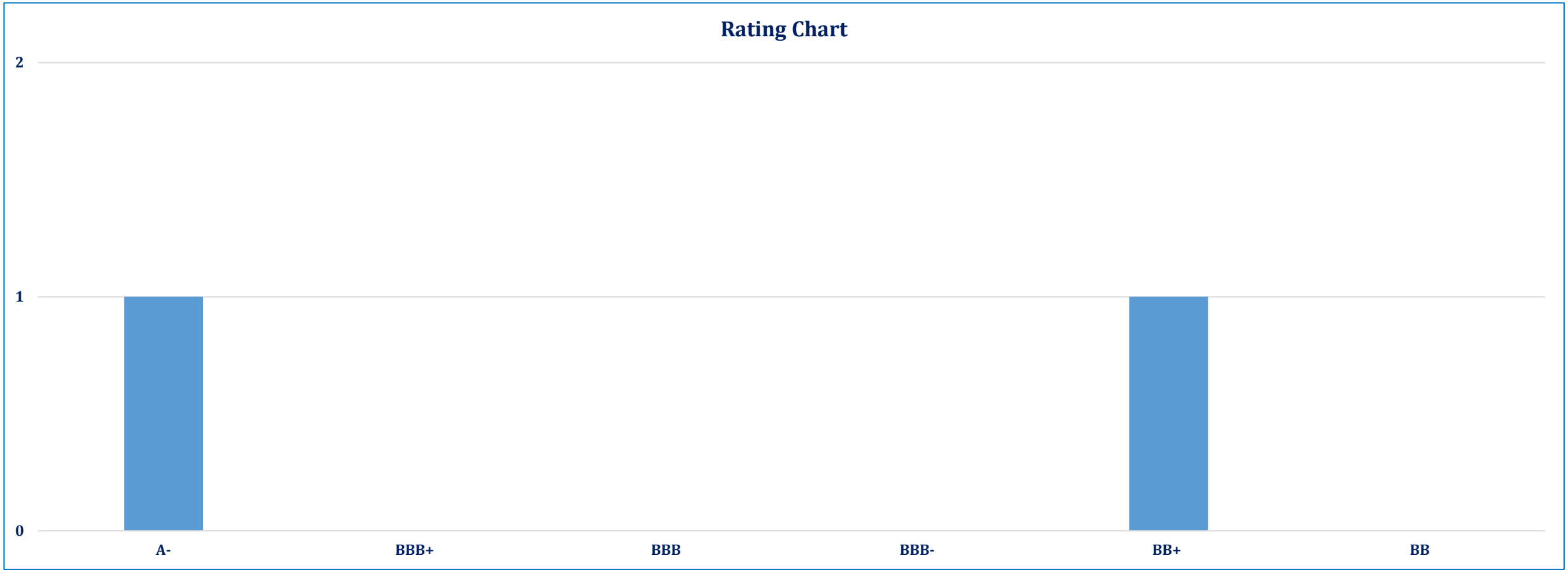
Rating Curve

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



Source: PACRA Database

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Outlook: Stable

- In FY24, Pakistan's GDP (nominal) stood at PKR~105.4trn (FY23: PKR~101.1trn), increasing, in real terms, by ~2.4% YoY (FY23: ~0.2% decline). Industrial activities in FY24 held ~21.9% share in the GDP while manufacturing activities made up ~62.9% of the value addition. In 1QFY25, Pakistan's GDP (nominal) stood at PKR~26.3trn (1QFY24: PKR~24.7trn), increasing, in real terms, by ~-0.9% YoY and signaling an improvement in economic activity as compared to the SPLY.

- During FY24, global average refined lead prices dropped by ~2.9% YoY, averaging at USD~2,050/MT as the global supply of lead increased amid weak demand in advanced economies, including China. Pakistan imports lead majorly from the Middle East, therefore, with the stable exchange rate during FY25 and a continued reduction in the global prices of lead, profit margins for players operating in the local demand-driving sectors (for instance, batteries) are expected to remain favorable.

- During FY24, business activity in the copper and aluminum segments remained sluggish as all margins exhibited a downward trajectory (average gross margins dipped to ~9.6% while average net margins were down to ~3.4%). On the other hand, international aluminum and copper prices witnessed a stable trend during FY24 on the back of stable demand. However, going forward, demand for copper is expected to grow on the back of increased demand from China.

- Going forward, the Sector's financial performance is expected to show signs of recovery on the back of reduced raw materials costs (owing to the lower projected global prices) and improved macroeconomic indicators, particularly interest rates, which are forecast to stay on the lower end. Moreover, the demand for metals (covered in the study) is expected to remain strong, driven by growth in electric vehicles and renewable energy infrastructure sectors. Any improvement in the LSM segment of the economy is also likely to catalyze the demand, translating into better revenue prospects for the Sector players.

- On the external front, Aluminum and Copper exports cumulatively clocked in at USD~807.8mln during FY24 (~30.7% YoY growth), further inching up by ~4.6% YoY in 6MFY25. This is a relatively new and growing export avenue for the country. In the presence of an enabling business environment, the growth trajectory is expected to continue on the back of stable global demand, further supporting the foreign exchange earnings.

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- Lead and Zinc Study Group
- Business Insider
- U.S. Geological Survey, Mineral Commodity Summaries (USGS)
- World Bank (WB)
- UN Comtrade
- Bloomberg
- PACRA Database

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