SECTOR STUDY . DECEMBER 2023

Together. Creating Value.

Batteries

Research Team

Saniya Tauseef | Senior Manager Research
Ayesha Wajih | Supervising Senior Research

Batteries

Batteries

Introduction

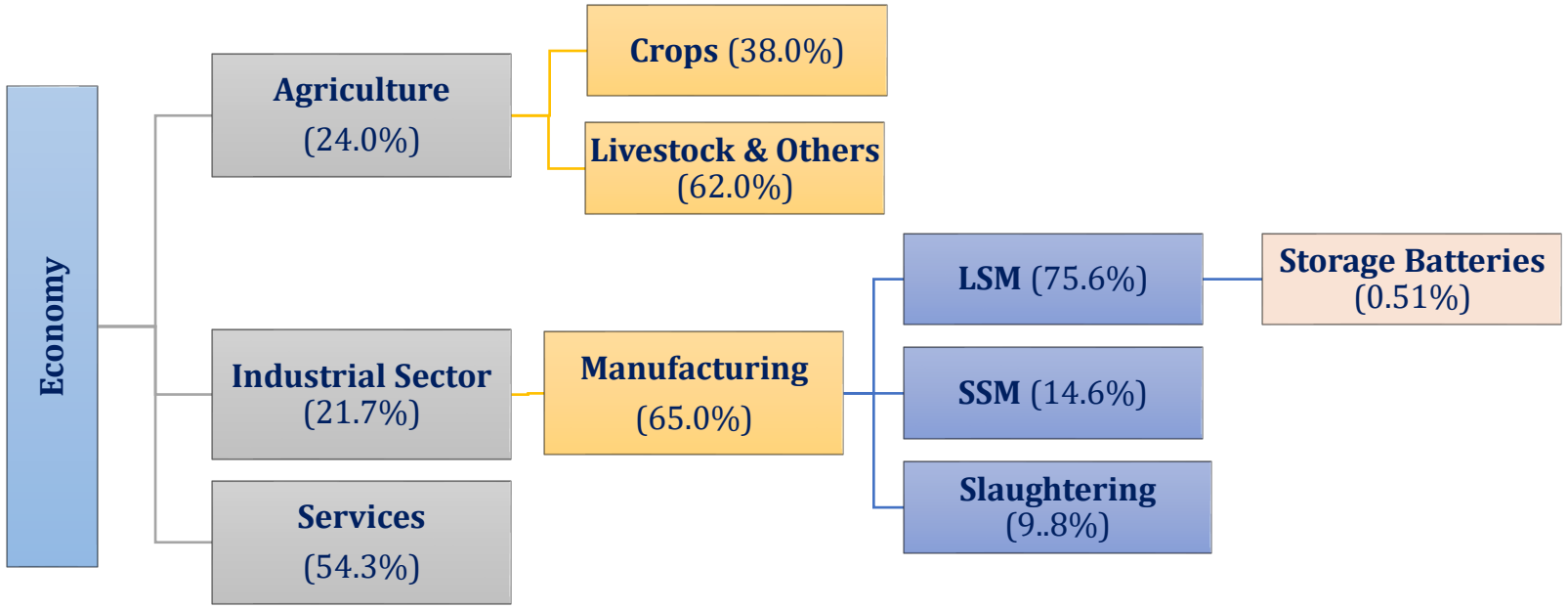
- A Battery is a device that stores chemical energy and converts it into electrical energy. The chemical reactions in a battery involve the flow of electrons from one electrode to another.
- Every battery (or cell) has a cathode, or positive plate, and an anode, or negative plate. These electrodes must be separated by and are often immersed in an electrolyte that permits the passage of ions between the electrodes. The electrode materials and the electrolyte are chosen and arranged so that sufficient electromotive force (measured in volts) and electric current (measured in amperes) can be developed between the terminals of a battery to operate lights, machines, or other devices.
- Batteries are divided into two general groups: (i) Primary batteries and (ii) Secondary/Storage batteries. Primary batteries are designed to be used until the voltage is too low to operate a given device and are then discarded. Secondary batteries have numerous special design features, as well as particular materials for the electrodes, that permit them to be reconstituted (recharged). After partial or complete discharge, they can be recharged by applying direct current (DC) voltage.

Source: Britannica.com, Australia Academy of Science

Batteries

Local | Overview

- In FY23, Pakistan's GDP (nominal) stood at PKR~79.7trn (FY22: PKR~63.3trn), contracting, in real terms, by ~0.17% YoY (FY22: ~6.3% growth). Industrial activities in FY23 held ~22% share in the GDP while the manufacturing activities made up ~65% of value addition. In 1QFY24, Pakistan's GDP (nominal) stood at PKR~22.6trn (1QFY23: PKR~18.4trn), rising in real terms by ~2.13% (1QFY23: ~0.96%).
- Large Scale Manufacturing (LSM) in Pakistan is essential for the economic growth considering its linkages with other sectors, as it represented ~75% value of all manufacturing activities in FY23. The LSM fell by ~10.3% in FY23 (FY22: ~11.7%) and further declined by ~0.44% YoY in 4MFY24 period.
- The Batteries sector is classified as a Large Scale Manufacturing (LSM) industrial component within the industrial sector. In FY23, the Batteries sector's weight in the QIM was recorded at ~0.51%.



Source: PBS, PES

Batteries

Local | Overview

- Manufacturing in Pakistan's local Batteries sector comprises organized and unorganized segments, with the former occupying ~90% of the market share and consisting of ~7 major players. Meanwhile, several smaller players operate in the unorganised segment.
- During FY23, the Sector's estimated revenue grew ~65.6% YoY, clocking in at PKR~171.7bln (FY22: PKR~103.7bln) majorly owing to an increase in prices on the back of overall inflationary impact during the year.
- The number of total Storage Batteries produced during the year were down ~9.0% YoY to ~151,519 units as compared to ~166,470 units produced in FY22. These are usually employed in backup power providers such as a UPS (Uninterrupted Power Supply). During 3MFY24, these were up ~4.6% YoY (SPLY: ~40,817).
- Imports of electrical accumulators were down ~33.8% YoY in FY23 to USD~71.7mln (SPLY: USD~108.3mln) while exports increased ~45.8% YoY to USD~35mln in FY23. During the same year, a total of ~1.6mln electrical accumulators were exported depicting an increase of ~34.6% YoY in volumetric terms. On the imports side, during FY22, ~5.9mln batteries were imported, comprising ~58.1% lithium-ion accumulators, ~23.3% battery parts and ~11.2% lead-acid accumulators, with nickel-based batteries forming the rest.

Particulars	FY22	FY23	1QFY23	1QFY24
Estimated Revenue* (PKR bln)	103.7	171.7	36.5	45.4
Revenue YoY % Change	*24.5%*	*65.6%*	*40.4%*	*24.4%*
Export Value (USD mln)	*24.4*	*35.0*	*13.5*	*10.1*
Import Value (USD mln)	108.3	71.7	28.3	50.7
Local Production | Storage Batteries (Nos.)	166,470	151,519	40,817	42,692
Market Structure	Oligopoly			
No. of Major Players	~7			

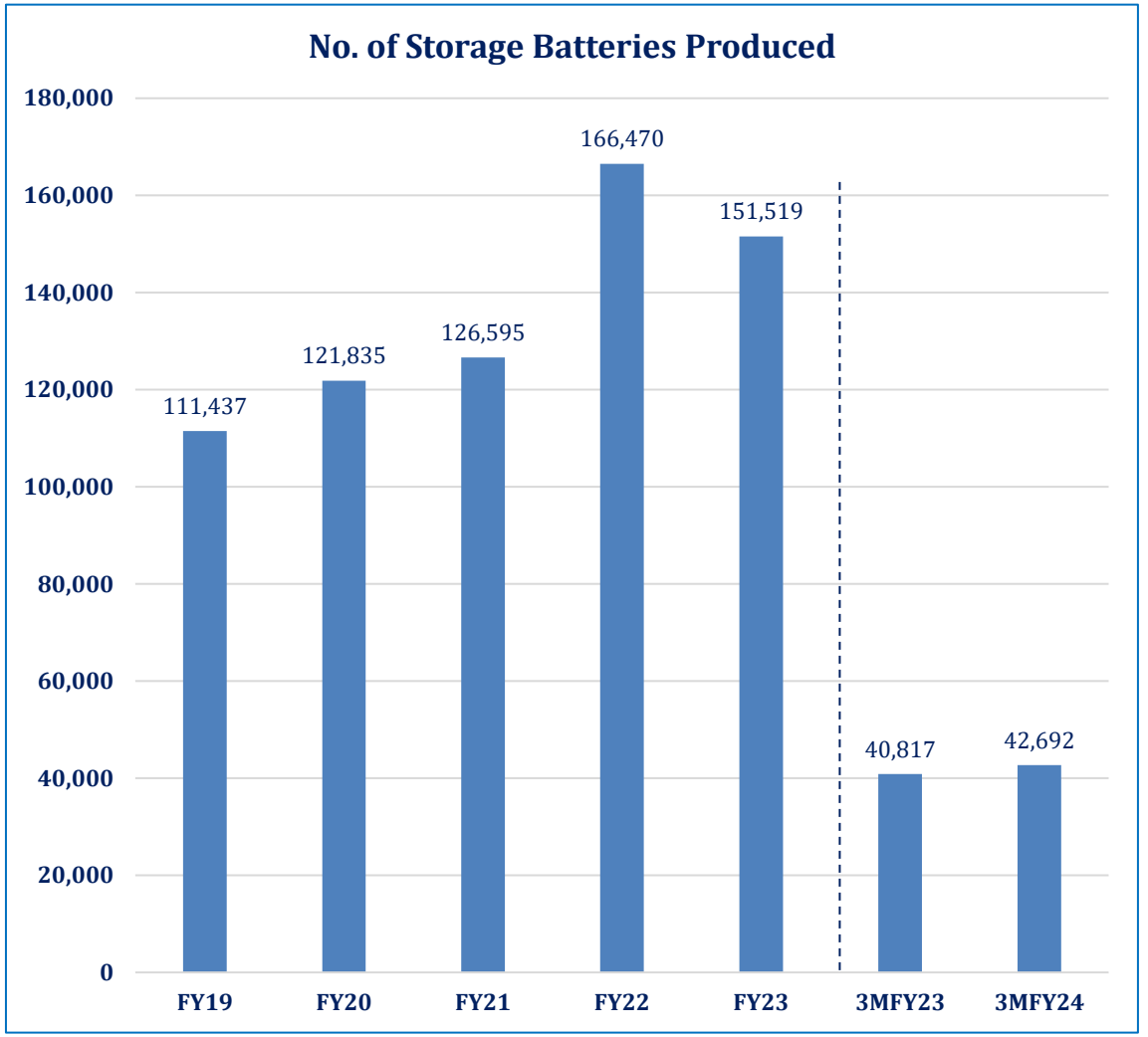
Estimated based on ~1 PACRA-rated/ listed Sector players.* ***Note**: Export & Import data pertains to storage batteries HS Code 8507 (Electrical Accumulators for Motor Vehicles that include trucks, buses, cars, tractors and dump trucks) i.e. other than UPS Batteries.*

Source: PBS, PACRA Database, Financial Statements

Batteries

Local | Production

- The number of locally produced storage batteries has increased steadily at a CAGR of ~7% over the last five years (FY19-23). During FY23, production was down ~9.0% YoY, recording at ~151,519 batteries. Moreover, during 3MFY24, ~42,692 batteries were produced as compared to ~40,817 batteries during SPLY (an increase of ~4.6% YoY).
- Apart from the automobiles segment and associated replacement market, increasing demand for backup power solutions and a rise in the solar power installations are likely to be major demand drivers for the Sector.
- On the other hand, demand for heavy and medium-sized batteries for UPS (including solar UPS) can be associated with power shortages in the country, which occur more frequently during the summer season.
- The anticipation of an increase in future solar power installations is linked with the GoP's endorsement of the CY22 Framework Guidelines for Fast Track Solar Initiative with the goal to promote and advance cost-effective local renewable energy sources in FY23-24. Additionally, the GoP has set a target to increase the share of renewable (solar and wind) generation to ~30% in the national energy mix by CY30.
- The initiation of electric vehicle assembling projects such as the locally assembled Electric Vehicle (HEV) by the Indus Motor Company and Toyota Corolla Hybrid Electric Vehicle (HEV) as well as Battery Electric Vehicles (BEVs) is also expected to boost the demand for low-maintenance hybrid batteries in the coming years.



Note: *Data is limited to those reported by PBS. Storage Batteries are assumed to be used in Uninterrupted Power Supply (UPS) equipment.*

Source:. PBS, PAMA, LUMS Energy Institute, Enerdata

Batteries

Local | Raw Materials

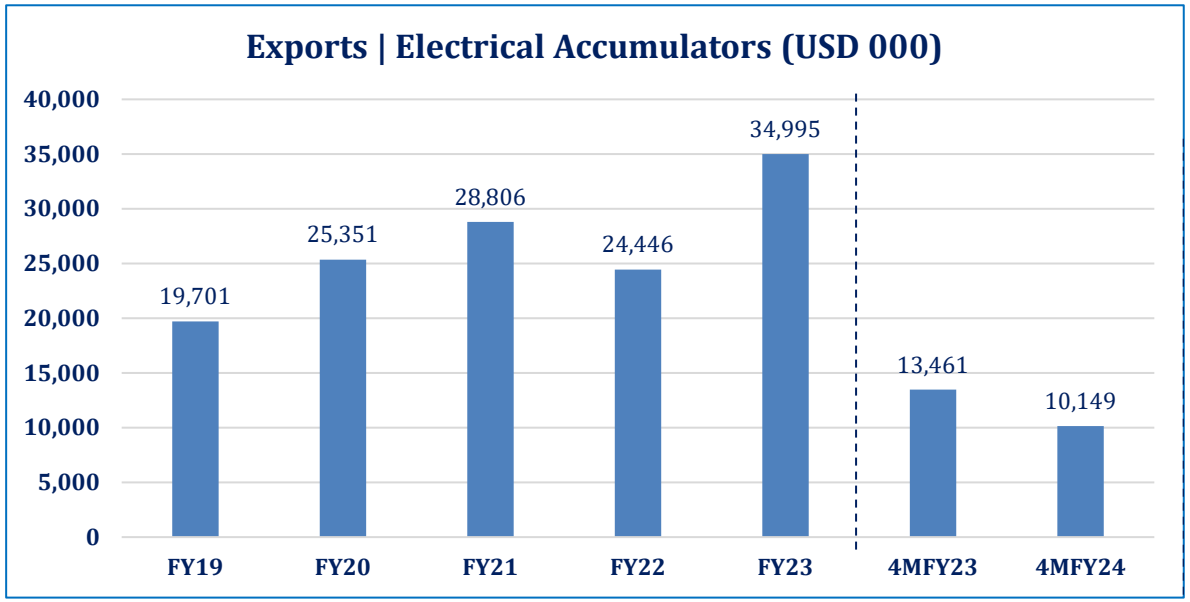
Lead: Lead is employed in lead storage batteries due to its superior reliability. These batteries are not only cost-effective but also highly-convenient in terms of installation. Additionally, they serve as a sustainable energy source, contributing to eco-friendly practices. Lead-acid batteries can store a significant amount of energy relative to their size and weight and are also highly recyclable. These cater a wide range of applications, including automotive, aviation, marine, medical, nuclear, motive power, standby, uninterruptible power supplies (UPS), energy storage, load leveling, renewable energy, security, emergency lighting, electric and hybrid electric vehicles, among others. However, lead batteries require water replacement and their lifespan is shorter than lithium lead batteries.

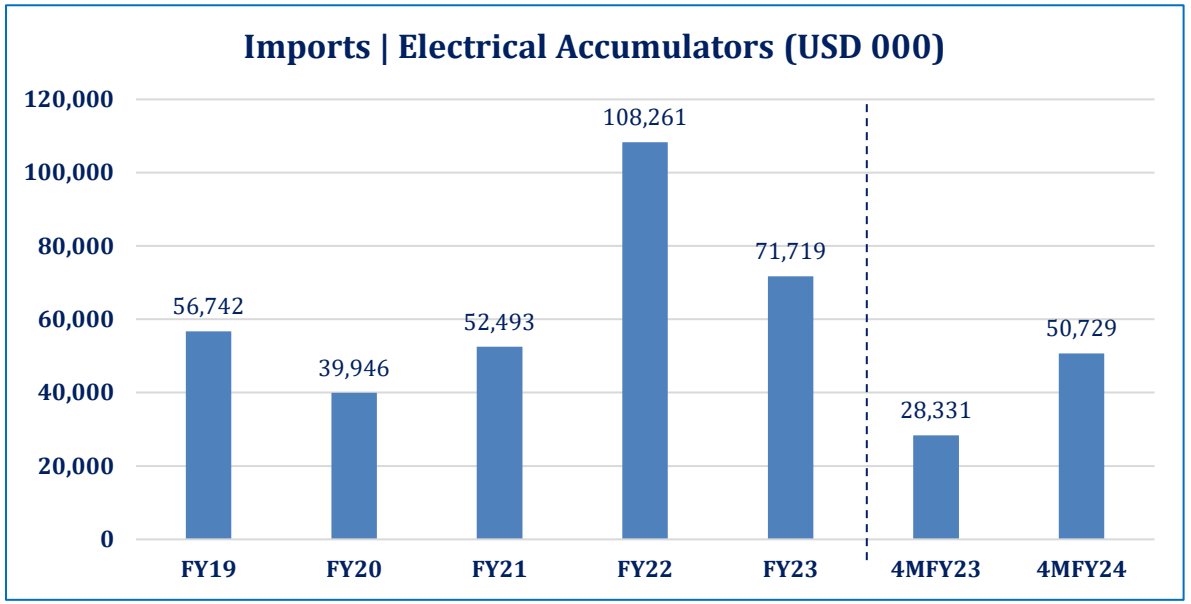
Lithium: Lithium, if used in batteries, makes them last ~10x longer than lead acid batteries. Whilst storing significant amount of energy relative to their size and weight, they usually require low maintenance. Lithium makes batteries hold charge for a longer period when not in use. Lithium batteries are rechargeable, allowing them to be used repeatedly. These also provide a higher voltage compared to other rechargeable batteries. This can be advantageous in certain applications, such as electric vehicles, where higher voltage contributes to increased power efficiency.

Source: Battery Council International, relionbattery.com

Batteries

Local | Exports & Imports





- Electrical accumulators exported in FY23 amounted to USD~35mln from USD~24mln, a decline of ~46% YoY. A possible explanation for the rise in export receipts in FY23 might stem from volumetric increase in exports. The imports of electrical accumulators was down ~33% to USD~72mln from USD~108mln in FY22 due to import restrictions (May'22-Jun'23) imposed by SBP as well as due to PKR depreciation against USD ~39% that rendered imports expensive.

- The ratio of imports to exports was recorded at ~67:33 in FY23 (FY22: ~82:18). During 4MFY24, exports of electrical accumulators clocked in at USD~10mln (SPLY: USD~13mln), whereas imports stood at USD~51mln in 4MFY24 (4MFY23: USD~28mln).

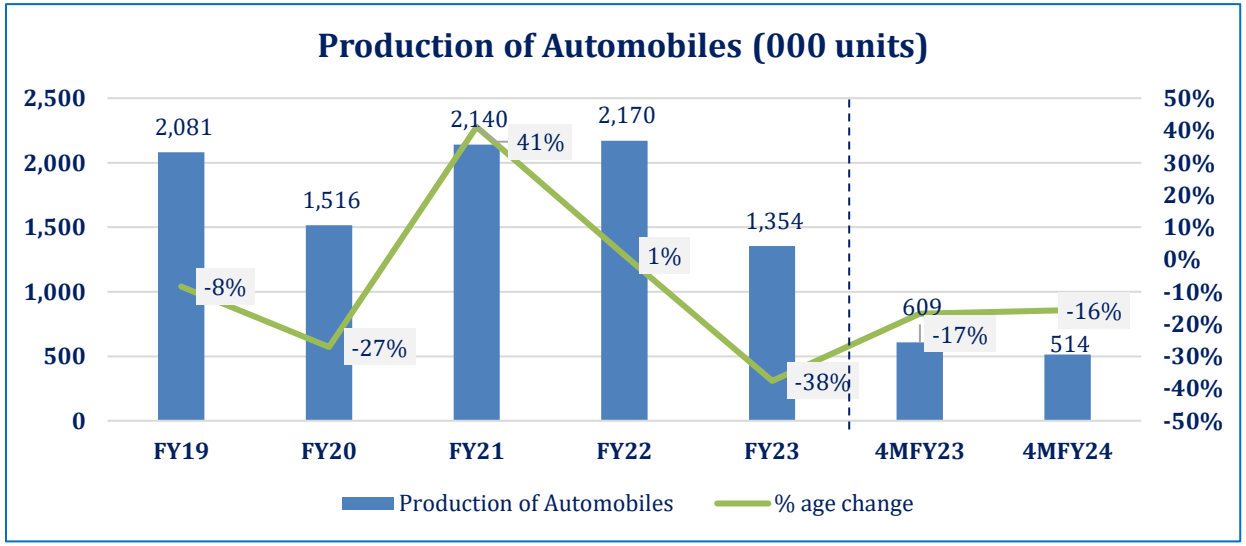
***Note**: Export & Import data pertains to storage batteries HS Code 8507 (electrical accumulators for motor vehicles) i.e., other than UPS batteries*

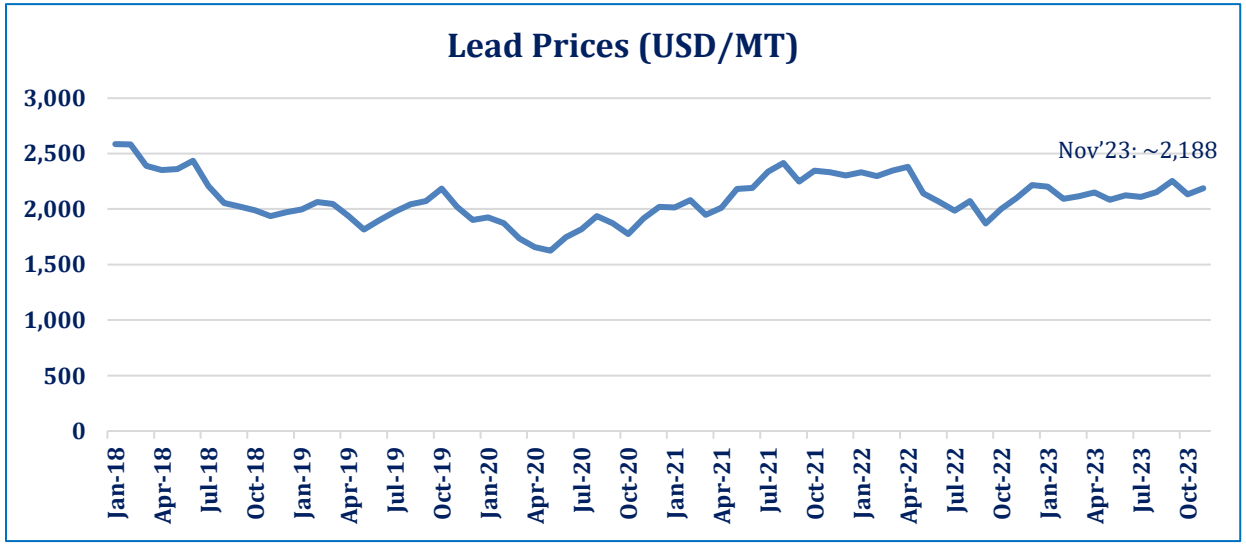
Source: PBS, SBP

Batteries

Local | Business Risk

- The production of automobiles declined by ~37.6% YoY in FY23 due to adverse economic conditions, import curbs (May'22-Jan'23), rising interest rates and high raw material prices. Resultantly, major players in the automobile sector including Indus Motor Company, Honda Cars and Suzuki Motors had to halt their productions and/or shut down.
- Although import restrictions were withdrawn in Jun'23, the production of automobiles is expected to decline further in FY24 due to high interest rates, rising inflation and currency depreciation. This decline in production of automobiles is also reflected in 4MFY24 that depicts a decline of ~15.7% YoY.
- Lead is one of the main raw materials in the production of batteries. In FY23, lead prices fell ~9.2% YoY, averaging at USD~2,084.2/MT as global supply of lead increased amid weak demand in advanced economies, including China. While these may have picked up pace Jul'23 onwards, reaching USD~2,188.5/MT in Nov'23, prices are forecast to remain stable in FY24 on the back of consistent supply.



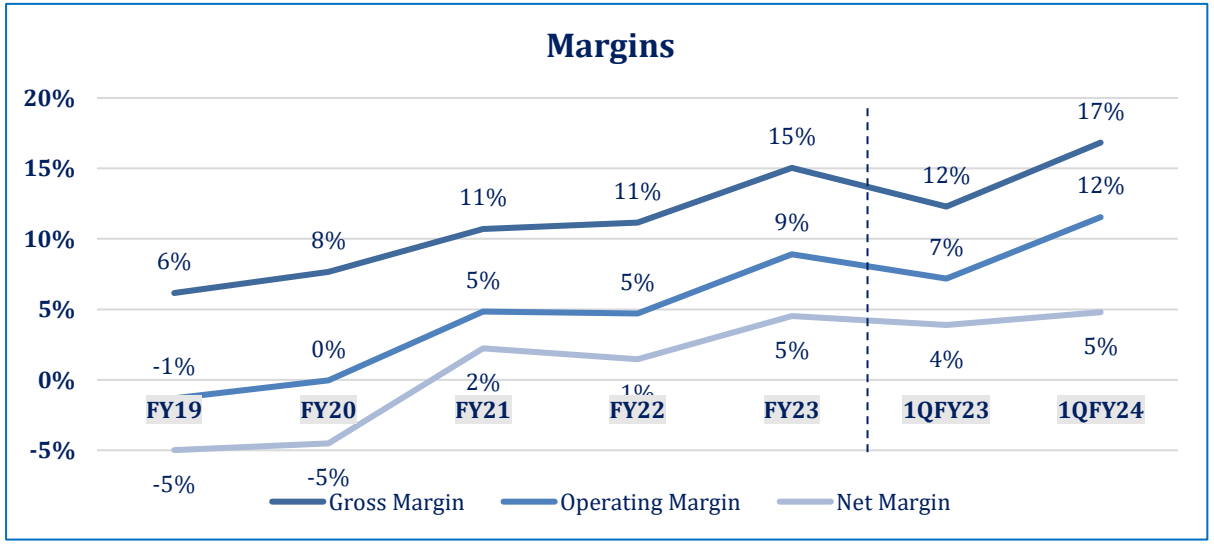


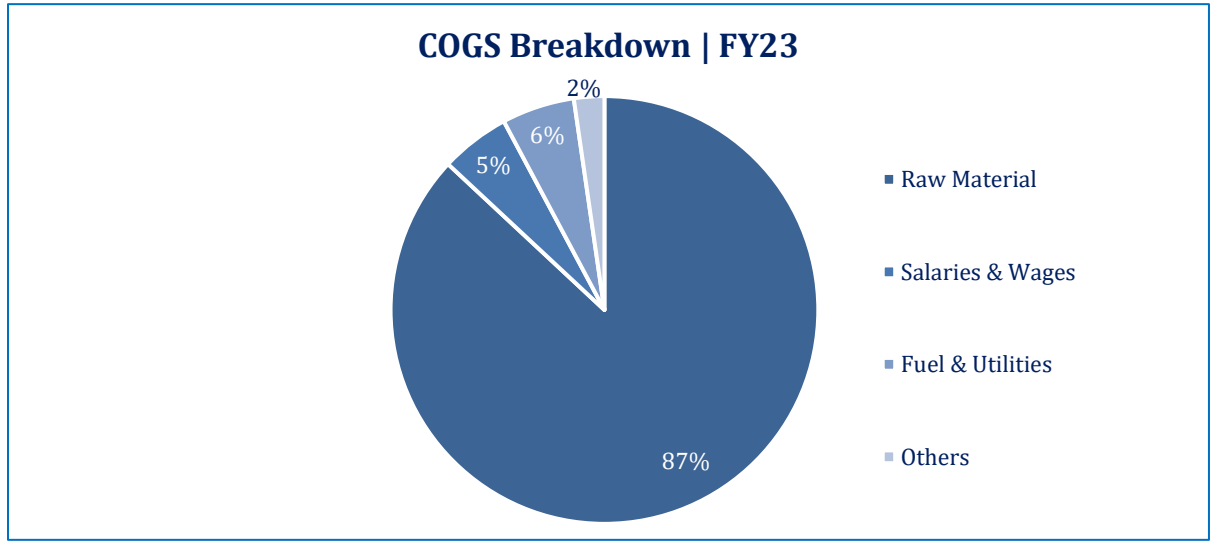
Source: PAMA, Business Insider, International Lead & Zinc Study Group, WB

Batteries

Business Risk | Margins & Cost Structure

- In FY23, the sector's average gross margins stood at ~15.0% (FY22: ~11.2%) on the back of increased sales revenue (~65.7% growth YoY). Meanwhile, average net margins stood at ~4.5% (FY22: ~1.0%), primarily attributed to a substantial increase in other income including dividend income, interests on savings and deposits accounts, gain on sale of investments, scrap sales and gain on disposal of operating fixed assets during the period under consideration. Meanwhile, finance cost increased ~47.9% due to policy rate hikes during FY23 (the MPR recorded ~500bps increase during the year).
- During 1QFY24 gross margin increased to ~17.0% (SPLY: ~12.0%) likely on the back of ~24.2% increase in sales while cost of sales only rose ~17.8% YoY. Operating profit rose by ~71.4% , while net margin rose by ~25.0% on the back of a significant increase in other income that nullified the effect of the rise in the finance cost when compared with 1QFY23.
- The largest component within the sector's direct costs is raw material which contributed ~86% to total direct costs in FY23. The main raw material for batteries consist of materials such as lead and lithium.





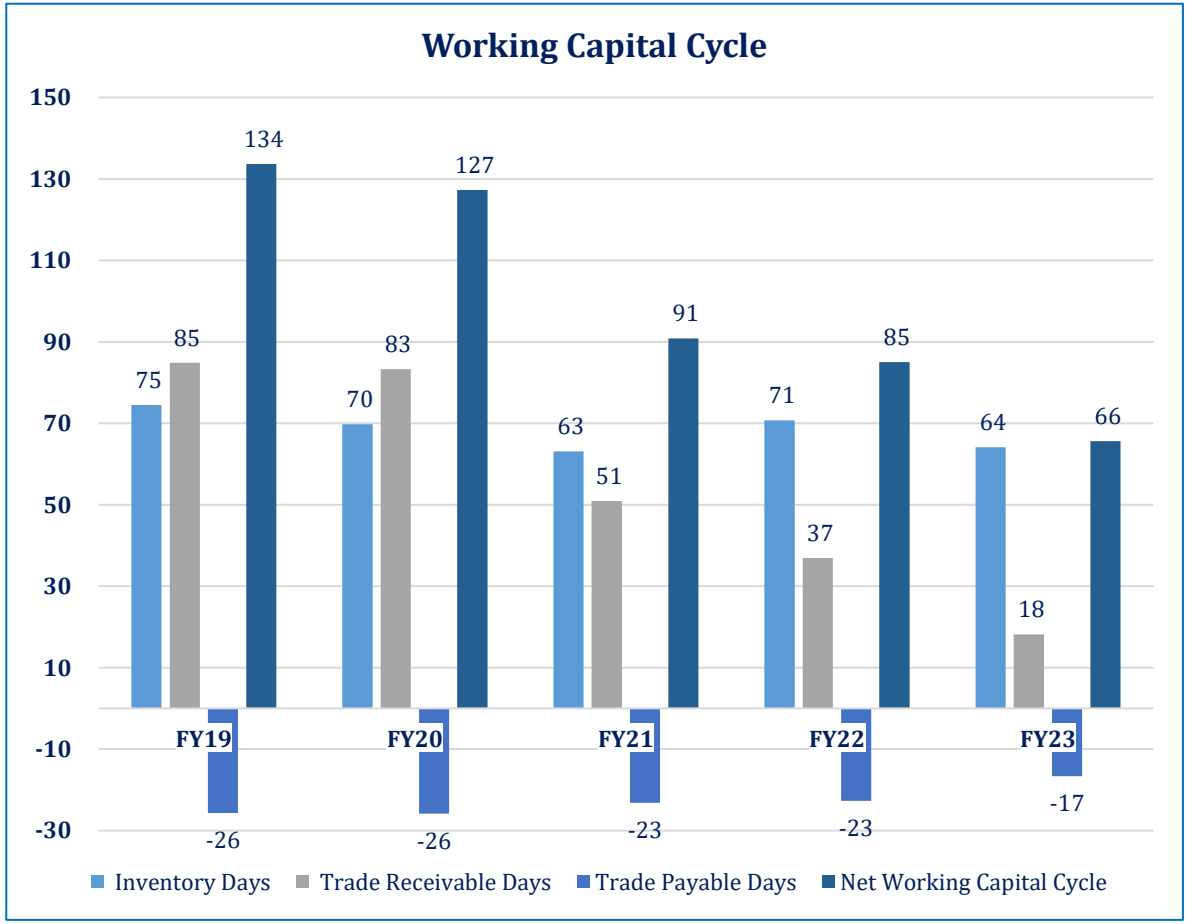
Note: *Margins and cost break up are reflective of ~2 listed/rated Sector players.*

Source: Financial Statements

Batteries

Financial Risk | Working Capital Management

- The sector's working capital cycle is predominantly a function of its inventory and trade receivable days. It recorded an improvement in FY23, averaging at ~66 days from ~85 days in FY22
- This change can be attributed to a significant decline in trade receivables of ~17 days YoY as well as due to a decrease in the inventory days which reduced by ~7 days (FY23: ~64 days; FY22: ~71 days).
- The sector relies on short-term borrowings to finance its working capital needs. In FY23, short-term borrowings (STBs) comprised ~83% of the total borrowings of the sector (FY22: ~76%).



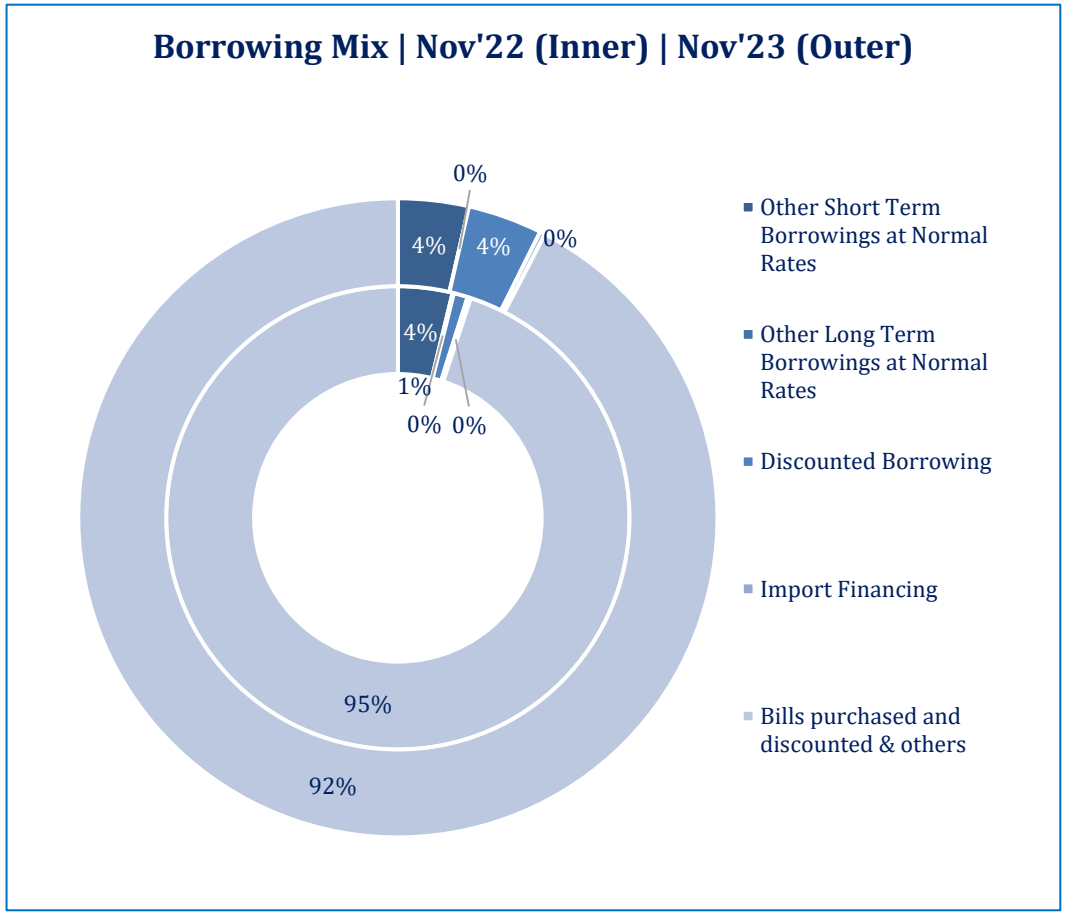
***Note**: Working capital cycle is reflective of ~2 listed/rated players belonging to batteries segment.*

Source: Financial Statements

Batteries

Financial Risk | Borrowing Mix

- The Batteries manufacturing sector recorded total borrowings of PKR~10,564mln as at End-Nov'23, a increase of ~5% YoY.
- Of these, short-term borrowings (STBs) comprised ~86% of the total borrowings (End-Nov'23: ~78%), recording at PKR: ~9,883mln. These are majorly used to finance the working capital requirements of the Sector. Meanwhile, long-term borrowing made up ~14% of the total borrowings (End-Nov'22: ~22%).
- Discounted borrowing amounted to PKR~431mln as at End-Nov'23 (EFS: PKR~330mln, LTFF/TERF: PKR~131mln) and accounted for ~4.0% of total borrowings (End-Nov''22: ~1.0%). Furthermore, there was ~78.0% surge in Long Term Financing Facility (LTFF), which recorded at PKR~131mln as at End-Nov'23.
- In FY23, the Sector was moderately leveraged with debt-to-equity ratio of ~38% which is similar to FY22. However, during 1QFY24 leverage ratio increased to ~43% (SPLY: ~25%) indicating an increased reliance on debt rather than equity.



***Note**: Leveraging is reflective of ~2 listed/ PACRA-rated Sector players. *Borrowing Mix pertains SBP's classification of "Manufacture of Batteries and Accumulators".*

Source: SBP

Batteries

Regulatory Framework

- With respect to Income Tax, the Sector falls under the Normal Tax Regime (NTR). Further, Minimum Tax @ 1.25% of turnover is also applicable if tax liability under NTR is lower than minimum tax. The applicable custom duty structure has been summarized below -

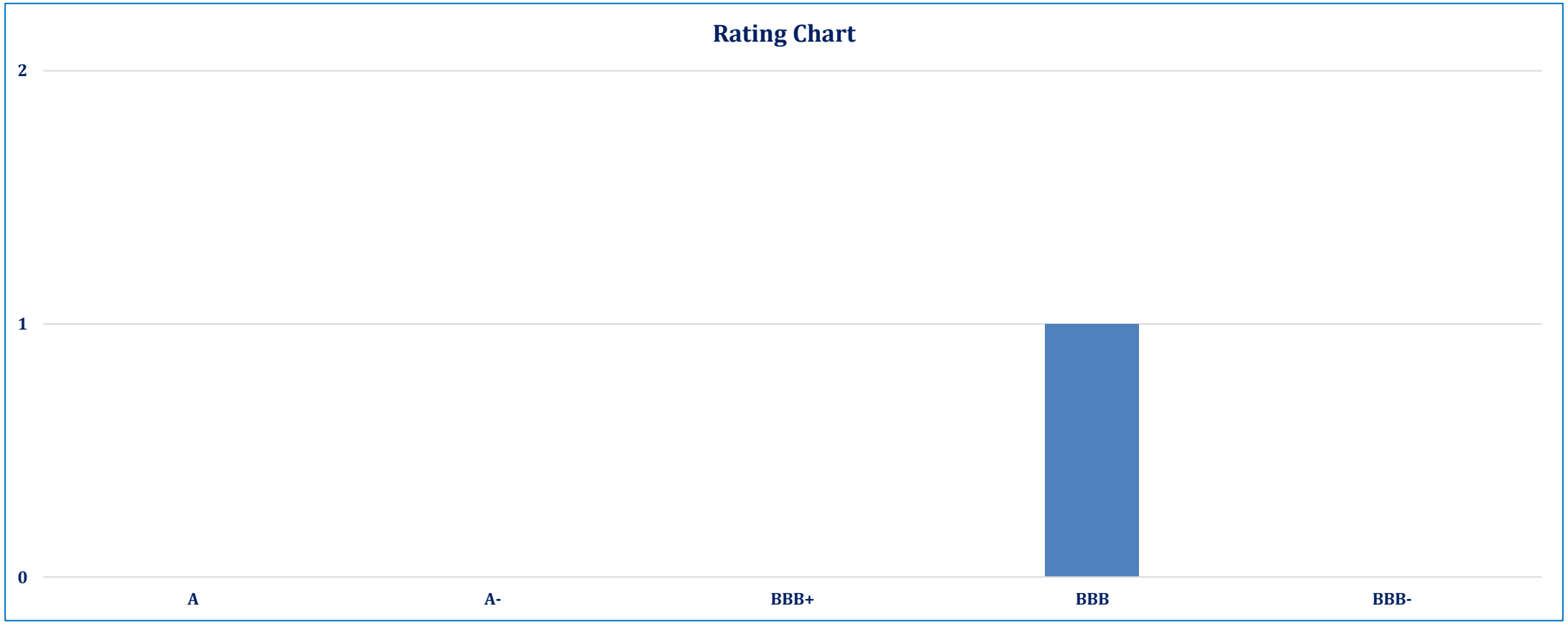
PCT Code	Description	Custom Duty		Additional Custom Duty		Total	
		FY24	FY23	FY24	FY23	FY24	FY23
26.07	Lead Ores and Concentrates	0%	0%	2%	2%	**2%**	**2%**
26.20	Slag, ash and residues of lead	0%	0%	2%	2%	**2%**	**2%**
78.01	Unwrought Lead (including refined lead)	0%	0%	2%	2%	**2%**	**2%**
78.02	Lead 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%**
78.06	Other articles of lead	20%	20%	6%	6%	**26%**	**26%**
85.06	Primary Batteries - Lithium	3%	3%	2%	2%	**5%**	**5%**
85.07	Batteries/ Electric Accumulators, made from lead-acid, for use in vehicles	35%	35%	11%	7%	**46%**	**42%**
85.49	Waste and scrap of cells, batteries and electric accumulators	0%	0%	2%	2%	**2%**	**5%**

Source: FBR

Batteries

Rating Curve

PACRA rates 1 player in the batteries sector with a long-term rating of BBB.



Source: PACRA Database

Batteries

SWOT Analysis

- A few large players occupying a significant market share.
- High-quality products with ample surplus capacity available, thus providing room for growth.

- Presence of unorganized segment which provides substitutes at low prices.
- Limited suppliers of lead.
- Volatile raw material prices.

- Significant level of competition and threat of new entrants.
- Reducing sales volume of cars that majorly drive demand for the sector.
- Non-compliance with environmental laws may cause closure of business.
- Influx of low quality batteries through Afghan Transit Trade.

- Increasing demand for alternative energy sources solar connections which require batteries.
- Shortfall in power supply which creates demand for UPS that use batteries.
- MF (maintenance free) batteries for motor vehicles and motor cycles.
- Tubular batteries.
- Hybrid Batteries for vehicles.

Batteries

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, along with the flash floods of Aug'22, and consequent sluggish demand across major industrial sectors of the country. The Batteries sector is classified as a Large Scale Manufacturing (LSM) industrial component within the industrial sector. In FY23, the Batteries sector's weight in the QIM was recorded at ~0.51%
- Major demand drivers for the Sector include the automobiles segment and associated replacement market, as well as backup power solutions (owing to power shortages in the country) and a rise in the solar power installations (in line with GoP's endorsement of the CY22 Framework Guidelines for Fast Track Solar Initiative). Furthermore, initiation of electric vehicle assembling projects such as the locally assembled Electric Vehicle (HEV) by the Indus Motor Company and Toyota Corolla Hybrid Electric Vehicle (HEV) as well as Battery Electric Vehicles (BEVs) is also expected to boost the demand for low-maintenance hybrid batteries in the coming years.
- The number of locally produced storage batteries has increased steadily at a CAGR of ~7% over the last five years (FY19-23). During FY23, production was down ~9.0% YoY, recording at ~151,519 batteries. Moreover, during 3MFY24, ~42,692 batteries were produced as compared to ~40,817 batteries during SPLY (an increase of ~4.6% YoY).
- Lead is one of the main raw materials in the production of batteries. In FY23, lead prices fell ~9.2% YoY, averaging at USD~2,084.2/MT as global supply of lead increased amid weak demand in advanced economies, including China. While these may have picked up pace Jul'23 onwards, reaching USD~2,188.5/MT in Nov'23, prices are forecast to remain stable in FY24 on the back of consistent supply.
- However, the Sector's estimated revenue grew ~65.6% YoY, clocking in at PKR~171.7bln (FY22: PKR~103.7bln) majorly owing to an increase in prices on the back of overall inflationary impact during the year. Meanwhile, sector's average gross margins stood at ~15.0% (FY22: ~11.2%) on the back of increased sales revenue (~65.7% growth YoY). Meanwhile, average net margins stood at ~4.5% (FY22: ~1.0%), primarily attributed to a substantial increase in other income including dividend income, interests on savings and deposits accounts, gain on sale of investments, scrap sales and gain on disposal of operating fixed assets during the period under consideration. Meanwhile, finance cost increased ~47.9% due to policy rate hikes during FY23 (the MPR recorded ~500bps increase during the year).
- Going forward, with the GDP registering ~2.13% growth in 1QFY24 and economy forecast to grow ~2-3% during FY23 (SBP estimate), the sector's performance is expected to stay rangebound, with demand expected to pick up pace in line with GoP's focus towards renewable power generation and focus in the automotive sector shifting towards electric vehicles.

Source: PACRA Database

Batteries

Bibliography

- State Bank of Pakistan (SBP)
- Pakistan Bureau of Statistics (PBS)
- PACRA Database
- Pakistan Stock Exchange (PSX)
- Federal Board of Revenue (FBR)
- Pakistan Automobile Manufacturers Association (PAMA)
- World Bank (WB)
- https://www.thebalancesmb.com/the-amazing-story-of-lead-recycling-2877926
- https://www.britannica.com/technology/battery-electronics

Research Team	Saniya Tauseef Senior Manager saniya.tauseef@pacra.com	Ayesha Wajih Supervising Senior ayesha.wajih@pacra.com	Sabeen Mirza Research Analyst sabeen.mirza@pacra.com
Contact Number: +92 42 35869504			