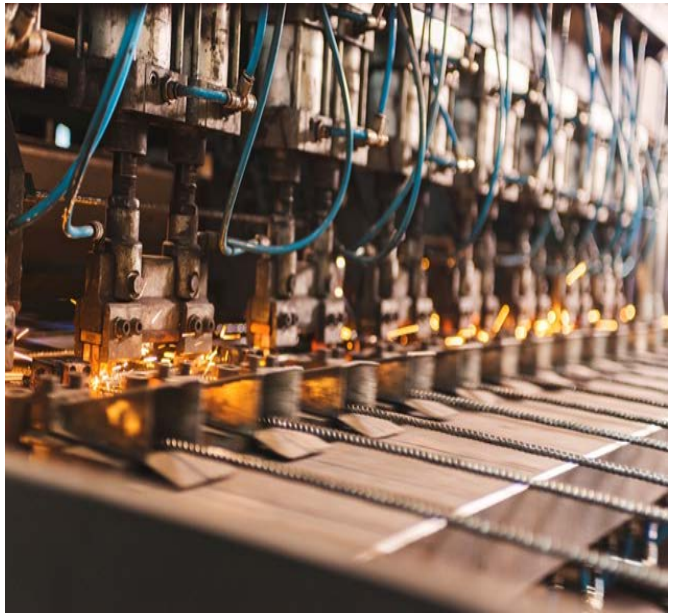
SECTOR STUDY . DECEMBER 2023

Together. Creating Value.

Machinery



Research Team

Saniya Tauseef | Senior Manager Research
Ayesha Wajih | Supervising Senior Research
Maham Ali | Associate Research Analyst

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Introduction

- A machine uses power to control movement to perform a task or action, reducing the amount of human work required to complete it. Machines can also be mechanical systems, which include computers and sensors to control and monitor output.
- Machinery manufacturing encompasses a wide number of segments broadly classified into Agricultural machinery, Construction, Mining and Industrial machinery. Other categories include Commercial and Service industry machinery, Metalworking machinery and Heating & Refrigeration equipment. It also includes Engines, Turbines and Power transmission equipment and other general-purpose machinery.

Agricultural Machinery: It includes tractors, cultivators, ploughs, harvesters, threshers and many other types of machinery employed by the agriculture industry in order to assist in various processes such as cultivating, planting and harvesting.

Construction Machinery: Includes machinery such as bulldozers, excavators, cranes, graders and drilling machines.

Industrial Machinery: There is a wide variety of machines used by various industries for example spindles and looms used in textile manufacturing, heating and mixing machinery used in food and beverage industry, packaging machinery and various types and components of assembly lines.

Machinery

Global | Overview

- **Market Size**: The global machinery market is expected to grow from USD~3,542bln in CY22 to USD~3,810bln in CY23 at a compound annual growth rate (CAGR) of ~7.6%. The growth experienced a slow-down due to political and economic factors like the Ukraine-Russia war.

- **Demand**: Rapid advances in technology are expected to drive innovation in industrial machinery manufacturing, thus driving growth for the industry, going forward. Furthermore, technologies such as 3D printing, artificial intelligence and big data analytics are being used in manufacturing thus resulting in higher productivity, lower operating costs and higher margins.

- **Region**: The top global machinery manufacturers are Asia-Pacific, China, Western Europe, Eastern Europe, North America, USA, South America, Middle East and Africa. Among these regions, the Asia-Pacific machinery manufacturing market accounts for the largest share in the global machinery manufacturing market.

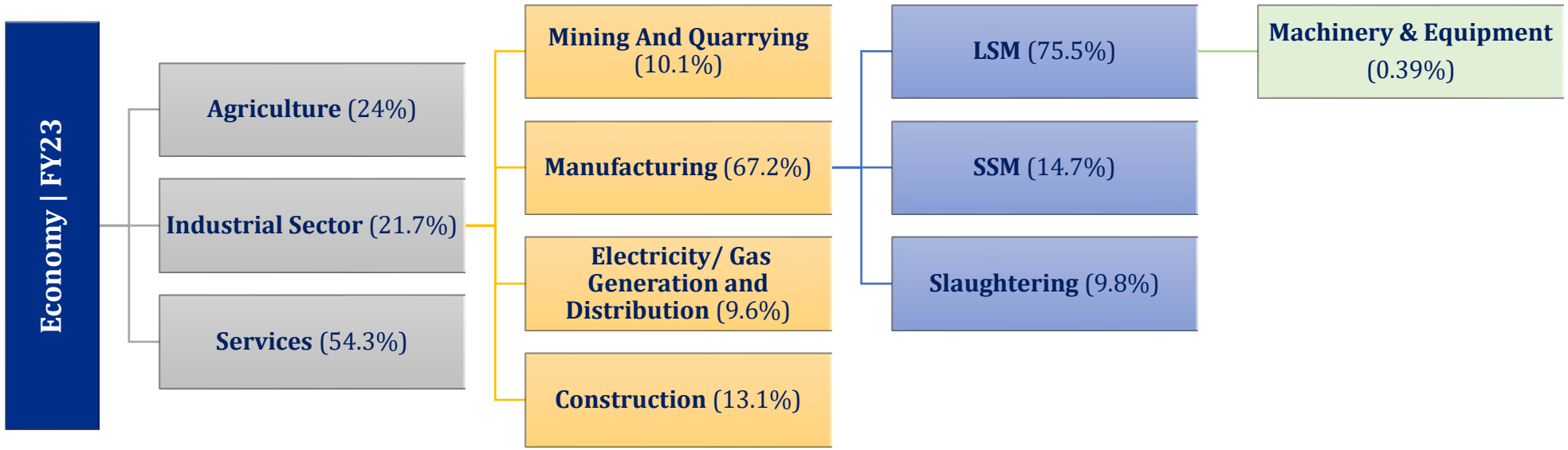
- **Major Players**: The major players involved in the manufacturing of industrial machinery are Caterpillar Inc and Deere & Co, based in the United States, CNH Industrial, ABB Group and Linde AG, based out of UK, Switzerland and Germany, respectively and Daikin Industries and Komatsu Limited which are based in Tokyo, Japan. The companies account for a significant share in the global market due to high levels of R&D and technological advancements.

Source :Business Research Company

Machinery

Local | Overview

- In FY23, Pakistan's GDP (nominal) stood at PKR~79.3trn (FY22: PKR~63.3trn), contracting by ~0.17% YoY (FY22: ~6.1% growth). The country's economy is classified into three main sectors: Agriculture, Industrial Sector and Services, where Industrial activities in FY23 represented ~11.9% share of the GDP (SPLY: ~12.5%), taken at constant prices, while recording a YoY dip of ~3.8%.
- Large Scale Manufacturing (LSM) in Pakistan is essential for the economic growth, considering its linkages with other sectors, as it represents ~75.6% value of all manufacturing activities in FY23. The QIM dipped by ~10.3% during FY23 when compared with the same period of the last year (SPLY).



Source :Business Research Company

Machinery

Local | Overview

- Majority of the demand for machinery emanating from large industries such as construction, textile, energy etc are met through imports. In addition, there is a lack of investment in technology and R&D in Pakistan due to which the country's machinery sector lags behind the international market in terms of production and quality.
- Import of machinery was down ~46.8% YoY and stood at USD~5,808mln. This decrease can be attributable to the restrictions imposed on imports of machinery and opening LCs. Even during 4MFY24, import value was recorded at USD~1,200mln, a decline of ~46.1%.
- Imported machinery includes Electrical Machinery, Power Generating Machinery and others (which includes, but is not limited to, printing machinery, laundry machinery, shoemaking machinery among others).
- Local machinery production, including agricultural (chaff cutters, sugarcane machines, wheat thrashers) and industrial (Power looms, Electric motors, Switch gears, Electric transformers) machinery, declined by ~13.1% to ~70,804 units in FY23. In 4MFY24, machinery production figures recorded at ~16,024 units, a decrease of ~25% YoY. Demand of machinery is majorly met through imported machinery as it is more advanced technology and has better quality.
- Export of machinery increased by ~8.2% YoY and stood at USD~180mln during FY23. However, 4MFY24 export value was recorded at USD~42mln, a decline of ~35% YoY.
- Exports of machinery includes Electrical Machinery, Specialized Machinery, and Other Machinery (which includes but is not limited to mechanical appliances, agriculture machinery, tobacco machinery among others).

Sector Overview	FY22	FY23	4FY23	4MFY24
Imports (USD mln)	10,290	5,808	2,226	1,200
Imports (% of Total Imports)	13%	13%	11%	14%
Local Production* (Units)	81,498	70,804	21,379	16,024
Exports (USD mln)	166	180	65	42
Industry Association	Engineering Components & Machinery Manufacturing Association of Pakistan (ECMMA)			

Note: *Imports data is reflective of machinery Group imports. *Data pertains to 3MFY24.*

Source: PBS

Machinery

Local | Production

- Although majority of machinery demand is met through imports, there is some local production of agricultural and industrial machinery as well. Agricultural machinery comprises chaff cutters, sugarcane machinery and wheat thrashers, while industrial machinery includes power looms, electric motors, switch gears and electric transformers.
- The Agricultural machinery produced posted a decline of ~13.9% YoY, recording at ~8,617 units during FY23 as against ~10,007 units in FY22. The production also decreased in 4MFY24 by ~7% YoY. The declining trend may be associated with greater reliance on imports.
- A further breakdown of sugarcane machinery supply, for instance, reveals that during FY22, while production declined ~20.9% YoY, imports climbed ~26.4%, indicating greater reliance on imported machinery.
- On the other hand, Industrial machinery production stood at ~62,187 units in FY23, a decrease of ~13% YoY from FY22 during which production recorded stood at ~71,491 units. Production further registered a decline of ~27% during 4MFY24. However, with respect to total supply of power looms, the country did not import any during FY21-22.
- Overall, the number of units produced has been declining since FY20. Initially, this was because COVID-19 pandemic caused disruption to various industries. However, this reduction is expected to continue due to a host of factors including availability of raw materials, limited project financing options, untrained workforce, and lack of R&D facilities.

Local Production (Units)							
Category	**FY19**	**FY20**	**FY21**	**FY22**	**FY23**	**3MFY23**	**3MFY24**
Agricultural	**13,609**	**16,911**	**13,878**	**11,450**	**8,617**	**2,360**	**2,184**
Chaff Cutters	16,146	13,298	11,086	9,720	8,246	2,342	2,052
Sugarcane Machines	501	202	105	83	40	12	8
Wheat Thrashers	264	378	259	204	331	6	124
Industrial	**86,285**	**93,250**	**65,034**	**65,690**	**62,187**	**19,019**	**13,840**
Power Looms	461	708	379	468	552	113	643
Electric Motors	56,819	37,675	30,054	22,832	18,756	5,180	4,193
Switch Gears	4,686	3,444	6,476	13,358	11,103	2,910	2,434
Electric Transformers	31,284	23,207	28,781	34,833	31,776	10,816	6,570
Total	**99,894**	**110,161**	**78,912**	**77,140**	**70,804**	**21,379**	**16,024**

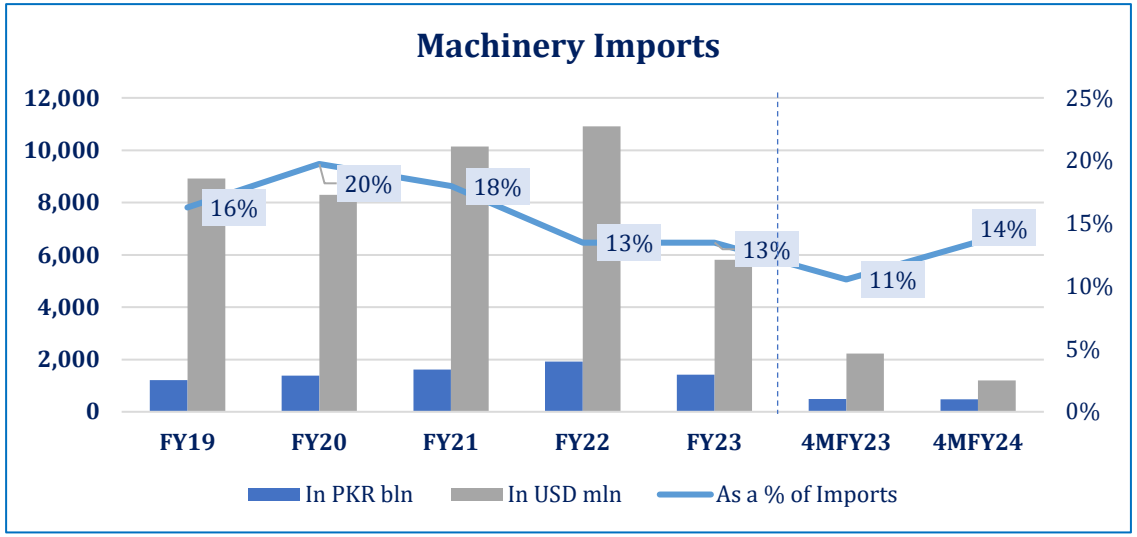
Note: *Imports for Sugarcane machinery pertain to HS code: 8438.3010, Power Looms: 8446.2100*

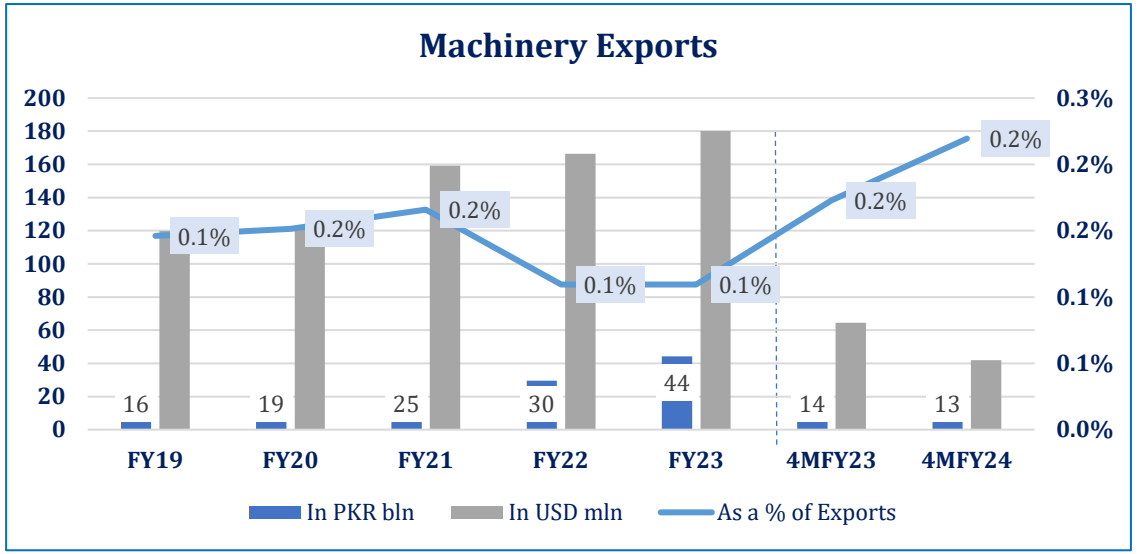
Source: PBS

Machinery

Local | Imports and Exports

- Due to the absence of a significant local machinery manufacturing industry, most of Pakistan's industrial sectors rely on imported machinery.
- During FY23, machinery imports accounted for ~13% of the country's total import bill (same as SPLY). These declined by ~46.8% YoY and stood at USD~5,808mln. The decrease could potentially be linked with the import restrictions placed by the State Bank of Pakistan (SBP). During 4MFY23, the imports have declined as import value was recorded at USD~1,200mln, a decline of ~46.1%.
- In comparison with the large size of imports, Pakistan's machinery exports remain minimal. During FY23, exports stood at PKR~44bln, an increase of ~49.5% from PKR~30bln in FY22. The exports in 4MFY24 registered a decline of ~12.7% YoY, forming an insignificant part of the total exports (~14%).
- Export of machinery increased by ~8.2% YoY and stood at USD~180mln. During 4MFY24, the exports have declined as the export value was recorded at USD~42mln, compared to USD~65mln in SPLY, a decline of ~35%.
- Exports of machinery pertains to Electrical Machinery (~23.3%), Specialized Machinery (~24.4%) and Other Machinery (which includes but is not limited to mechanical appliances, agriculture machinery, tobacco machinery, rubber and plastic machinery, dairy machinery among others) ~ 52.2% in FY23.





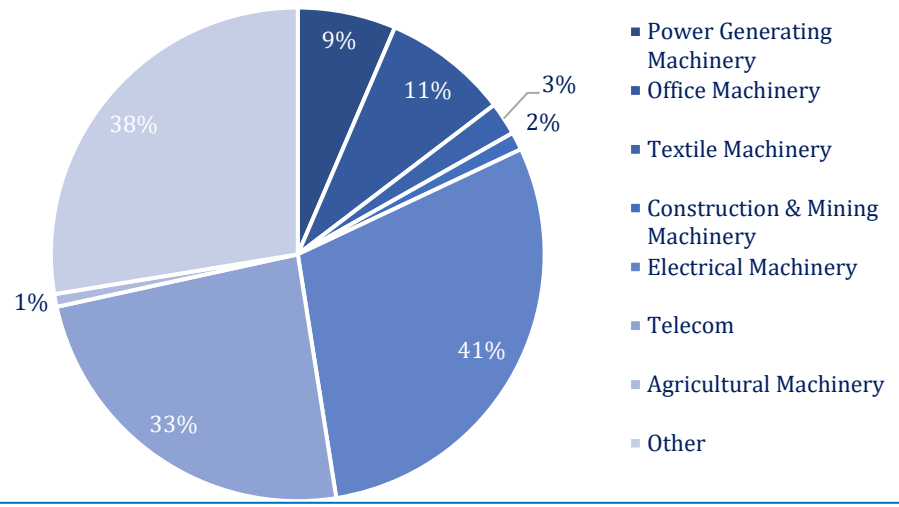
Source: PBS

Machinery

Local | Segment-wise Imports

- In FY23, Other and Electric machinery comprised ~32.5% and ~28.7% respectively of the total machinery group imports (SPLY: ~29.2-% and ~17.6%), However, these posted a cumulative decline of ~46.8% YoY. Similarly, Machinery group imports were also down ~47% YoY in FY23, with the decline potentially reflecting SBP-imposed import curbs which were in place during May'22-Jun'23.
- In 4MFY24, the largest import segment was Electrical machinery which accounted for ~41% of total machinery imports and stood at USD~489mln. The second largest individual import segment is of telecom~33%. However, the second largest overall import segment was of Other machinery (~38%) which included but was not limited to machinery for sorting, cleaning, shoe making, rubber/ plastic, food and drink, temperature change among others. In terms of import destinations, China leads the way in being one of the top players in machinery imports followed by Italy and Germany.

Segment-wise Imports (%) | 4MFY24



Segment-wise Imports (USD mln)	FY22	FY23	4MFY23	4MFY24
Power Generating Machinery	1,471	500	208	107
Office Machinery	589	340	89	136
Textile Machinery	764	329	188	36
Construction & Mining Machinery	175	85	28	20
Electrical Machinery	1,930	1,667	635	489
Telecom	2,685	957	346	399
Agricultural Machinery	112	41	18	14
Other	3,193	1,889	714	457
Machinery Group	**10,920**	**5,808**	**2,226**	**1,200**

Source: PBS, SBP

Machinery

Local | Types of Machinery

The focus of this study will be limited to Pumps, Valves and Industrial Engineering/ Power Generation equipment.

Pumps

- A Pump is a device which moves fluids by mechanical action from one place to the other. It is a hydraulic device that lifts fluids from low to high levels, and moves fluids from low to high-pressure areas. The Pump transfers fluid by converting the fluid's mechanical energy into pressure energy (hydraulic energy). It is, essentially, the earliest form of machine, dating back to ancient Egypt.
- Centrifugal pumps are the most commonly used pumps. These pumps are mostly used for pumping water, solvents, organics, oils, acids, bases and any 'thin' liquids in both industrial, agricultural and domestic applications.

Valves

- Valves are mechanical devices that control the flow and pressure within a system or process. They are essential components of a piping system that transfer liquids, gases, vapours, slurries etc.
- Different types of valves are available, for example, gate, globe, plug, ball, butterfly, check, diaphragm, pinch, pressure relief, control valves etc. Each of these types has a number of models, each with different features and functional capabilities.

Source: Economic Survey, Planning Commission, Market Estimates

Machinery

Local | Types of Machinery

Generator Sets

- A Generator set or a "genset" is a portable piece of energy-producing equipment that consists of an engine and an alternator/electric generator. Generators are frequently utilized in developing nations and other non-grid-connected locations where power outages are common. An engine turns a fuel's chemical energy to mechanical energy. The mechanical energy is converted to electrical energy by spinning the alternator rotor. An alternator is composed of two major components: a rotor and a stator. Through the phenomena of electromagnetic induction, spinning the alternator rotor through the magnetic field between the rotor and stator generates a voltage on the alternator stator. When the stator voltage is coupled to a load, electrical current flows and the generator generates electricity.

Solar Panels

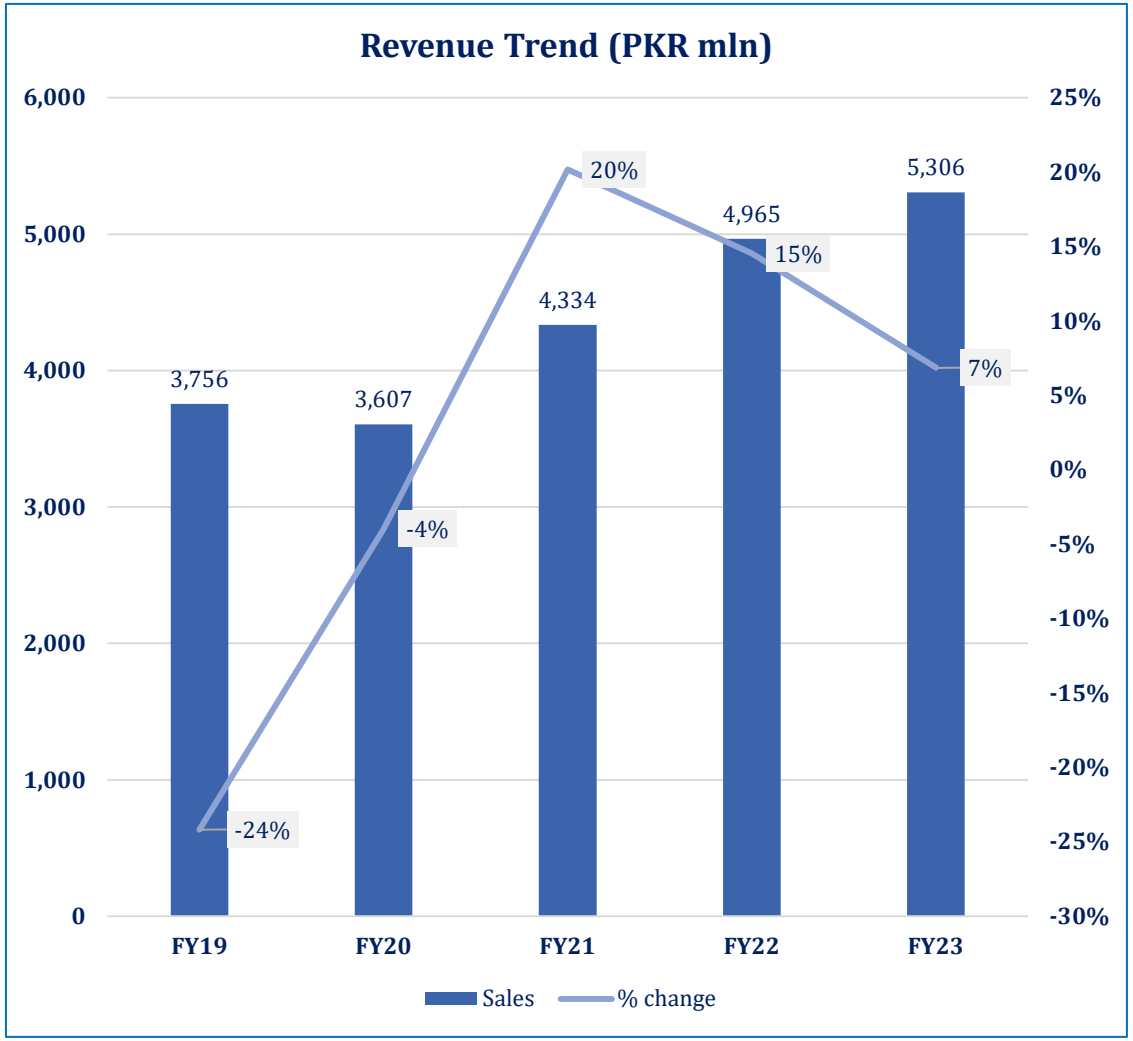
- Solar technologies use photovoltaic (PV) panels or mirrors to concentrate solar radiation to convert sunlight into electrical energy. This energy can be converted into electricity or stored in batteries or thermal storage.

Source: Economic Survey, Planning Commission, Market Estimates

Machinery

Pumps & Valves | Revenue Trend

- The segment derives its demand largely from government projects such as those involving water pumping and thermal power, among others. However, private sector is also being catered, while focus on Segment's exports is also increasing. The Segment's revenue clocked in at PKR~5.3bln during FY23, marking an increase of ~6.8% from PKR~4.9bln in FY22, although the increase in revenue has been lowering since FY21.



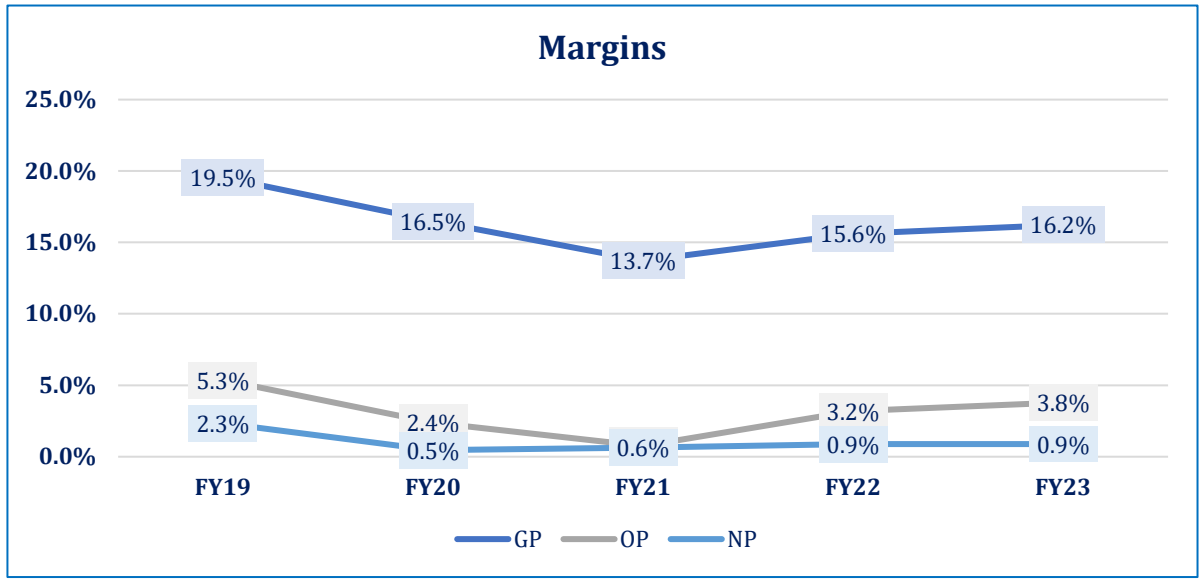
***Note**: Data is reflective of ~1 listed/ rated player, where FY23 numbers are prorated based on latest available quarterly accounts.*

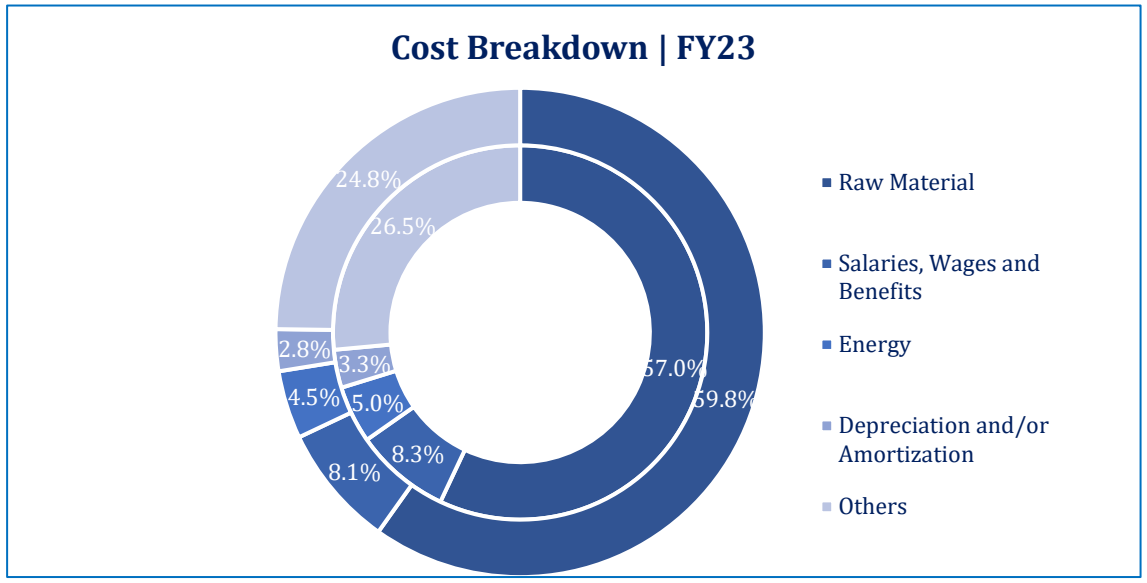
Source: Economic Survey, Planning Commission, Market Estimates

Machinery

Business Risk | Margins and Cost Structure

- Over the last five years, the segment's gross margins have stood at ~13.3% while average net margins stood at ~1%. The Segment's margins, have during this period, remained rangebound, with little fluctuation, with the exception of FY20, which was marred by COVID-19. Gross margin increased to ~16.2% in FY23 from ~15.6 % in FY22, likely attributable to an increase in exports to group firms, which enhanced profits due to exchange gains, while average operating margin increased from ~3.2% to ~3.8% in FY23, likely due to better expense management, seeing as the economy experienced considerable inflationary pressures. Meanwhile, net margins remained the same at ~0.9% even in an increasing interest rate environment, and could be reflective of lower borrowings by the Sector.
- The largest component within this segment's direct costs comprises raw materials, which contributed ~59.8% in FY23. These raw materials largely consist of various types of metals such as iron, steel and copper depending upon the product specifications and requirements.





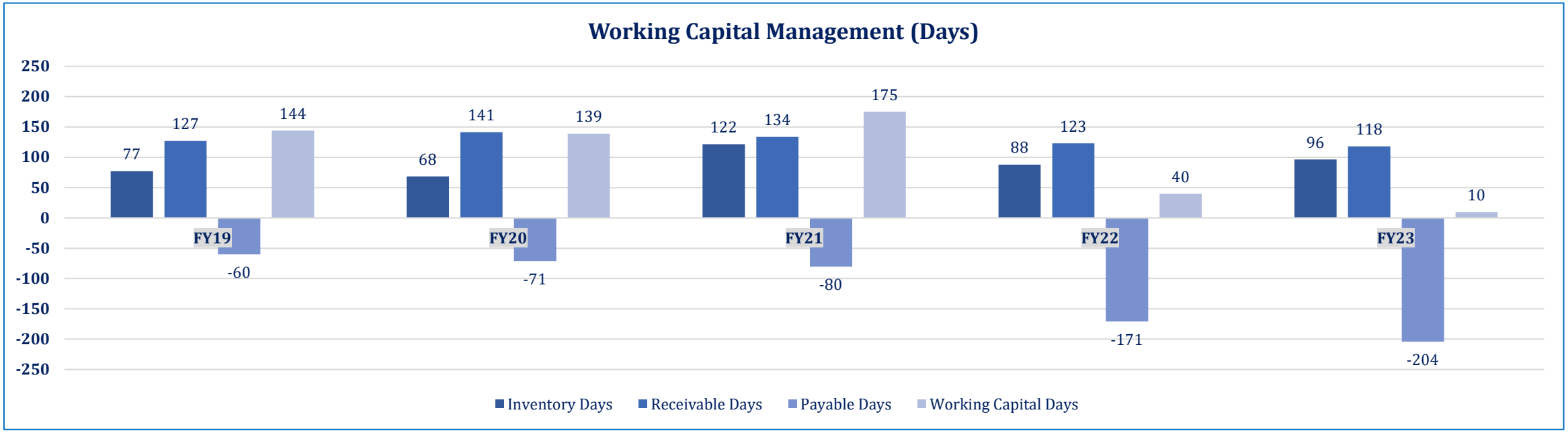
Note: *Margins and cost break up are reflective of ~1 listed/rated player belonging to Pumps and Valves segment.*

Source: PSX, PACRA Database

Machinery

Financial Risk | Working Capital Days

- Over the last five years (FY19-23), the Segment's working capital cycle has averaged ~101 days. There is heavy reliance on short-term borrowing to fulfil Sector's working capital needs. In FY23,
- The Segment's receivable days are relatively high although they did decrease to ~118 days from ~123 days in FY23, showing a relative improvement. A significant portion of sales are made to government departments and projects from which receipts can be delayed, however, that was not the case in FY23.
- Payable days also registered a sharp increase of ~33 days during FY23, recording at ~204 days. This is likely associated with taking more time in terms of repayment of credits for the Segment. Going forward, due to the shift in its business strategy towards the private sector, the Segment anticipates quick cash recoveries, allowing it to be less reliant on working capital lines.



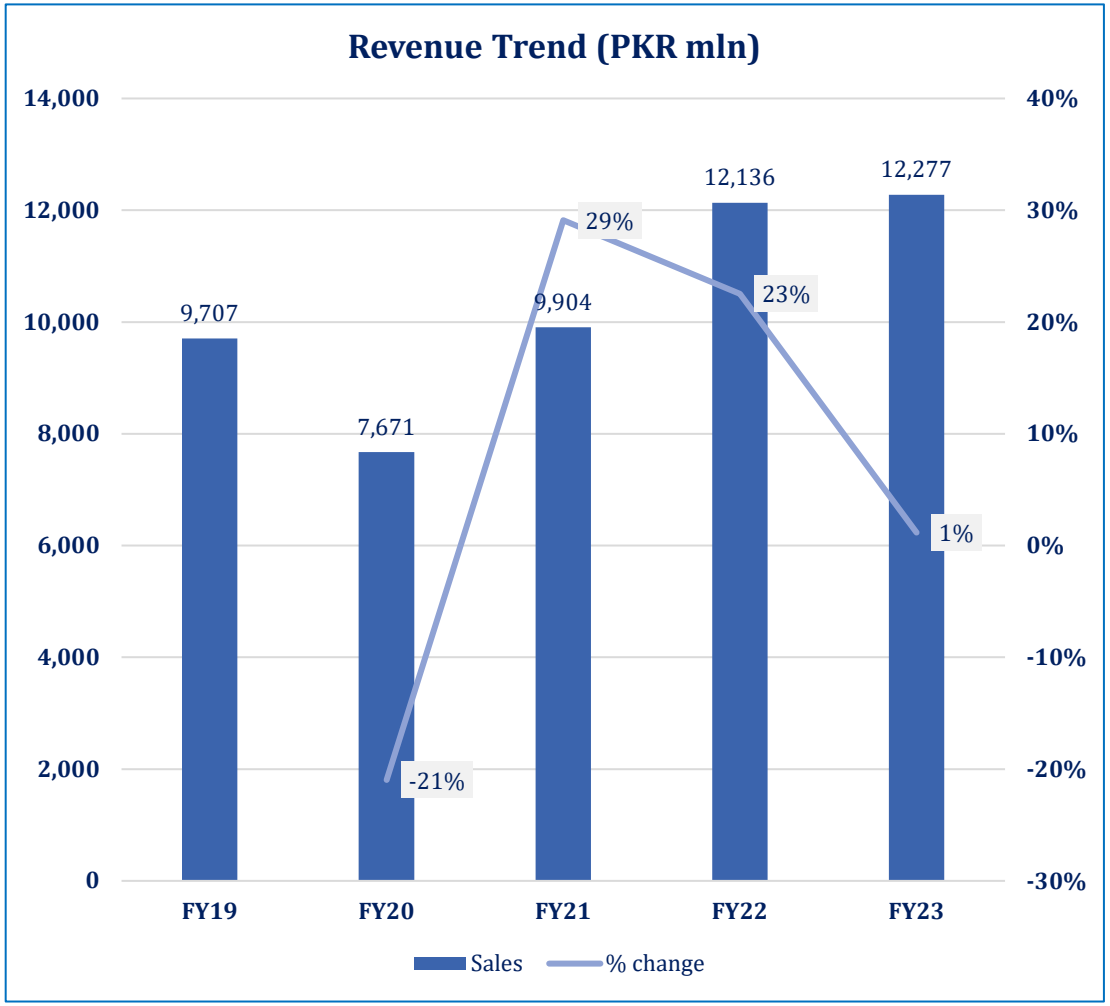
Note: *Data is reflective of ~1 listed/rated player belonging to Pumps and Valves segment.*

Source: PSX, PACRA Database

Machinery

Power Generation | Revenue Trend

- The estimated revenue of the local energy machinery segment clocked in at PKR~12.3bln during FY23, an increase of ~1.0% from PKR~12.1bln in FY22. The meagre growth in revenue can likely be associated with the overall economic slowdown in FY23 and a concomitant dampening of demand across various sectors such as automobile and private sector projects pertaining to wind and solar power generation, among others. Moreover, rising fuel prices could have had an impact on sales, causing a lower revenue overall.
- The Engineering and Technology services segment is a very niche sector that caters a specific target market, including infrastructure development projects such as highways, exploration and production sites, private sector projects such as solar and wind power generation, different industrial sectors and providing equipment to large-scale projects such as hypermarkets, banks and hospitals among others. The segment is primarily reliant on equipment and replacement parts imports. As a result, segment players are exposed to cyclicality, import limitations and taxes and foreign exchange risk.



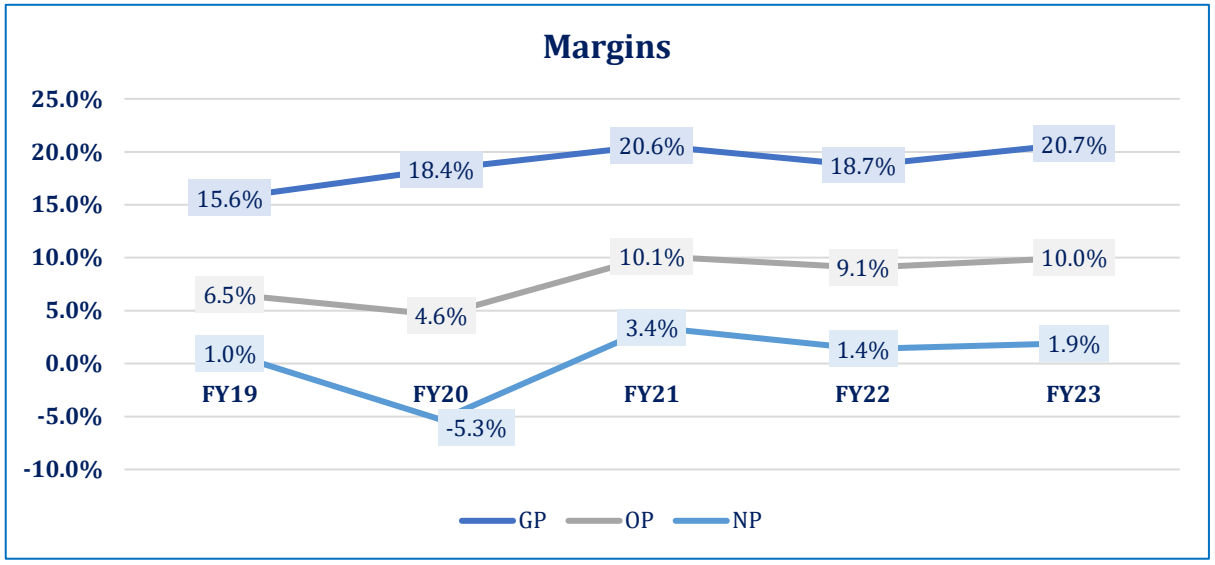
**FY23 numbers are prorated based on latest available quarterly accounts.*

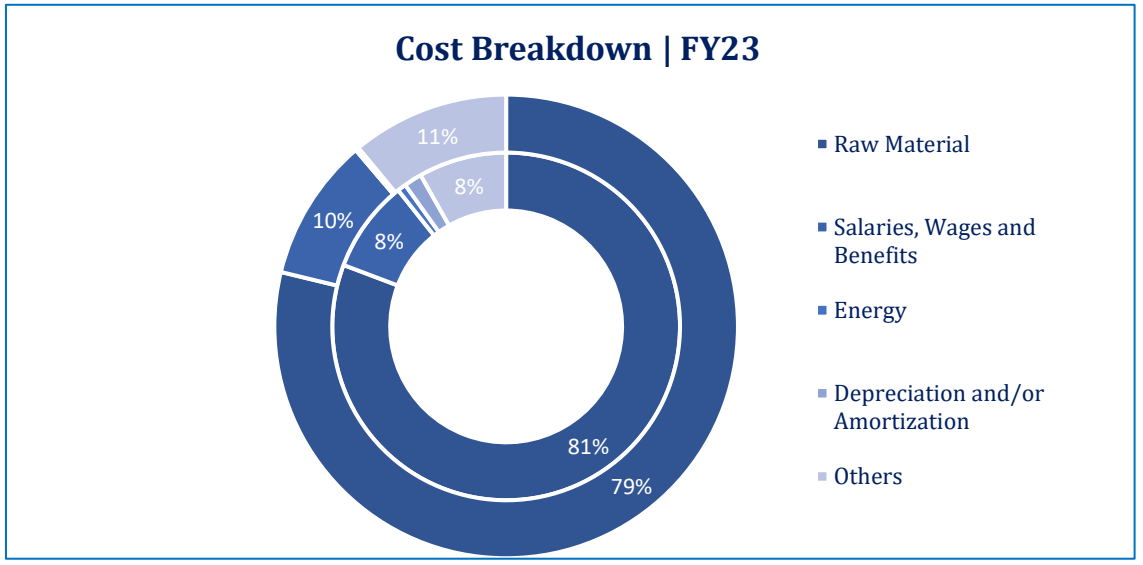
Source: Economic Survey, Planning Commission, Market Estimates

Machinery

Business Risk | Margins & Cost Structure

- Over the last five years, the segment's average gross margins have stood at ~18.8% while average net margins stood at ~0.5%. Margins stayed rangebound during FY19-22, however, a slight change was observed in FY23.
- Average gross margin increased to ~20.7% in FY23 from ~18.7% in FY22, reaching FY21 levels. Meanwhile, average operating margin increased from ~9.1% to ~10.0% in FY23, whereas average net margins also slightly increased from ~1.4% in FY22 to ~1.9% in FY23. Both long and short term borrowings decreased leading to a lower debt-to-equity ratio.
- The largest component within the segment's direct costs comprises raw materials, which contributed ~79.0% to the total cost of production. The segment is primarily reliant on equipment and spare parts imports. As a result, all involved players are exposed to cyclicality, restrictions on imports and taxes, and foreign exchange risk.





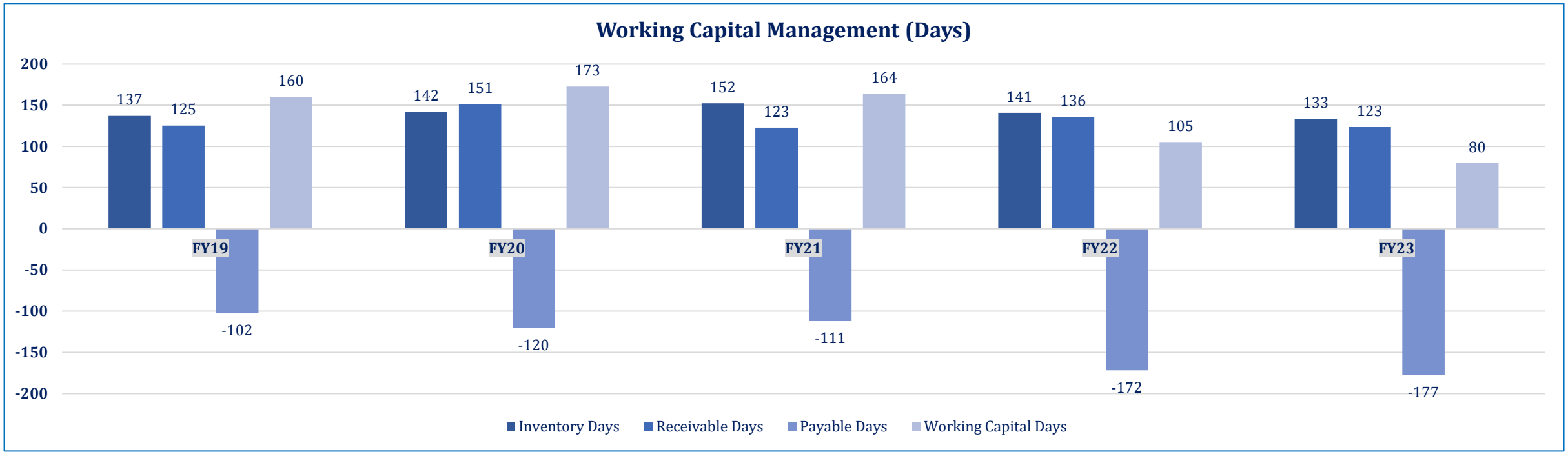
Note: *Margins are reflective of ~2 listed/rated players belonging to power generation segment.*

Source: PSX, PACRA Database

Machinery

Financial Risk | Working Capital Management

- Over the last five years (FY19-23), the segment's working capital cycle averaged ~172 days. However, during FY23, it reduced to ~80 days (SPLY: ~105 days), largely on account of reduced inventory and slightly greater payable days. These respectively recorded at ~133 days (SPLY: ~141 days) and ~123 days (SPLY: ~136 days).
- On the other hand, average receivable days also dipped to ~123 days (SPLY: ~136 days), reflecting efficient management of credit collection by the segment. Meanwhile, average payable days also registered an increase of ~5 days during FY23, recording at ~177 days and is likely associated with delayed credit repayments.



Note: *Data is reflective of ~2 listed/rated players belonging to power generation segment.*

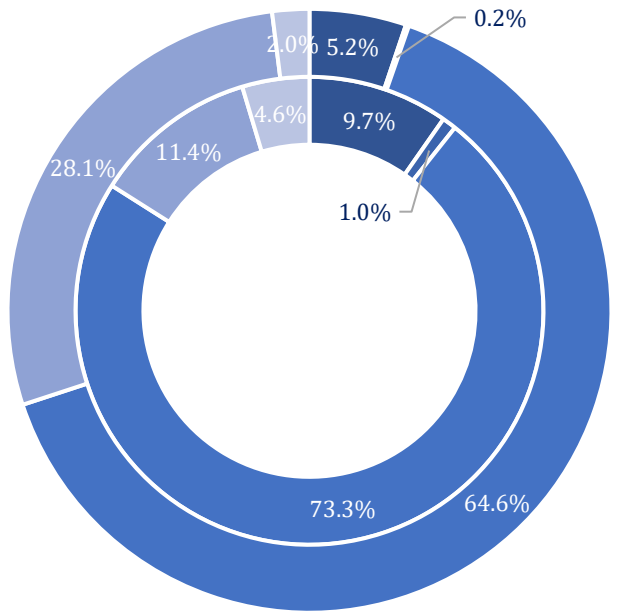
Source: PSX, PACRA Database

Machinery

Financial Risk | Borrowing Mix

- Total borrowings of the Machinery sector, as at 3MFY24, stood at PKR~14,124mln as compared to PKR~ 18,936mln during SPLY, an increase of ~34% YoY.
- The largest share is taken up by other short-term borrowing at normal rates which accounts for ~64.6% and stands at PKR~9,126mln in 3MFY24 which was previously PKR~ 13,882mln in 3MFY23.
- In addition, long-term borrowing at normal rates in 3MFY24 contributed ~28.1% to total borrowing mix and stood at PKR~2,155mln (PKR~3,962mln in 3MFY23).
- With respect to discounted borrowing, Export Finance Scheme (EFS) clocked in at PKR~731mln (SPLY: PKR~1,839mln), while Long Term Financing Facility (LTFF)/ Temporary Economic Refinance Facility (TERF) stood at PKR~23mln and was PKR~184, respectively, in 3MFY24.
- The average leveraging for the power generating machinery stands at 32.1% (moderately leveraged) decreasing from ~40.6% in FY22. Meanwhile, the average leveraging for pumps and vales stands at ~45.7% an increase from 44.2% in FY22.

Borrowing Mix | Sep'24 (Outer), Sep'23 (Inner)



Note: *Data is reflective of SBP's classification "Manufacture of Machinery and Equipment".*

Source: SBP, PACRA Database

Machinery

Duty Structure

PCT Code	Description	Additional Duty	Custom duty	Regulatory Duty	Total
Pumps & Valves					
8413.1100	Pumps for dispensing fuel and lubricants	2%	11%	0%	**13%**
8413.1910	Pumps for dispensing chemicals	2%	0%	0%	**2%**
8413.2000	Hand pumps	4%	16%	0%	**20%**
8413.6011, 19, 90	For Motor Cars and Vehicles	2-7%	3-35%	0%	**5-42%**
8413.7011, 19	Submersible pumps having 5 to 10 inches diameters, Other submersible pumps	2%	3-11%	0%	**2-16%**
8413.9150	Plunger and other pumps parts for the vehicles of chapter 87	7%	35%	0%	**42%**
8413.9190	Parts of Other Pumps	6%	20%	0%	**26%**
Power Generating Equipment					
8501.1000, 2000	Electric Motors and Generators	2%	0%	0%	**2%**
8502.1130	Electric Generating Sets Exceeding 20 KVA but not exceeding 50 KVA	6%	20%	10%	**36%**
8502.2010	Electric Generating Sets Of an output not exceeding 5 kVA	2%	11%	0%	**13%**
8502.3100	Wind-powered	2%	0%	0%	**2%**
8503.0010, 20, 90	Parts of Machine (Electric Motors/ Generators/ Generator Sets)	2-4%	11%-16%	0%	**13-20%**

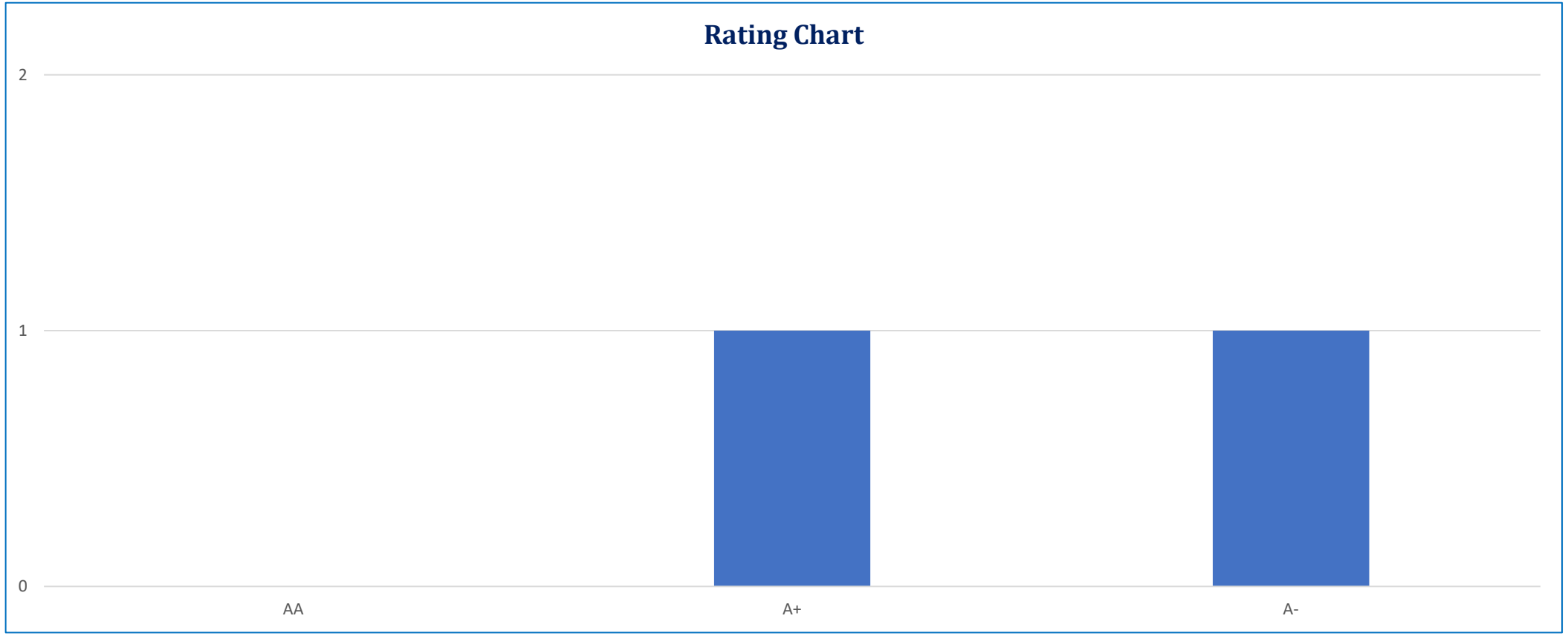
Note: *Data is latest available (FY24).*

Source: FBR

Machinery

Rating Curve

- PACRA rates 2 machinery players in the machinery sector
- The clients have a long term rating of A+ and A-.



Source: PACRA Database

Machinery

SWOT

- Certain segments benefit from demand from government departments and projects
- Reduced sales tax and custom duty rates for various sectors in order to encourage investment

- Lack of advanced technology
- Reliance on imports
- Hardly any focus on research and development
- Government clients often have delays in payments
- Obsolescence of machinery

- Disruptions in supply chain after COVID-19 pandemic
- Significant competition from imports
- Increased mark up rates of the discounted borrowings in the form of LTFF/EFS

- Increase in budgeted PSDP is likely to increase demand
- SEZs/STZs provide incentives for new investments

Machinery

Outlook: Stable

- Pakistan's GDP (nominal) in FY23 was PKR~79.3trn (FY22: PKR~63.3trn), down ~0.17% YoY (FY22: ~6.1% increase). The LSM fell by ~10.3% (FY22: ~11.8%), owing mostly to disruptions in the supply chain caused by SBP-imposed import restrictions and resulting lackluster demand across the country's key industrial sectors. Since the machinery sector relies heavily on imports, it is vulnerable to currency fluctuations. Machinery imports account for ~13% of overall imports. Machinery imports fell ~46.8% YoY to USD~5,808mln during FY23. Compared to the volume of imports, Pakistan's machinery exports are insignificant. During FY23, exports stood at PKR~44bln, an increase of ~49.5% from PKR~30bln in FY22.

- For the pumps and valves segment, revenue clocked in at PKR~5.3bln in FY23, up ~6.8% YoY from PKR~4.9bln in FY22. Meanwhile, gross margins averaged 13.3%, with average net margins of ~1% (FY19-23). Margins have largely remained rangebound during this time, exhibiting minimal variation across the years, with the exception of FY20, which had come about due to economic slowdown caused by COVID-19. Segment's gross margin climbed to ~16.2% in FY23 from ~15.6% in FY22, owing to an increase in exports to group firms, which raised profits due to currency gains, while average operational margin increased from ~3.2% to ~3.8% in FY23, owing to better expense control.

- In the power generation segment, the estimated revenue was recorded at PKR~12.3bln during FY23, a ~1.0% rise from PKR~12.1bln in FY22. Meanwhile, in FY23, average gross margin climbed to ~20.7% from ~18.7% in FY22, returning to FY21 levels. Meanwhile, average operating margins increased from ~9.1% to ~10.0% in FY23, while average net margins increased marginally from ~1.4% in FY22 to ~1.9% in FY23. Long-term and short-term borrowings both fell, resulting in a reduced debt-to-equity ratio. The average leverage for power generation machinery segment recorded at ~32.1% (moderately leveraged) during FY23, down from ~40.6% in FY22. Meanwhile, the average leverage for pumps and valves is ~45.7%, up from ~44.2% in FY22, therefore, both segments remained moderately-to-high leveraged in FY23.

- With the economy exhibiting early signs of recovery after FY23 (LSM reported ~0.68% growth in 1QFY24), lower fuel prices, stable interest rates (likely to be revised downward by 2HFY24) and anchored inflationary expectations, the Sector's overall performance is expected to improve in FY24. Furthermore, the government has offered incentives for a variety of sectors, including construction and technology, as well as export-oriented sectors, which are likely to increase investment and, as a result, demand for machinery. Despite the GoP's efforts to improve economic activity and import substitution, the country's dependence on imported machinery is expected to remain high in the medium to long-term due to lack of technological development, financial resources and research and development.

Source: PBS, SBP

Machinery

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Research Team	**Saniya Tauseef** *Senior Manager* saniya.tauseef@pacra.com	**Ayesha Wajih** Supervising Senior ayesha.wajih@pacra.com	**Maham Ali** *Associate Research Analyst* maham.ali@pacra.com

Contact Number: +92 42 35869504

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