



Industrial Gases

Sector Study

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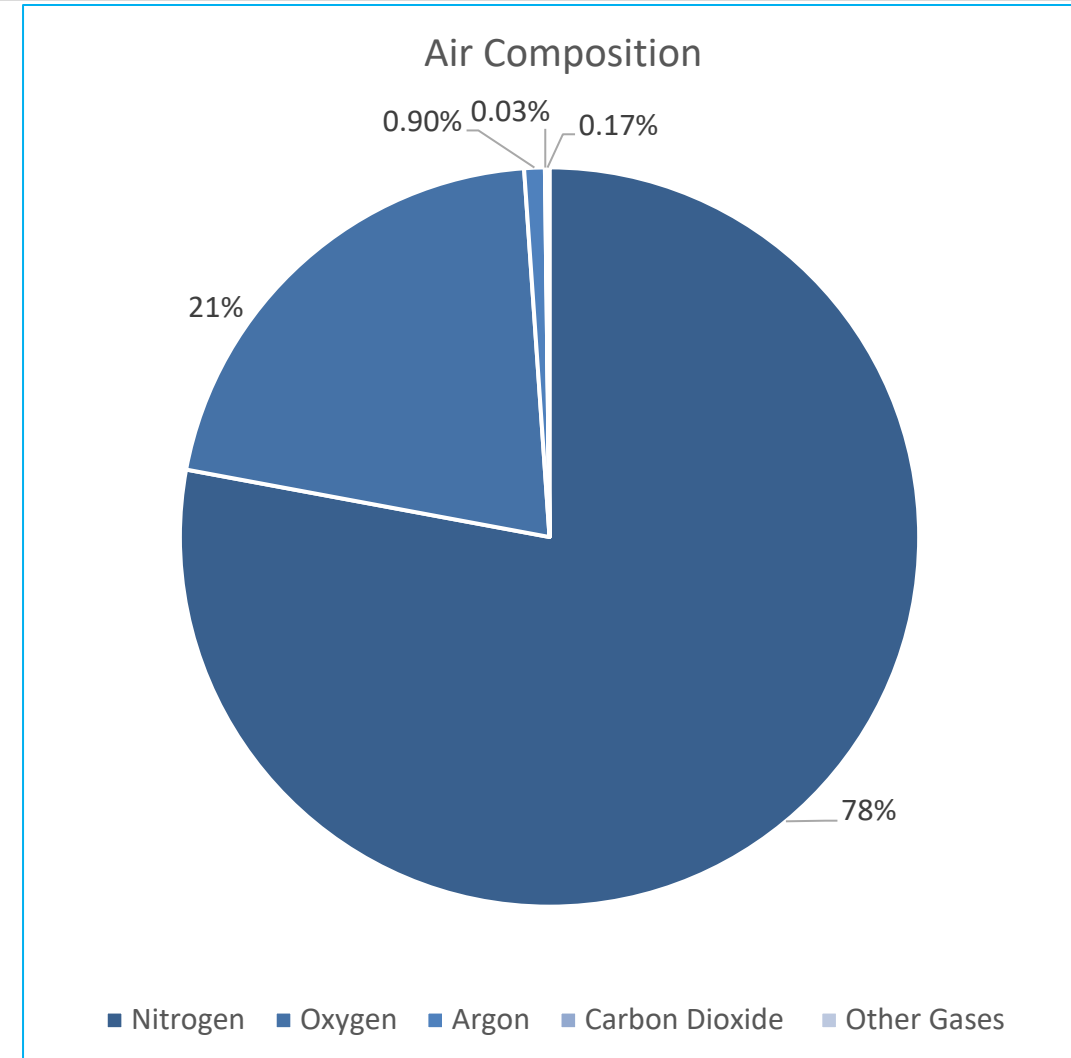
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Industrial Gases

Overview

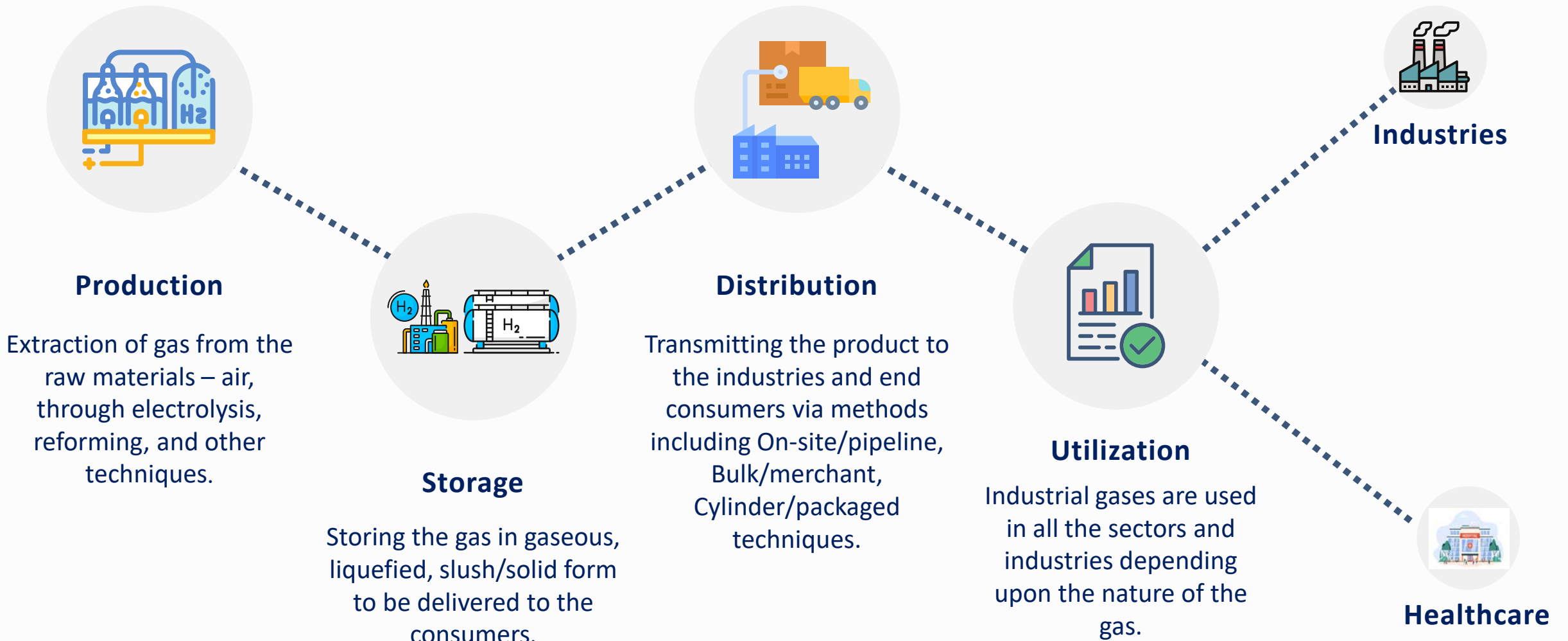
- Industrial gases are gaseous materials which are manufactured for use in various industries, health care and other areas. The main gases are nitrogen, oxygen, carbon dioxide, argon, hydrogen, helium, acetylene which are used in both liquid and gaseous forms.
- Industrial gases are mostly part of the specialty chemicals industry and are used in a great range of industrial applications like medical gases, cutting and welding, refrigeration or food processing and packaging. Depending on their use in different sectors, these gases are also known as fuel gases, medical gases, refrigerant gases, and specialty gases. Steel, glass, oil, and fiber optics segments demand intensive usage of industrial gases.
- Different methods are used to obtain the wide variety of industrial gases. Nitrogen, oxygen and argon are obtained from air by fractional distillation - Hydrogen is made by the electrolysis of water - Carbon dioxide is produced by the steam reforming of methane- Acetylene is made by the reaction of calcium carbide with water.
- The growth of the market is primarily attributed to the growing manufacturing industry in the developing economies. Ongoing investments in large-scale infrastructure projects and investments in core industrial sector are expected to drive demand for industrial gases in the medium term.





Industrial Gases

Supply Chain



Global Overview

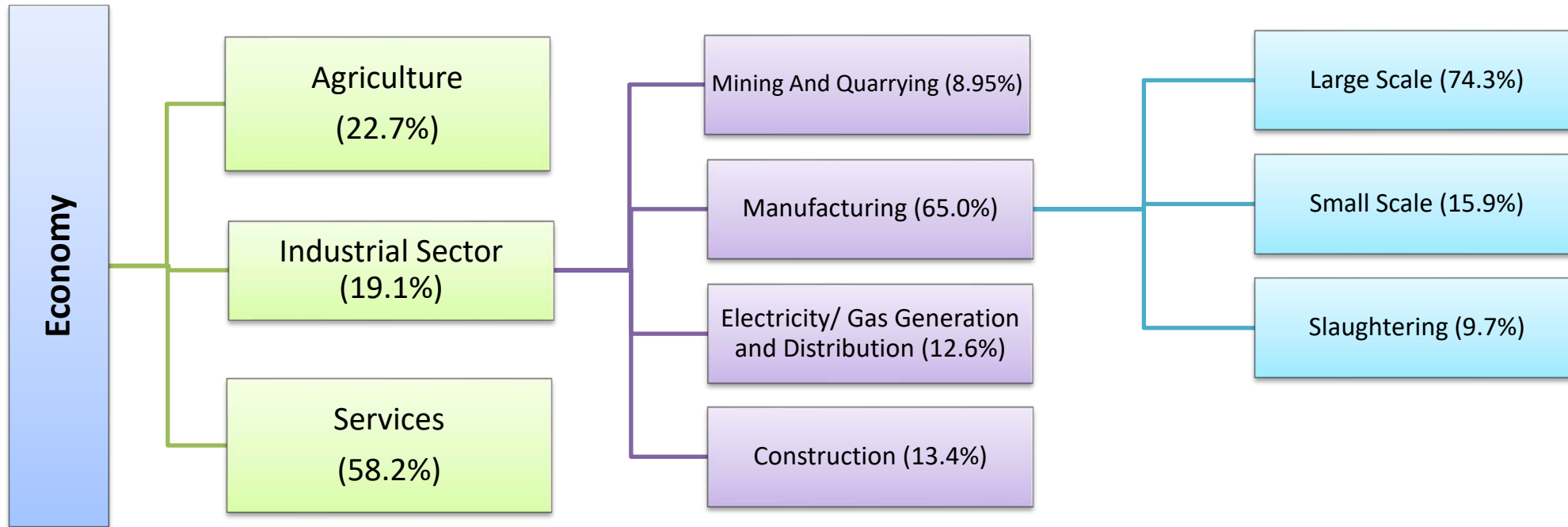
- **Market Size:** The global industrial gas market size is expected to grow from USD~93.7bln in CY21 to USD~99.2bln in CY22. The compound annual growth rate (CAGR) is expected to remain around ~6.0% from CY21 to CY28.
- **Region:** The market is segmented into North America, Europe, Asia Pacific, Latin America and the middle East and Africa. The global market is anticipated to gain momentum in the Asia Pacific owing to the increasing urbanization and industrialization. China, India, Japan and Indonesia, among others are looking forward to invest in sustainable energy development.
- **Demand:** The rising application of industrial gases in various end-use industries such as metallurgy, healthcare, food and beverage, oil & gas and power is increasing its demand.
- **Major Players:** The industrial gas market is consolidated and globalized in nature. It is dominated by a few major players in the global market including Air Liquide, Messer Group GmbH, Linde PLC, and Air Products Inc., among others.



Industrial Gases

Economy | Overview

- Pakistan’s economy is classified into three main sectors. Industrial sector represents ~19.1% to the country’s GDP and manufacturing segment contributes ~65.0% to the industrial sector. Meanwhile, Large Scale Manufacturing (LSM) contributes ~74.3% to the manufacturing segment.
- Within the Industrial sector, the manufacturing segment has been the primary contributor to GDP growth in FY22. Output of the LSM grew by ~10.5% in FY22, in contrast to a growth of ~11.5% in FY21. The current environment with political uncertainty and the recent flood destruction is affecting the economic growth. Eventually, the latest projected growth rate for FY23 stands around ~2% (SBP).



Local | Overview

- The Revenue of the Sector is estimated to record around PKR~17bln in CY22 – a growth of ~12% YoY basis. The sector has a high dependency on the performance of LSM and since there is an overall slowdown in the economic growth, the sector is also expected to record a slower growth rate than before.
- The Sector’s growth remained impressive in CY21, as the economy had gradually, though not fully, recovered from the COVID-19 pandemic and the economic activities revived. However, considering the current economic situation of the country, no major industry is expected to thrive especially industrial gases since its demand is dependent on the growth of other allied industries such as manufacturing, chemical and medical.
- Pakistan's overall production capacity for industrial gases currently stands at ~170mln cubic meters. The structure of the sector is organized yet concentrated with two major players, i.e., Pakistan Oxygen and Ghani Chemicals are estimated to have ~82% share of the market. Other companies include Sharif Gases, Agha Gas, Sultan Oxygen and MediGas.
- The prominent players of the industry, Pakistan Oxygen and Ghani Chemicals are moving towards expansion plans to meet the growing demand of oxygen and nitrogen.

Industry Snapshot	CY21	CY22
Sector Revenue (<i>in PKR mln</i>)	14,767	16,513
Revenue Growth	43%	12%
Players	2 players contributing ~82% to the market share.	
Structure	Duopoly	
Regulatory Body	Securities and Exchange Commission of Pakistan (SECP)	

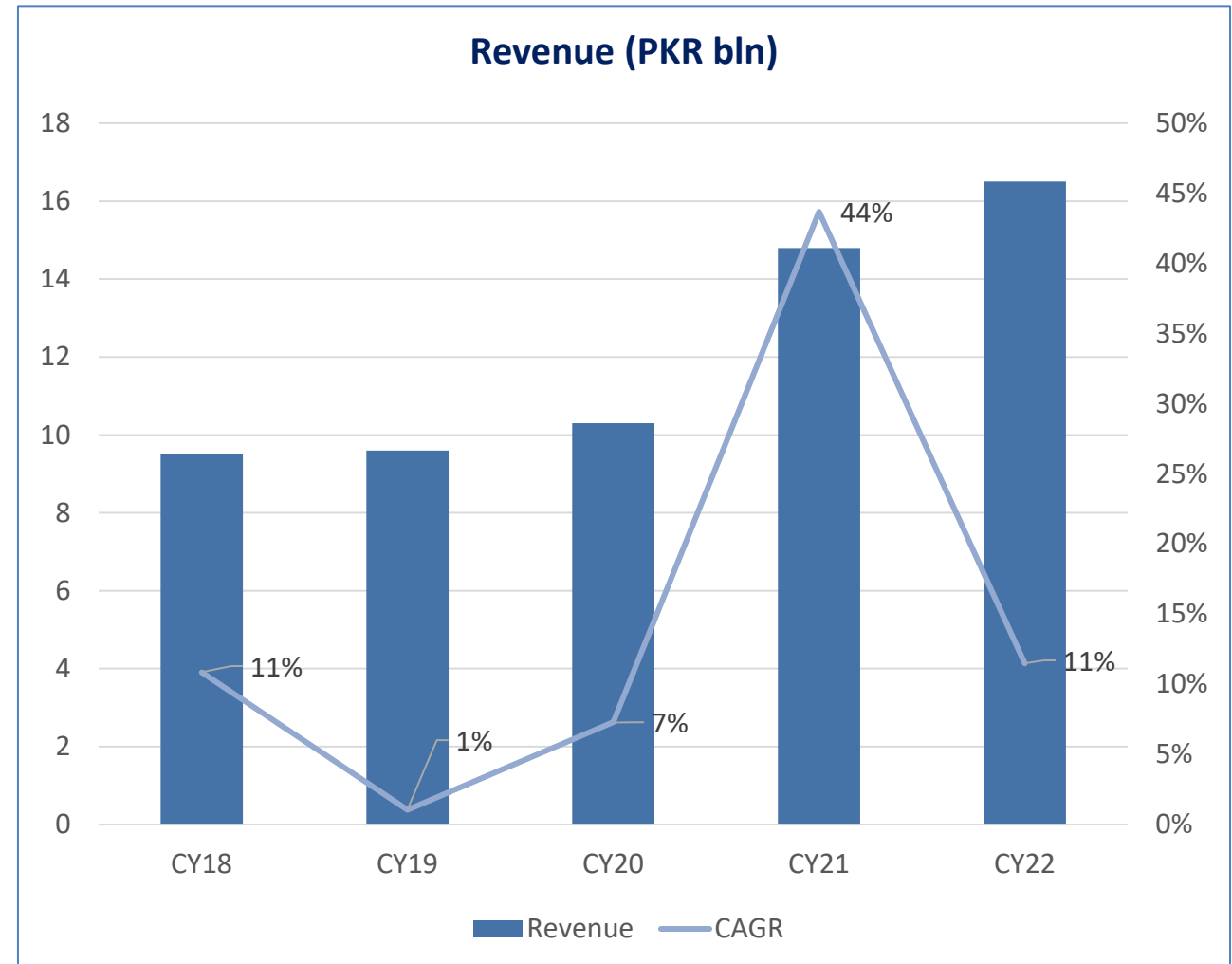
*Figures are estimated based on PACRA rated clients.

* CY22 numbers are prorated based on latest available quarterly accounts.

Industrial Gases

Local | Demand

- Major demand of the sector emanates from large scale manufacturing companies and health care sector. Thus, any fluctuation in LSM growth holds a direct implication on the sector's revenue.
- Recently, the economic slowdown due to vulnerabilities on the economic and political front, further exacerbated by floods, has impacted a large number of industries including those driving the demand for industrial gases. The demand is however, expected to increase in the future as the economy recovers from the effects of the flood.
- The increased demand from the healthcare segment experienced a downward adjustment in 1HCY22 as COVID-19 situation has significantly improved in the country. The use of the industrial gases in the manufacturing sector was still creating demand till the 1HCY22, however this demand may be effected in the second half of the year due to the massive floods that have stunted the economic growth.
- However the medium and long term demand for the sector can grow as these gases are used in several significant sectors of the economy like steel, cement, food industry and other manufacturing sectors.



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Industrial Gases

Local | Demand

Local Demand	
Products	Industrial Use
Oxygen	Medical, Chemical processing, General engineering, Fabrication, Steel manufacturing, Welding industries, Ship breaking industry ,Oxidation, Pulp and Paper industry
Nitrogen	Chemical processes , oil and gas exploration, Blanketing , Healthcare applications , Food freezing/storage
Argon	Healthcare applications , Deep sea environments , Welding , Food and drink , Cinematography , Lighting
Carbon Dioxide	Refrigerant , Fire extinguishers. Greenhouses, Chemicals , Pharmaceuticals , Metal industry
Hydrogen	Commercial fixation of nitrogen from air, Hydrocracking, Rocket fuel, Welding, Production of hydrochloric acid, Reduction of metallic ores, Filling balloons
Helium	Magnetic Resonance Imaging (MRI) , Fiber Optics , Balloon Filling , Deep Sea Diving , Space Exploration, Leak Detection
Rare Gases (Neon/Krypton /Xenon)	Electronics, Media, Healthcare

Industrial Gases

Local | Supply

- For almost all of the industrial gases, the production is derived from the underlying demand. This explains that the variance and utilization is attributable to demand.
- Underutilization of capacity is attributable to certain factors including non-availability of natural gas and load shedding of electricity.
- Moreover, the sector players are expanding the capacity/plants in different areas including Port Qasim, Karachi and KPK. The added capacity shall ensure consistent supply of gases for the industrial requirements of the health sector, CPEC projects and growth in other sectors in the LSM.

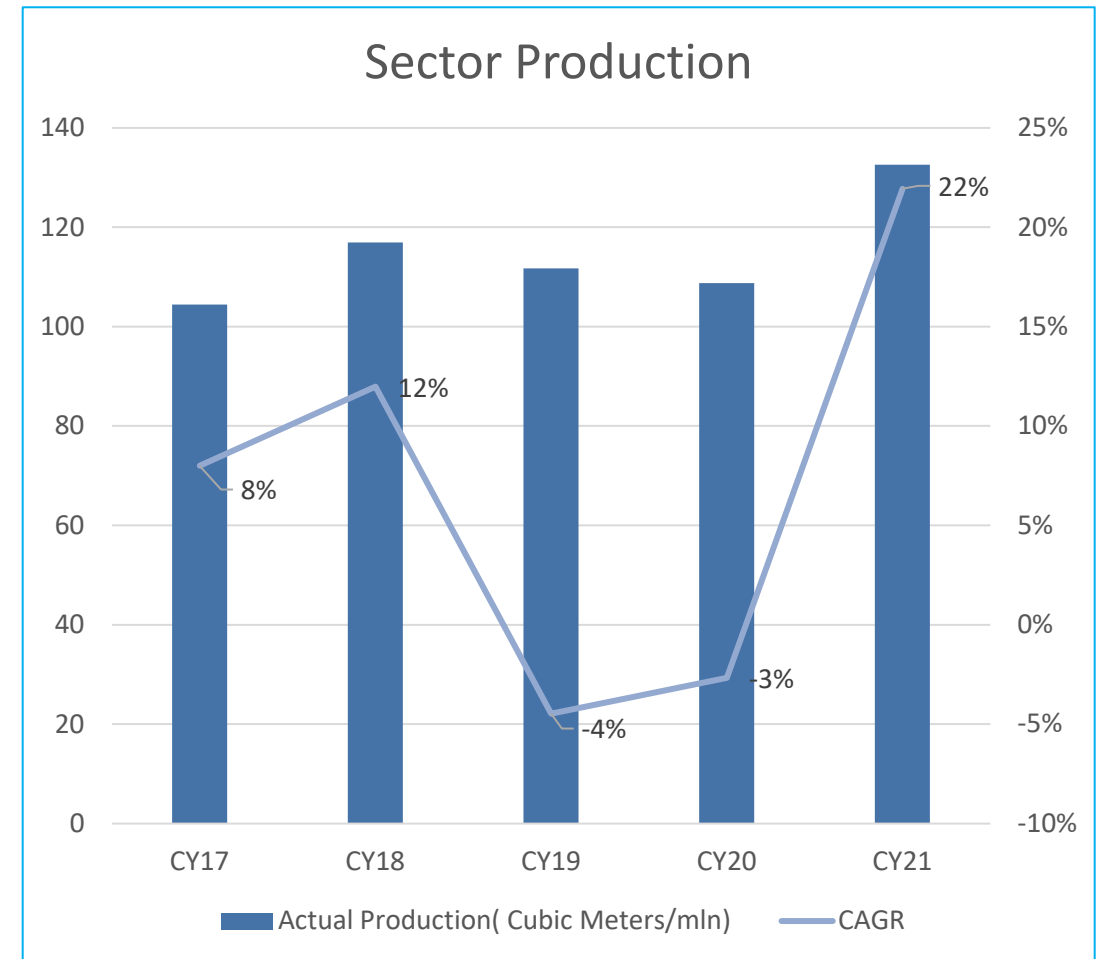
Year	Pakistan Oxygen Limited			Ghani Chemicals Industry Limited			Sector Total		
	Production Capacity (Cubic Meters/mln)	Actual Production (Cubic Meters/mln)	Capacity Utilization	Production Capacity (Cubic Meters/mln)	Actual Production (Cubic Meters/mln)	Capacity Utilization	Production Capacity (Cubic Meters/mln)	Actual Production (Cubic Meters/mln)	Capacity Utilization
CY17	101.2	70.9	70%	45.8	33.5	73%	147.0	104.4	71%
CY18	101.2	71.0	70%	45.8	45.9	100%	147.0	116.9	80%
CY19	101.2	68.6	68%	45.8	43.1	94%	147.0	111.7	76%
CY20	101.2	64.6	64%	61.0	44.1	72%	162.2	108.7	67%
CY21	101.2	70.8	70%	70.8	61.8	87%	172.1	132.6	77%

*Figures are estimated based on PACRA rated clients.

Industrial Gases

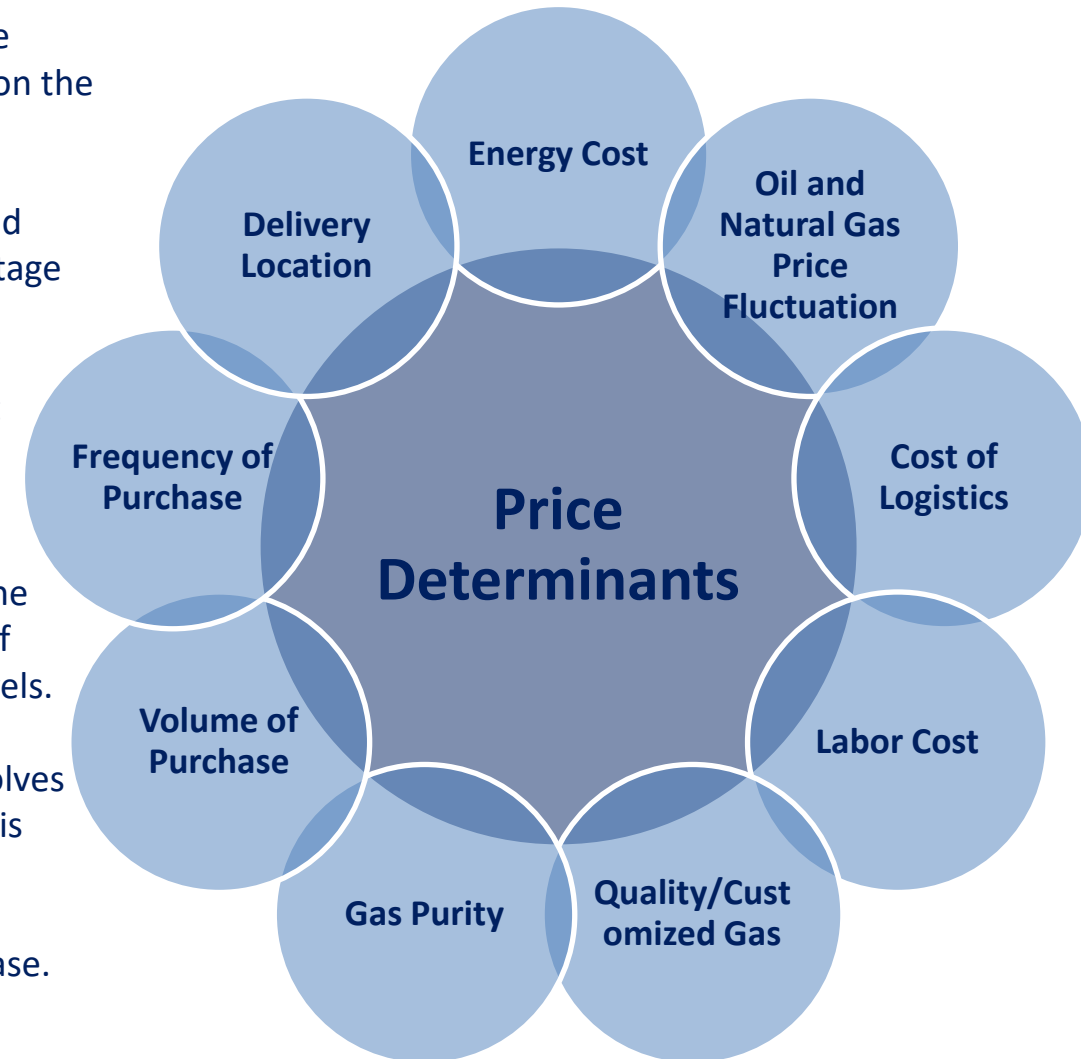
Local | Supply

- The average production capacity from CY17 to CY21 was ~ 115 million cubic meters, with an average growth rate of ~ 7% over the five years.
- In CY21, the actual production capacity of the sector was ~132mln (CY20: ~109mln), out of which Pakistan Oxygen contributed ~53% and Ghani Chemicals contributed ~47%.
- The production in CY20 witnessed a decline of ~3% despite the excess demand of oxygen in health sector due to a halt in the operations of major industries of the large scale manufacturing where the other industrial gases are used.
- The expansion plans of the major players will increase the production capacity of the sector which can increase the availability of medical gases for hospitals and can also help in developmental projects of CPEC in the future after the economy starts recovering.
- One of the major players, plant in KPK is expected to start production in the 2nd quarter of CY23 which will meet regional demand and help the company to achieve economies of scale and pass those cost saving to its clients, particularly in the healthcare industry.
- The percentage of import of industrial gases has been insignificant as compared to the domestic production. Even though the amount has increased over the years it still remains below 1%.



Business Risk | Price Determinants

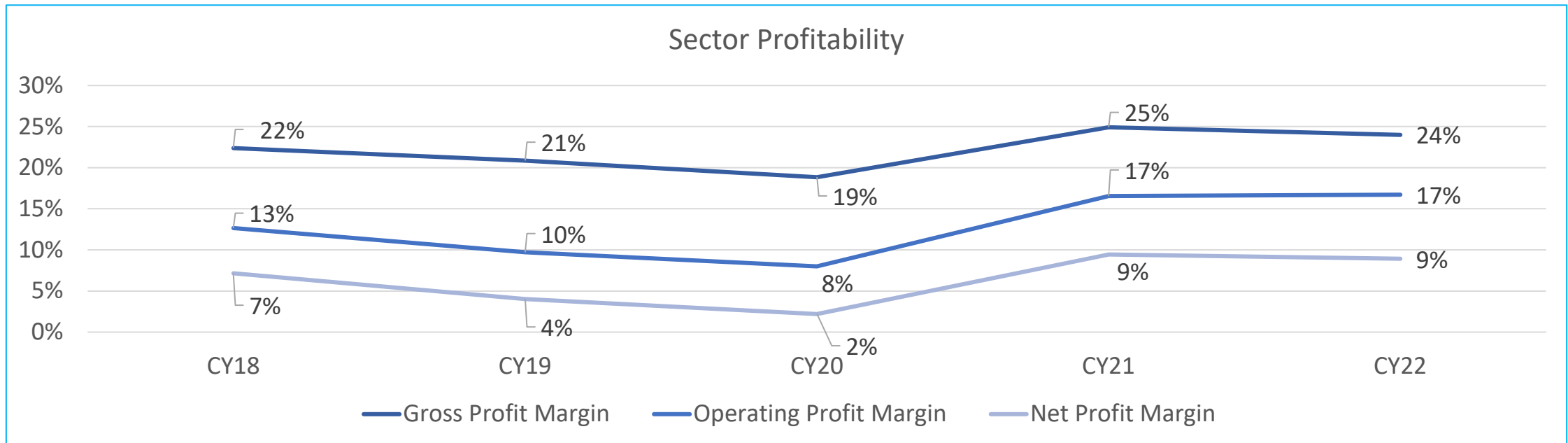
- Prices of Industrial gases are mainly dependent on the market forces. An increase in the amount of any price determinants can increase overall cost and hence have an impact on the price. Some of the key contributors are listed below:
- **Energy Cost:** Electricity is the main source of energy involved in the separation of air and thus drives the cost of production of industrial gases. Large scale production has advantage over smaller units as smaller units have higher specific electricity consumption.
- **Oil & Natural Gas Price Fluctuation:** For gases like hydrogen and helium, feedstock cost fluctuations have a large impact on the production cost.
- **Quality/Special Gas:** If the composition of gas requirement is proprietary, the costs are generally very high. The requirement of high-quality gas also drives the cost and thus the price. Low quality gas and general gases carry lesser cost due to abundant availability of multiple sources of supply. Further, gases are often based and priced on their purity levels.
- **Customized Product:** Complex design, specific gas products are tailor-made, which involves high value of production. This increases the prices of such products as their availability is through selected channels.
- **Other** price determinants include administrative costs and frequency/volume of purchase. The Sector is largely able to pass on its cost of production to the end users.



Industrial Gases

Business Risk | Margins

- **Margins:** The average gross margins of the sector (from CY18-CY22) hovered around ~22%. Gross margin is expected to record around ~24% during CY22 (CY21: ~25%). The growth rate of the revenue decreased by ~30% and the growth rate of the cost of goods sold decreased by ~ 22% keeping the gross margin relatively stable with a reduction of ~1% from the last year.
- The average operating margins of the sector (from CY18-CY21) were recorded at ~13%. The operating margin is expected to remain steady as compared to the previous year at ~17% during CY22 (CY21:~17%).
- The average net margins (from CY18-CY21) hovered around ~6%. During CY22, the net margins are expected to remain stable at ~9% (FY21:~9%).
- The above margins are estimated using the data for the 1HCY22 and can be effected by uncertain business environment and slowdown in the economy due to the floods.



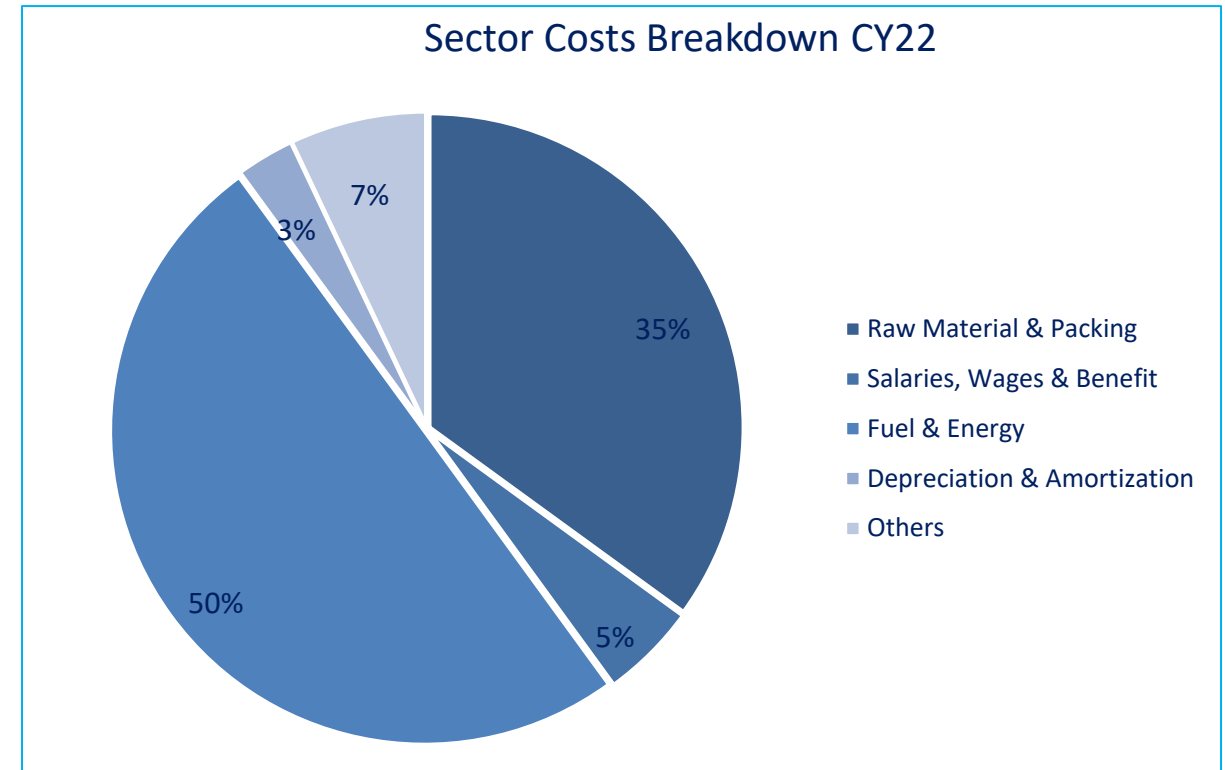
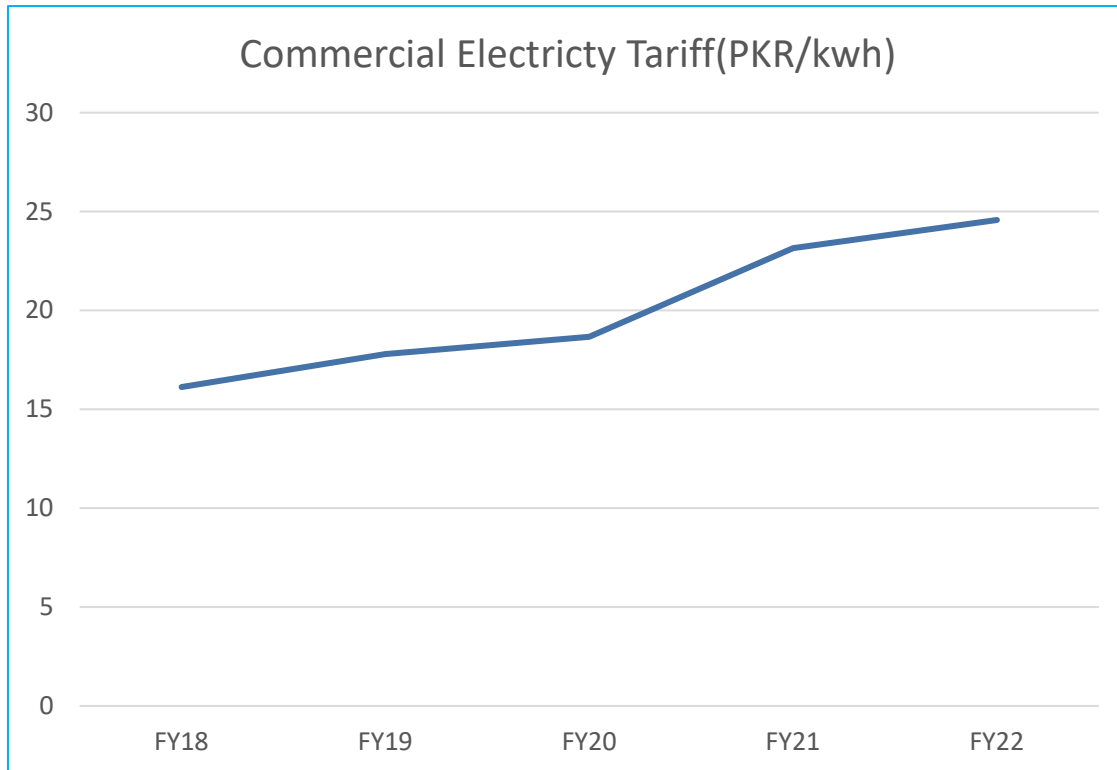
*Figures are based on financials of PACRA rated clients.

* CY22 numbers are prorated based on latest available quarterly accounts

Industrial Gases

Business Risk | Operating Risk

- The key price drivers for the sector are energy cost, gas purity, customization of the product, the volume of purchase, and delivery location.
- Production is entirely demand driven.
- The cost structure of the industrial gases is mostly variable ~70-75% variable cost.
- Electricity cost accounts for nearly ~50% of the total cost, hence the cost of production varies with electricity prices, and the business remains vulnerable to the changes in electricity tariffs.



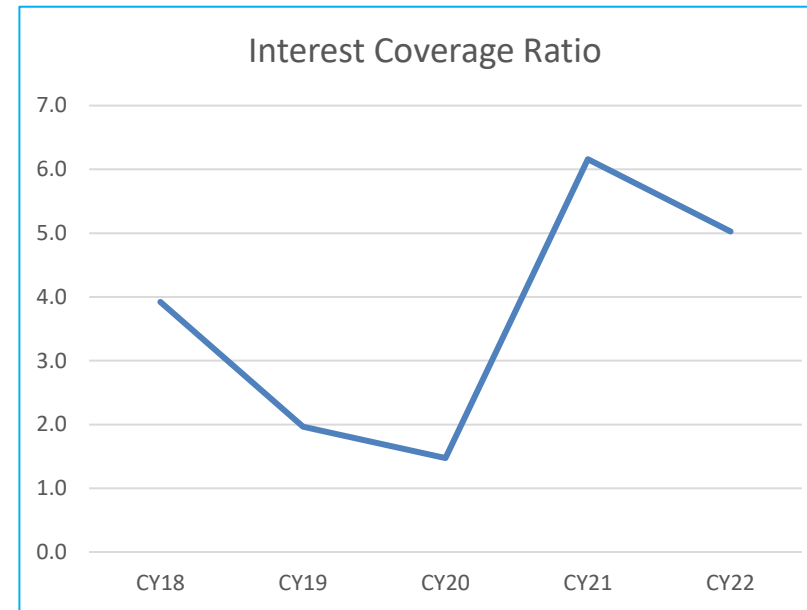
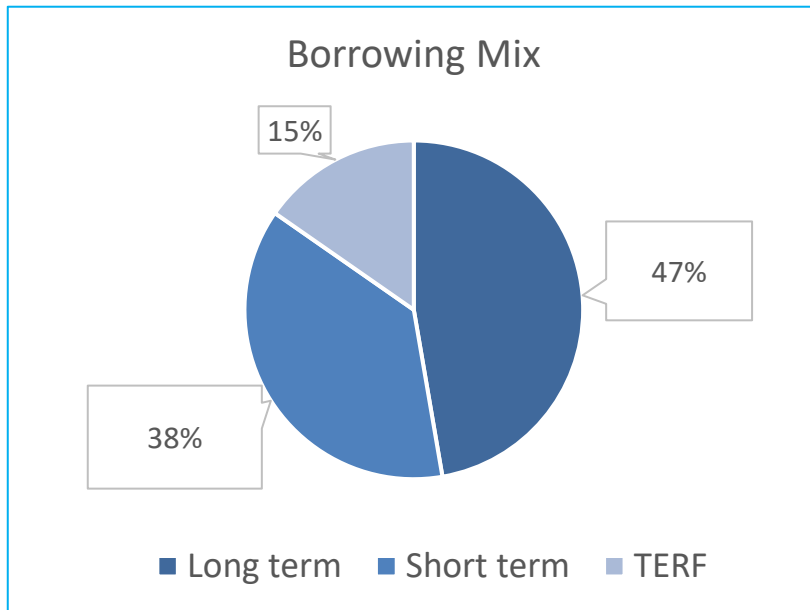
*Figures are based on financials of PACRA rated clients.

*Electricity Tariff does not include FCA and other charges.

Industrial Gases

Financial Risk

- Leverage:** Industrial gases sector is moderately leveraged with debt to equity ratio averaging around ~50% (from CY18-CY22), which increased in 1HCY22: ~60% (CY21:~53%) due to the sector players planning to increase their production capacities.
- Borrowing Mix:** The sector's total borrowing is estimated to be around PKR~6,224mIn in 1HCY22 (CY21: PKR~4,220mIn) a spike of ~47% YoY basis. The increase in borrowings reflects the pattern of expansion plans of both the leading players of the sector. The largest component in borrowing mix is represented by long term borrowings in 1HCY22: ~47% (CY21: ~46%) while the short term borrowings constitute ~38% of the total borrowings in 1HCY22 (CY21: ~54%) and the temporary economic relief facility is 15% of the total borrowing.
- Interest Cover:** The average interest cover of the sector was recorded around ~3x (from CY18-CY22), which will approximately be ~5x in CY22 (CY21:~6x). Even though the profitability of the sector increased the interest coverage ratio slightly decreased from the previous year due to higher interest costs. The interest expense are expected to be ~37% of the net profits in CY22 which is an increase of ~10% from CY21(~ 27%)

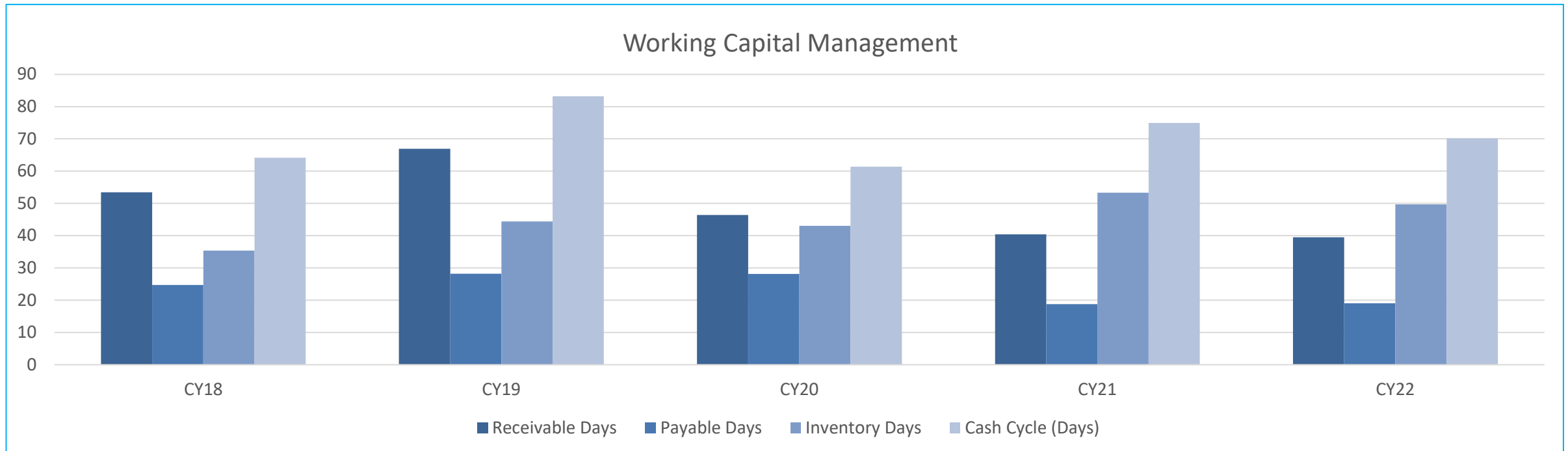


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Financial Risk | Working Capital Management

- The Sector’s Working Capital (WC) requirement emanates from financing inventories and trade receivables for which the sector relies on both internal cash flows and short-term borrowings.
- During CY22, the demand of oxygen decreased due to a fall in COVID-19 cases but the LSM which provides most of the demand for the sector witnessed a growth of ~10.5% in FY22 due to which the sector’s topline remained stable and so did its WC cycle. WC days saw a slight decrease of 5 days and improved from ~75 days in CY21 to ~70 days in CY22. No significant changes were witnessed in any component of the WC.



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Industrial Gases

Regulatory Framework

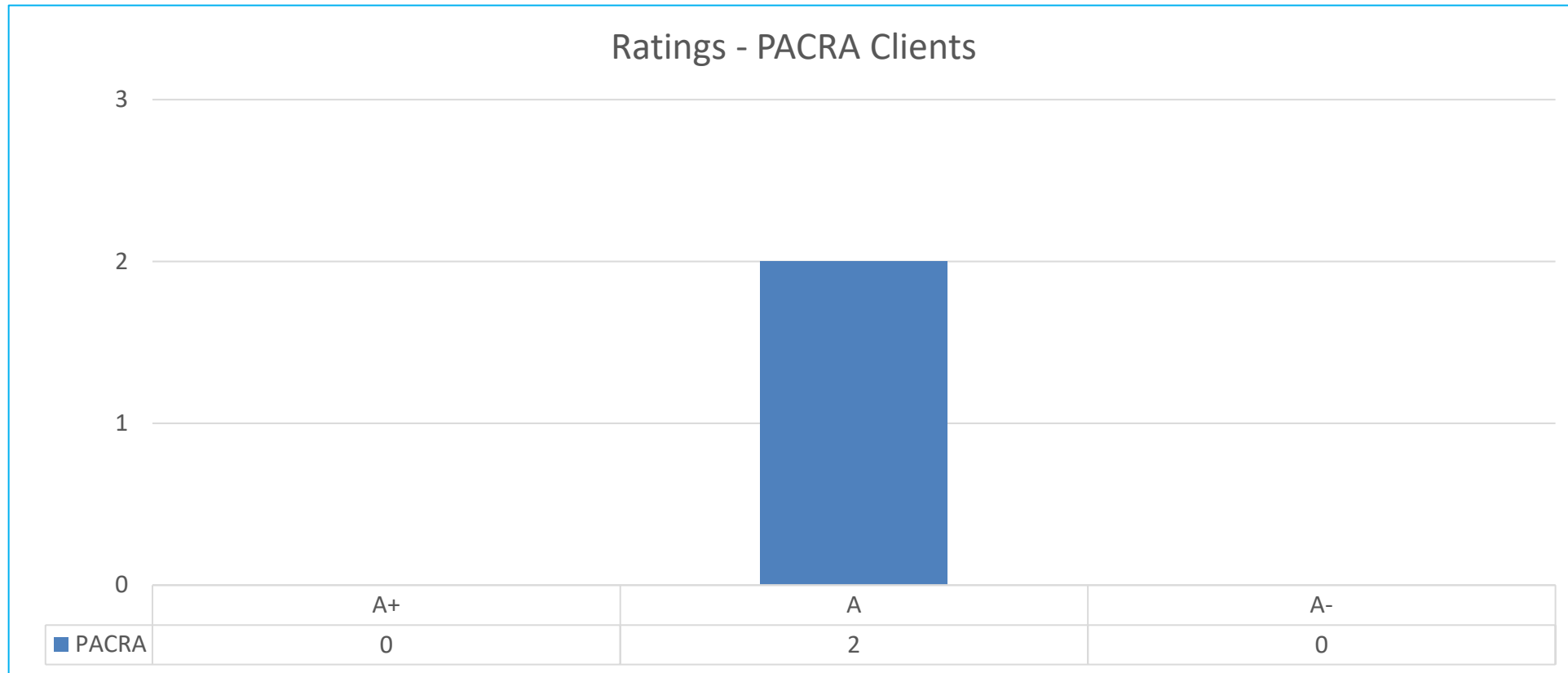
- The custom duty remained stable at ~3% for most of the gases and no change was seen in the custom duty on any gas.
- No change in the Additional Customs Duty was witnessed.
- In terms of Regulatory Duty, the government imposed a regulatory duty of ~10% on import of Argon and Nitrogen.
- The imposed Sales Tax is of ~17% and income tax is charged at ~11% on import stage.

PCT Code	Description	Custom Duty		Additional Custom Duty		Regulatory Duty		Total	
		FY23	FY22	FY23	FY22	FY23	FY22	FY23	FY22
2804.1000	Hydrogen	3%	3%	2%	2%	0%	0%	5%	5%
2804.2100	Argon	3%	3%	2%	2%	10%	10%	15%	15%
2804.3000	Nitrogen	3%	3%	2%	2%	10%	10%	15%	15%
2804.4000	Oxygen	3%	3%	2%	2%	0%	0%	5%	5%
3824.9996	Neon	0%	0%	2%	2%	0%	0%	2%	2%
2811.2100	Carbon Dioxide	3%	3%	2%	2%	5%	5%	10%	10%
2814.1000	Anhydrous Ammonia	0%	0%	2%	2%	0%	0%	2%	2%
8405.1000	Acetylene	0%	0%	2%	2%	0%	0%	2%	2%
2804.2900	Other	3%	3%	2%	2%	0%	0%	5%	5%

Industrial Gases

Rating Curve

- PACRA rates 2 clients in the industrial gases sector.
- Both of the clients have a long term rating of A.



Industrial Gases

SWOT ANALYSIS



Outlook: Stable

- The current economic growth of the country is stunted due to the country's political unrest and was further impacted by the devastating floods that hit the country in the monsoon season. The floods effected 33 million people and put several economic activities at a halt, due to which the projected growth rate for FY23 is ~2% ,according to SBP.
- Large scale manufacturing grew by ~10.5% in FY22 which in turn increased the demand for industrial gases which can be seen by the increased revenues. However, the floods have completely changed the situation due to which LSM has contracted by ~0.4% YoY in the first two months of the FY23 which in turn might effect the demand of industrial gases that majorly emanates from large scale manufacturing industries.
- The sector's margins have sustained a stable position in the first half of the year due to the use of the industrial gases in several industries but they may be impacted by the slowdown in the economy and reduced demand in the LSM.
- Production capacity of the major players is being enhanced by setting up new plants which has resulted in an increase in the borrowing of the sector by ~47% in the first half of CY22 to finance the new projects. This will increase the borrowing cost of the sector, which are rising. The sector is moderately leveraged, having a debt to equity ratio of around 50% ,which is manageable for the sector as it has strong sponsor support.
- Currently, all the sectors of the economy are negatively affected and this will also be the case for industrial gases. However, in the medium term, it is expected that the industry will revive due to its demand in several significant sectors like steel, cement, food and research. The LSM output has increased by ~3.9% MoM from July to August in FY23 which means that the economy has started moving towards a recovery post floods, however the recovery is at a very slow rate and it will take time for business activity to reach the pre-flood level .The demand of oxygen in the healthcare sector will remain constant even in an economic slowdown.
- In the long run, the overall profitability of the sector is expected to become strong if the economic situation becomes stable. This is because of the growth of the sectors that use industrial gases; the demand for industrial gases is hence expected to remain stable. Industries like research and technology are growing rapidly which increase the use of gases like argon and other rare gases(neon, krypton and xenon). Gases such as nitrogen and carbon dioxide are used in packaged food to seal freshness by removing oxygen and moisture. With the rise in the consumption of packaged and tinned food, the demand for nitrogen and carbon dioxide will increase.

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