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## Refineries

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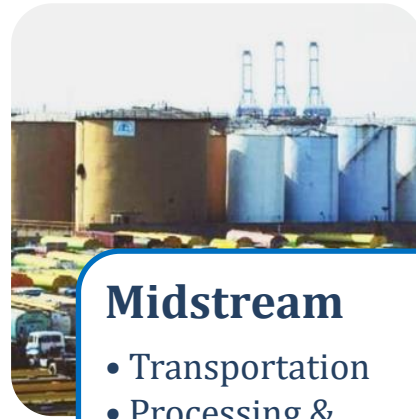
# Refineries

## Introduction | Industry Segmentation



### Upstream

- Exploration
- Field Development
- Production Operations



### Midstream

- Transportation
- Processing & Refining
- Storage & Distribution



### Downstream

- Wholesale & Marketing

# Refineries

## Oil Value Chain

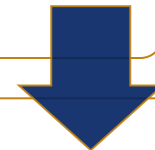
Crude oil is a mixture of hydrocarbons that exists in liquid phase in natural underground reservoirs and remains liquid at atmospheric pressure after passing through surface separating facilities.



Crude oil is transported to refineries to convert it into its derivatives.



Refining breaks crude oil down into its various components, which are then selectively reconfigured into new products. All refineries have three basic steps: Separation, Conversion, Treatment



Petroleum products include gasoline, distillates such as diesel fuel and heating oil, jet fuel, petrochemical feed stocks, waxes, lubricating oils, and asphalt.

# Refineries

## Refinery Configuration

There are 4 major refining processes that the refineries use and are based on the degree of complexity and the type of crude oil they can effectively refine.

### Hydro Skimming

In addition to the distilleries, these include hydrotreating, catalytic reforming and blending infrastructure. These can handle crude oil with low to medium API gravity and Sulphur content (Light Sweet to Medium Sour). With additional infrastructure, they can reform naphtha to MOGAS up to specific octanes and desulphurize light products such as MOGAS and HSD to meet regulatory requirements.

### Conversion/ Cracking

In addition to all the Hydro skimming infrastructure, these include facilities for hydro and/or catalytic cracking. These processes allow heavy fractions such as gas oil to be converted into lighter refinery streams, yielding MOGAS, jet fuel and other petrochemical feedstocks.

### Deep Conversion/ Coking

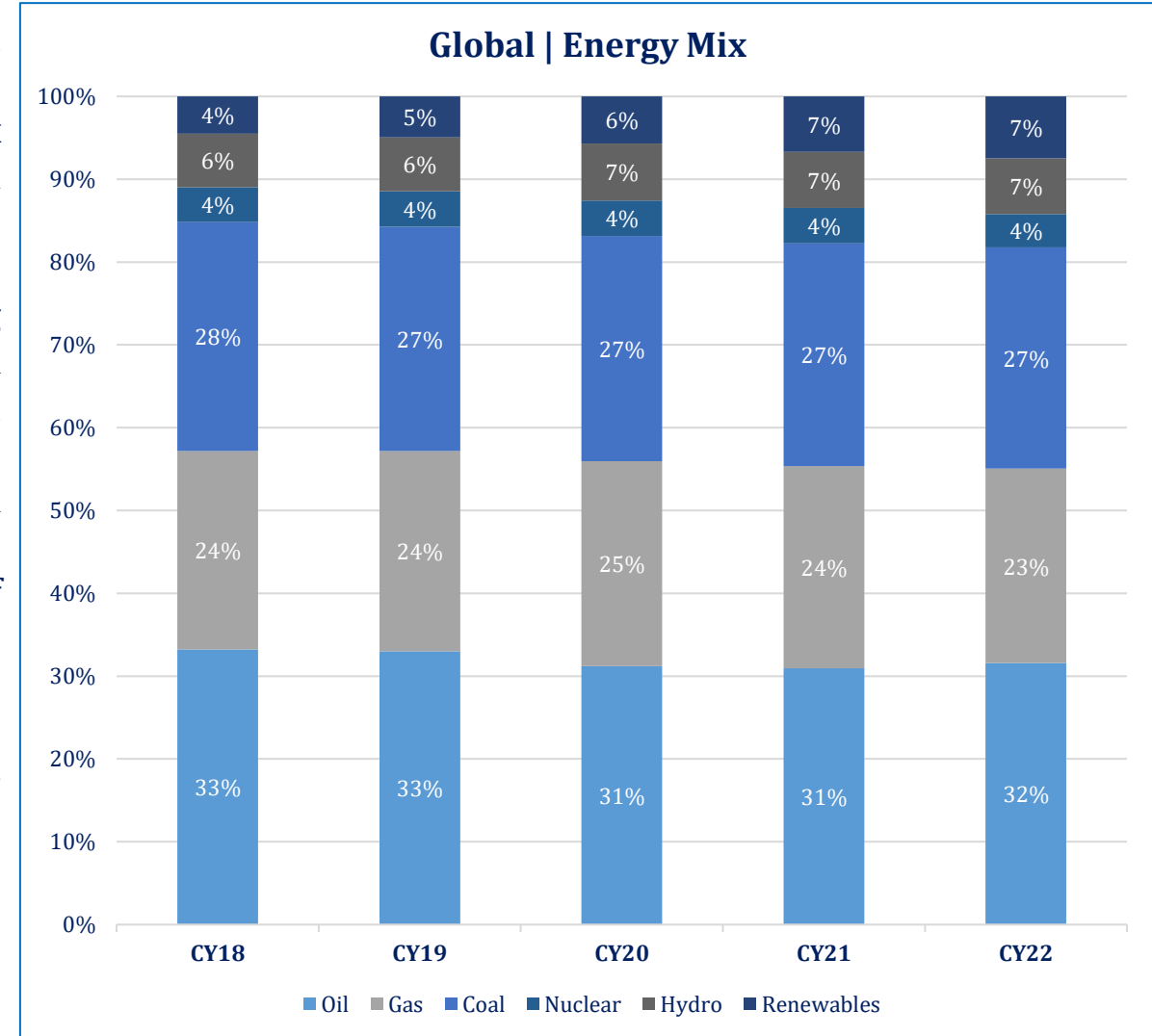
These are a special class of refineries that can convert the heaviest fraction i.e. residual oil into lighter streams which can then further be processed lighter petroleum products. These refineries can handle with economic viability; all classes of crude oil (Light Sweet to Heavy Sour).



# Refineries

## Global | Energy Mix

- The global energy mix has, over the years (CY18-22), been dominated by fossil fuels, with oil being the major contributor, followed by coal and gas. Fossil fuels comprised the lion’s share in the global energy mix in CY22, remaining relatively stable. Total energy consumed amounted to ~604EJ increasing YoY by ~1.2% YoY.
- Oil demand, although expected to peak around CY30, is expected to remain core part of the global energy mix in the medium term, along with natural gas. Factors leading to this decline in oil include improved engine efficiency, continued electrification of road transport, and international efforts for environmental sustainability.
- Natural gas is expected to account for ~65-75% of the increase in Asia by CY30, reflecting increasing usage in power and industrial sectors. For developed countries, demand is expected to be lower on the back of increased shift towards renewables.
- Renewable energy sources are forecast to provide ~40-50% to global power generation by CY30 and ~85% by CY50. This shift will likely be driven by their cost competitiveness, with solar and wind being the major contributors.
- The growth in installed wind and solar capacity by CY30 is forecast to be dominated by China and developed world, each accounting for ~30-40% of the overall increase in capacity. However, the renewable build-out faces challenges such as supply chain issues and slow permitting.

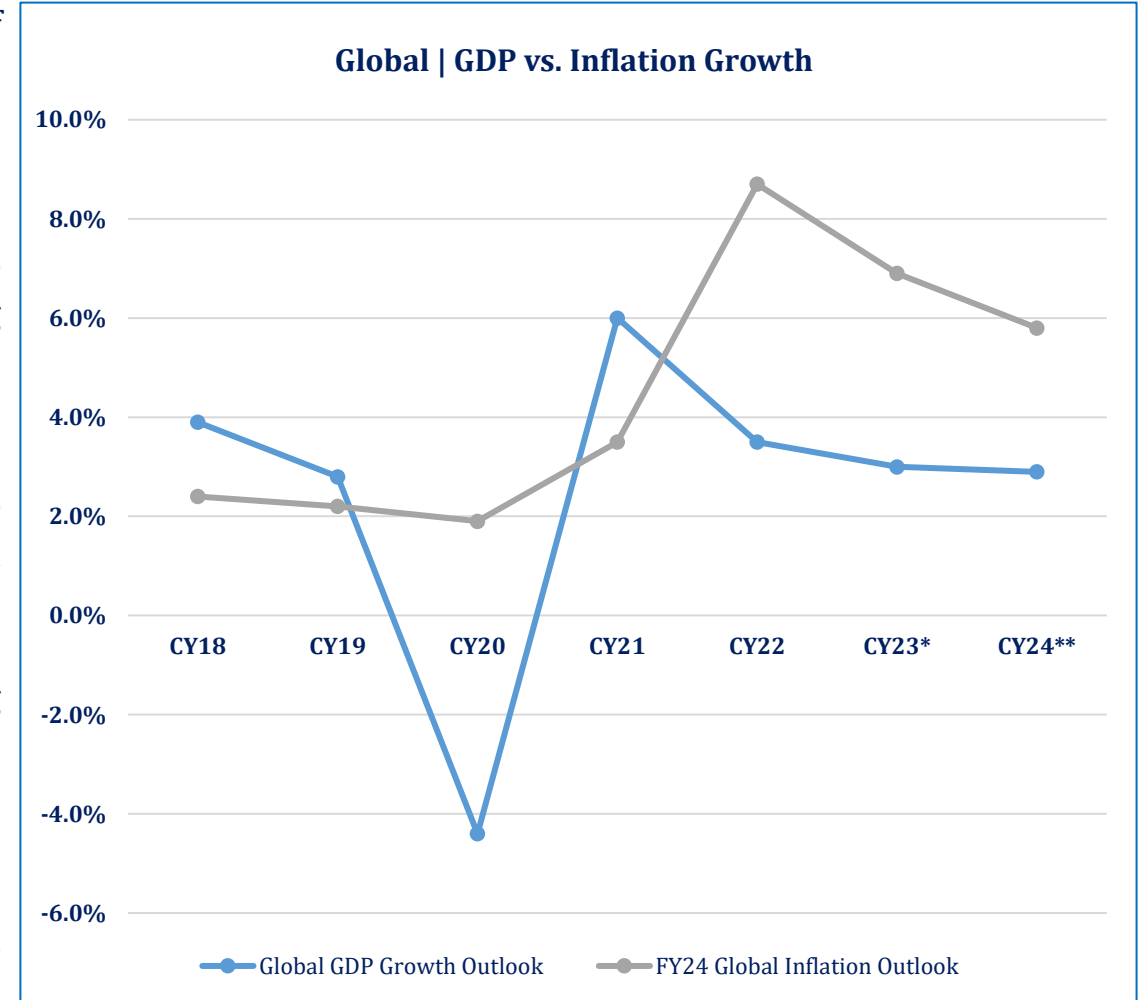


*Note: EJ stands for Exajoules.*

# Refineries

## Global | Economic Outlook

- Global GDP growth slowed down to ~3.5% during CY22, on the back of various headwinds, including the reeling effects of the pandemic, Russia-Ukraine war, worsening climate shocks, inflationary pressures, and increasing poverty levels across the globe.
- Global GDP growth is forecast to fall by ~14.3% to reach ~3.0% in CY23 and further shrink further by ~3.3% to clock at ~2.9% by CY24. The leading factors behind subdued GDP growth rates include diminishing pandemic-era savings, slowing rebound in services, including travel, and persisting manufacturing slowdown.
- China's growth is expected to remain muted with property sector crisis leading the factors hampering growth, along with uncertainty in the country's labor market (youth unemployment levels reached ~20% in Jun'23). These factors are forecast to weigh down on consumption. Moreover, industrial production, business investments and exports are also exhibiting a downward trajectory, translating into weakening overall demand.
- Global inflation for CY23 is projected to clock in at ~6.9% during CY23 (CY22: ~8.7%). For CY24, it is projected to further decline to ~5.8%. These projections are likely a result of the monetary tightening efforts, with drivers to inflation outlook comprising a combination of demand pressures and supply shifts in various industries.

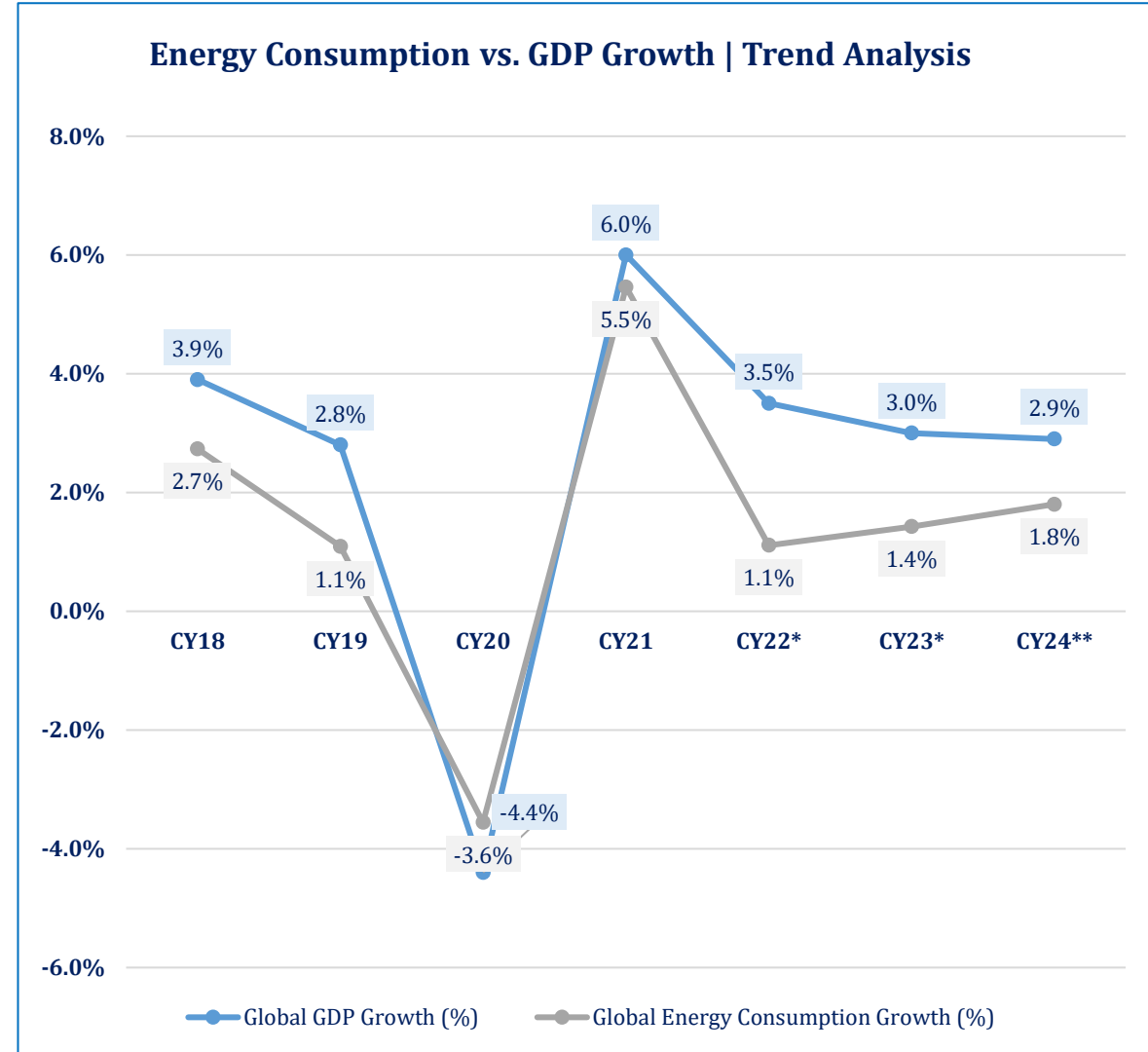


\*Forecast. \*\*Projected.

# Refineries

## Global | Energy Consumption

- Global energy consumption growth has exhibited strong correlation with global GDP growth, with a correlation coefficient of 0.91.
- Country-wise, China has an outsized role in shaping global energy dynamics, however, this influence is evolving led by a slowing economy and growing use of cleaner energy. Over the past decade, the country alone accounted for ~66.7% increase in global crude consumption, ~33.3% increase in natural gas usage, and has also been a prominent player in the coal market. Going forward, with respect to energy-intensive segments like steel and cement, China's demand is expected to weaken in CY24, with residential floorspace per capita the same as that in Japan. Moreover, China also accounted for ~50% of global EV sales in CY22.
- Across economies, drivers of energy demand, including rates of urbanization, constructed space per capita, ownership of EVs and air conditioners, remain lower in developing countries. Global population, however, is expected to increase by ~1.7bln by CY50, thereby driving the global energy outlook accordingly.
- Another important aspect to global energy outlook remains rooted in ~93 countries and EU's targets to achieve net-zero emissions and as of Sep'23, net-zero emissions pledges account for ~85% of global energy-related emissions (or ~90% of global GDP). Moreover, electric 2/3 wheelers and trucks have exhibited an uptick in developing economies like India, while the USA, through its Inflation Reduction Act of 2022, has provided significant funding to reducing costs for low-emissions technologies, such as CCUS and hydrogen.



\*Forecast. \*\*Projected. **Note:** CCUS – Carbon Capture, Utilization and Storage.



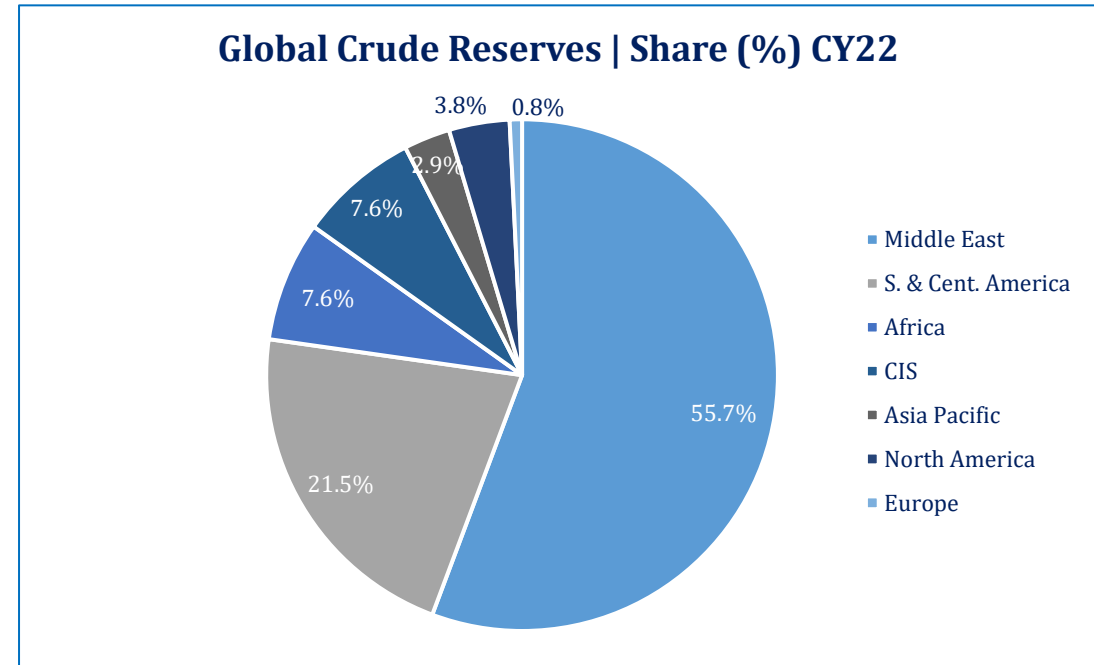
# Refineries

## Global | Crude Reserves Position

- During CY22, global crude reserves stood at ~1,564bln barrels, registering a growth of ~1.2% YoY, whereas the remaining life of global crude reserves is estimated at ~47 years.
- Country-wise breakdown depicts that USA registered ~34.3% increase in crude reserves YoY during CY22, amounting to ~55,251mln barrels, forming only ~3.5% of the global reserves. Similarly, Argentina, Colombia and Brazil recorded ~17.7%, ~12.1% and ~11.4% YoY increase in crude reserves, respectively. However, together, these formed ~1.1% of the global crude reserves.
- Region-wise distribution of these reserves shows that the largest reserves registered were in the Middle East, where these amounted to ~871,612mln barrels, making up ~55.7% of the global crude reserves (SPLY: ~56.2%). A further breakdown with respect to Middle Eastern countries reveals that Saudi Arabia formed ~17.1% of the global reserves, while Iran comprised ~13.3%.
- S. & Cent. American countries together accounted for ~21.5% of the total crude reserves, amounting to ~331,265mln barrels during CY22. Meanwhile, Venezuela alone formed ~19.4% of the global crude reserves.
- The CIS and Asia Pacific regions cumulatively accounted for ~15.2% of the global crude reserves. Of the former, Russia's crude reserves formed ~5.1% of the world total. Meanwhile, Africa accounted for ~7.6% of the world's total reserves, amounting to ~119,050mln barrels.

Global Crude Oil Reserves (bln barrels)						
Year	CY17	CY18	CY19	CY20	CY21	CY22
<b>World Total</b>	1,491	1,495	1,554	1,545	1,545	1,564

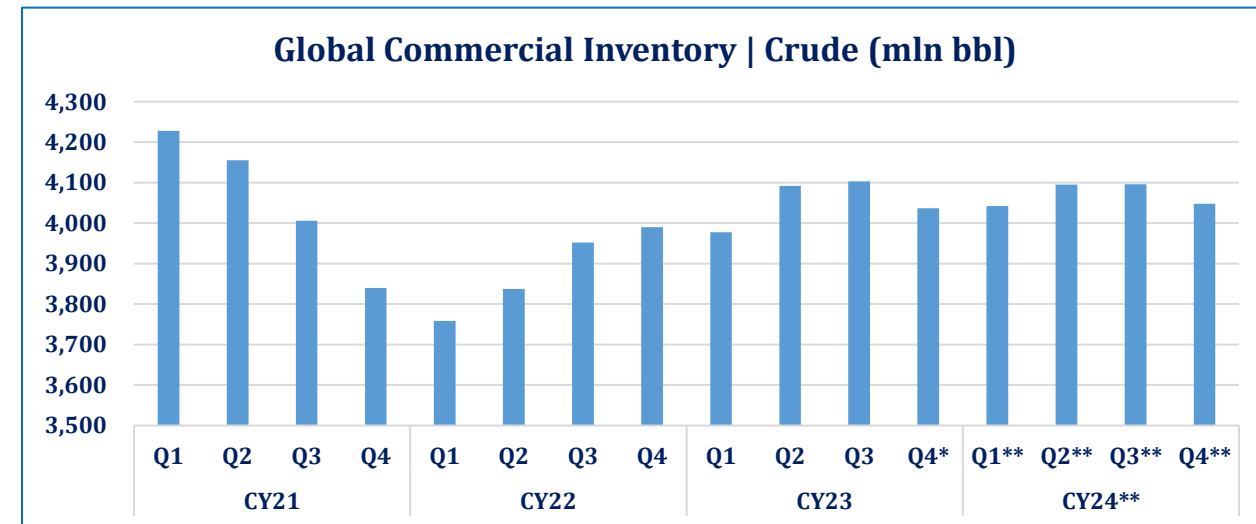
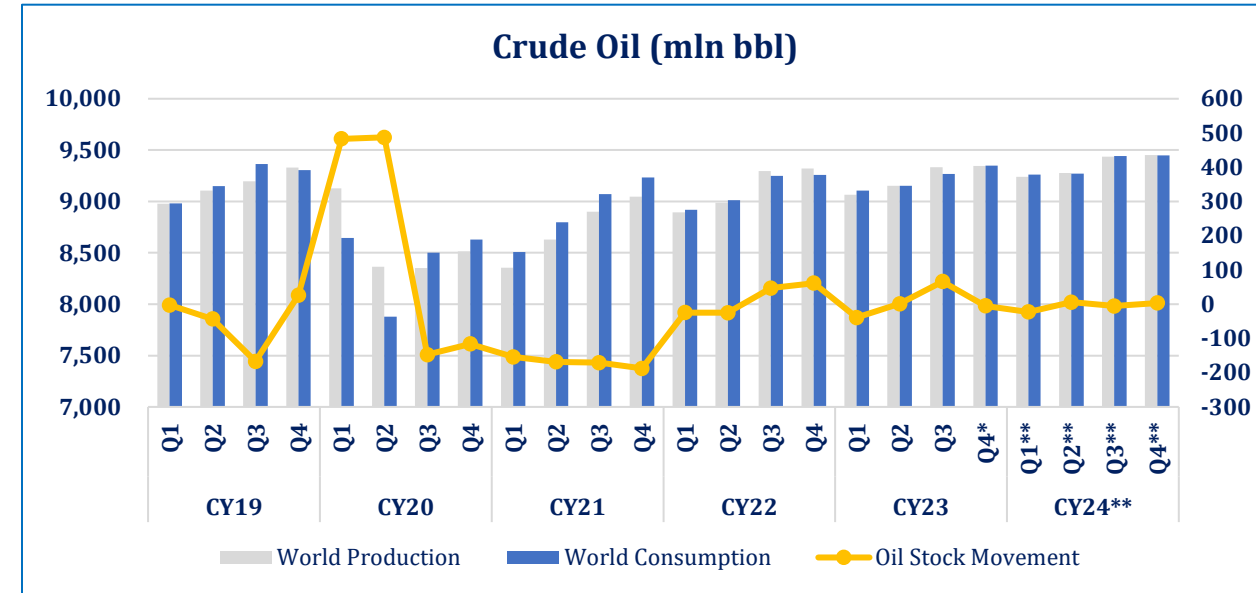
*Note: Oil Sands not considered*



# Refineries

## Global | Crude Stock Analysis

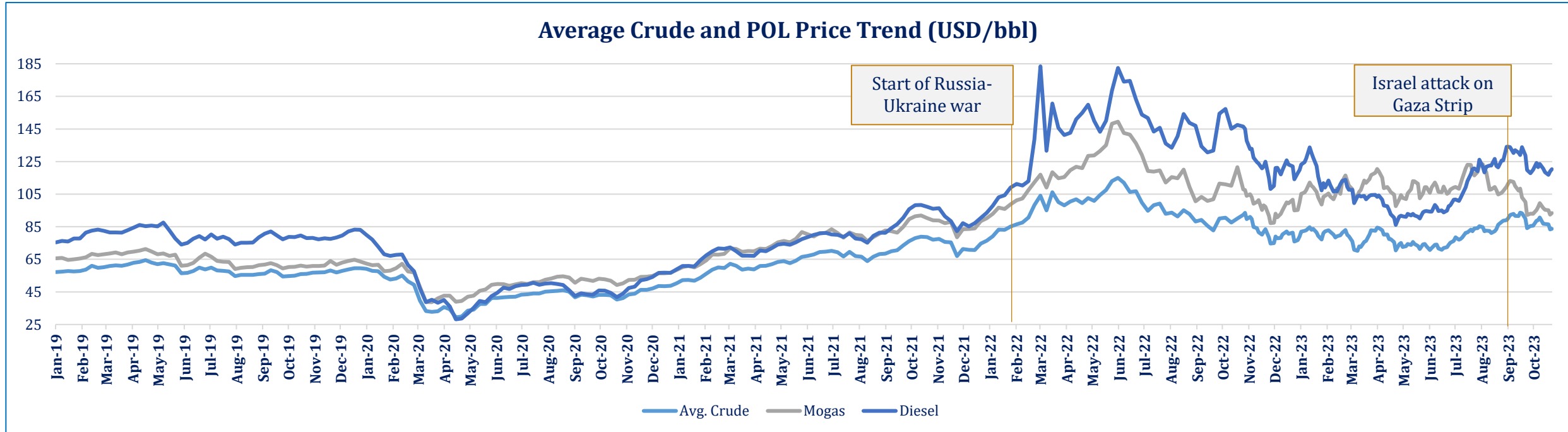
- During CY22, average global crude production recorded at ~99.9mbpd, while average crude consumption recorded at ~99.2mbpd.
- Global oil stocks are a function of oil production and consumption levels for a given time period. The largest global inventory draw was recorded at ~1.2mbpd during Jun'22, when crude production clocked in at ~99mbpd, against average crude consumption levels of ~100.3mbpd.
- During CY19-22, the highest level of inventory draw was recorded in Dec'22 at ~2.6mbpd, whereas highest inventory build-up was seen in Apr'20 at ~15.6mbpd, coinciding with the global slowdown due to COVID-19.
- During 1HCY23, average global crude production recorded at 101.2mbpd, while average global crude consumption clocked in at ~100.3mbpd, leading to a build-up of ~0.8mbpd
- Following supply cuts by OPEC+ of ~1mbpd in Ju'23, Aug'23 recorded inventory draw reaching ~0.6mbpd. EIA's forecast data suggests that 2HCY23 is likely to record inventory draw of ~0.2mbpd, on account of voluntary cuts by Saudi Arabia and reduced production targets among OPEC+ countries.



\*Estimated. \*\*Forecast. **Note:** mbpd stands for mln barrels per day; Global inventories include OECD and US commercial inventories.

# Refineries

## Global | POL Product Prices

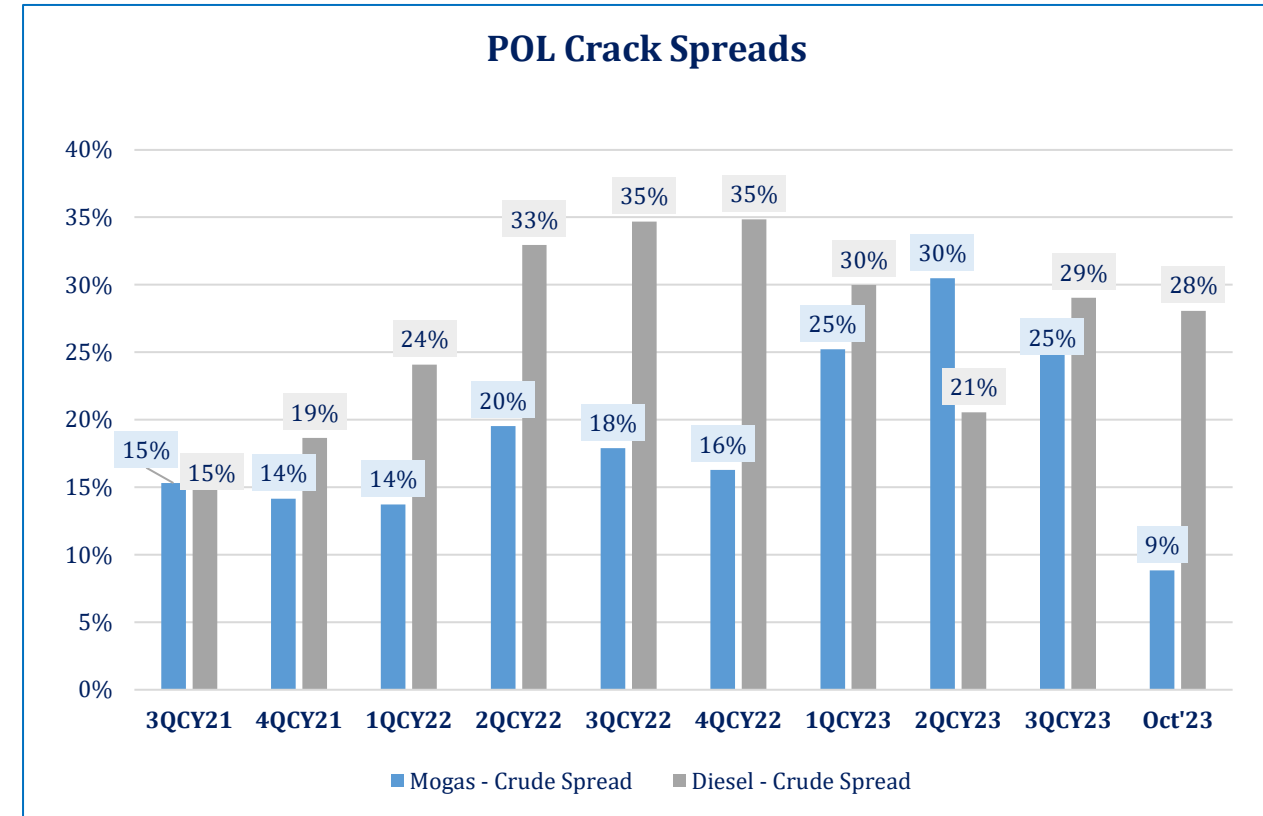


- Global POL product prices (MOGAS and HSD) tend to move in tandem with global crude oil prices. During Jan'19-Jan'22, average global brent prices remained at USD~56.7/bbl, recording at USD~74.7/bbl (Jan'21: USD~57.2/bbl), increasing ~30.6% during this period. However following the Russia-Ukraine conflict which began in Feb'22, average brent prices reached USD~115.0/bbl on account of global supply chain disruptions. Moreover, Russia was the second-largest exporter of crude oil in CY21.
- While global brent prices were starting to cool down, the decline continued well into CY23, recording at USD~71.3/bbl, they are beginning to exhibit an uptick again following tensions in the Middle East dated Sep'23, and recorded at USD~83.7/bbl in Nov'23.

# Refineries

## Global | POL Crack Spreads

- Refined petroleum products trade at a premium above crude oil prices. This spread between prices is referred to as 'Crack Spread' and is indicative of midstream profitability margins. Meanwhile, prices of crude and refined products are subject to their respective supply and demand dynamics, as well as regulatory, environmental and economic factors.
- Historically (CY21-Nov'23), crack spreads of MOGAS and Diesel (or HSD) have averaged ~19% and ~27%, respectively.
- In CY22, global refining capacity increased by ~0.5% YoY, whereas Refinery throughput also remained ~1.4% below pre-COVID levels and combination of sanctions on Russia have pushed the crack spreads of MOGAS and Diesel to ~30% and ~21%, respectively, during 2QCY23.



# Refineries

## Global | Crude Oil Supply and Demand

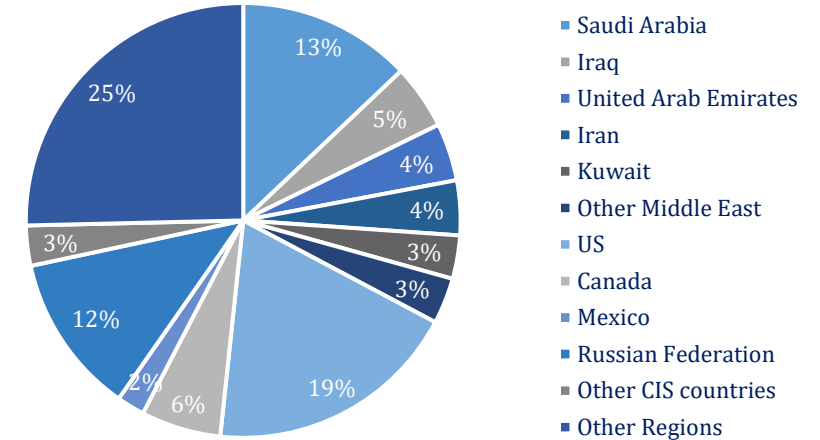
Global | Crude Oil Production (000 bpd)

Period	CY18	CY19	CY20	CY21	CY22
<b>Crude Extraction</b>	<b>94,914</b>	<b>94,972</b>	<b>88,630</b>	<b>90,076</b>	<b>93,848</b>
<i>YoY Growth</i>	<i>2.6%</i>	<i>0.1%</i>	<i>-6.7%</i>	<i>1.6%</i>	<i>4.3%</i>
<b>Middle East</b>	31,558	30,029	27,661	28,147	30,743
<b>North America</b>	22,638	24,432	23,534	24,020	25,290
<b>CIS</b>	14,618	14,717	13,496	13,877	14,006
<b>Asia Pacific</b>	7,632	7,669	7,456	7,373	7,273
<b>Africa</b>	8,267	8,361	6,937	7,298	7,043
<b>S. &amp; Cent. America</b>	6,660	6,313	5,946	5,933	6,361
<b>Europe</b>	3,539	3,450	3,601	3,427	3,131

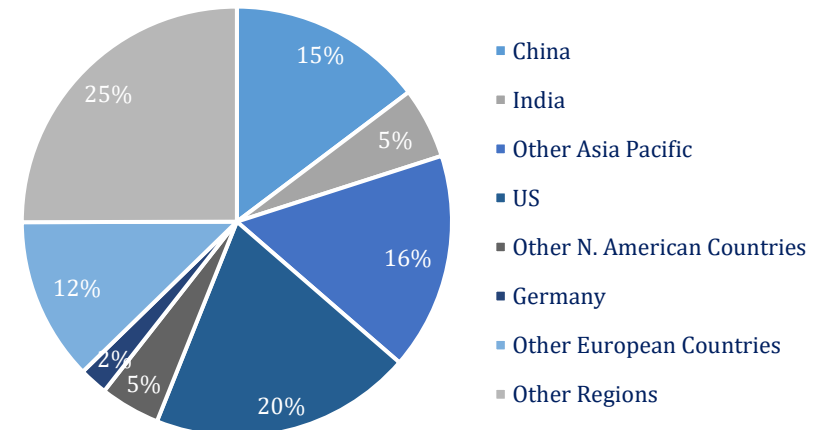
Global | Crude Oil Consumption (000 bpd)

Period	CY18	CY19	CY20	CY21	CY22
<b>Crude Consumption</b>	<b>97,711</b>	<b>97,959</b>	<b>89,139</b>	<b>94,372</b>	<b>97,309</b>
<i>YoY Growth</i>	<i>1.3%</i>	<i>0.3%</i>	<i>-10.0%</i>	<i>8.3%</i>	<i>3.1%</i>
<b>Asia Pacific</b>	35,391	36,046	34,039	35,147	35,326
<b>North America</b>	23,811	23,726	20,909	22,744	23,527
<b>Europe</b>	14,947	14,892	12,973	13,605	14,062
<b>Middle East</b>	9,184	8,949	8,246	8,680	9,450
<b>S. &amp; Cent. America</b>	6,032	5,894	5,151	5,799	6,153
<b>CIS</b>	4,322	4,388	4,194	4,439	4,628
<b>Africa</b>	4,024	4,065	3,627	3,958	4,163

Country-wise Crude Production | CY22



Country-wise Crude Consumption | CY22



Note: bpd stands for barrels per day.

# Refineries

## Global Trade | Crude

Crude Exports	CY18	CY19	CY20	CY21	CY22	CY22 Share (%)	CY22 YoY Δ	Crude Imports	CY18	CY19	CY20	CY21	CY22	CY22 Share (%)	YoY Δ
<b>Saudi Arabia</b>	7,379	7,198	6,991	6,491	7,325	17%	13%	<b>China</b>	9,328	10,186	11,158	10,562	10,206	24%	-3%
<b>Russia</b>	5,540	5,746	5,207	5,239	5,315	12%	1%	<b>Europe</b>	10,426	10,494	9,532	9,393	10,068	24%	7%
<b>Canada</b>	3,834	3,956	3,791	3,965	4,023	9%	1%	<b>USA</b>	7,757	6,796	5,883	2,359	6,278	15%	166%
<b>Iraq</b>	4,035	4,032	3,583	3,563	3,836	9%	8%	<b>Asia Pacific</b>	5,901	5,833	5,387	5,163	5,749	13%	11%
<b>USA</b>	1,872	2,766	3,110	2,782	2,354	6%	-15%	<b>India</b>	4,569	4,451	4,084	4,293	4,642	11%	8%
<b>UAE</b>	2,528	2,800	2,857	2,933	3,471	8%	18%	<b>Japan</b>	3,028	2,950	2,474	2,451	2,661	6%	9%
<b>ROW</b>	20,260	18,466	16,690	16,373	16,432	38%	0%	<b>ROW</b>	4,439	4,254	3,711	7,143	3,152	7%	-56%
<b>World</b>	<b>45,448</b>	<b>44,964</b>	<b>42,229</b>	<b>41,346</b>	<b>42,756</b>	<b>100%</b>	<b>3%</b>	<b>World</b>	<b>45,448</b>	<b>44,964</b>	<b>42,229</b>	<b>41,364</b>	<b>42,756</b>	<b>100%</b>	<b>3%</b>

Note: Exports and Imports data are in thousand barrels per day.



# Refineries

## Global Trade | POL Products

Product Exports	CY18	CY19	CY20	CY21	CY22	CY22 Share (%)	YoY Δ	Product Imports	CY18	CY19	CY20	CY21	CY22	CY22 Share (%)	YoY Δ
USA	5,259	5,250	5,007	5,110	5,289	20%	4%	Europe	4,698	4,373	3,079	4,129	4,316	17%	5%
Russia	3,619	3,440	2,226	2,941	2,633	10%	-10%	Asia Pacific	4,504	4,446	4,210	4,224	4,107	16%	-3%
Asia Pacific	2,188	2,286	2,325	2,742	2,616	10%	-5%	S. & Cent. America	2,235	2,303	1,969	2,211	2,421	9%	9%
Europe	2,801	2,622	2,177	2,310	2,290	9%	-1%	USA	2,172	2,398	1,981	2,359	2,052	8%	-13%
UAE	1,175	1,610	1,405	1,813	1,871	7%	3%	China	1,711	1,639	1,707	2,162	1,950	7%	-10%
India	1,117	1,268	1,165	1,449	1,741	7%	20%	Singapore	2,414	2,350	2,025	1,920	1,516	6%	-21%
ROW	9,737	9,485	8,527	9,247	9,619	37%	4%	ROW	8,162	8,452	7,861	8,607	9,697	37%	13%
World	25,896	25,961	22,832	25,612	26,059	100%	2%	World	25,896	25,961	22,832	25,612	26,059	100%	2%

# Refineries

## Global | POL Consumption Mix

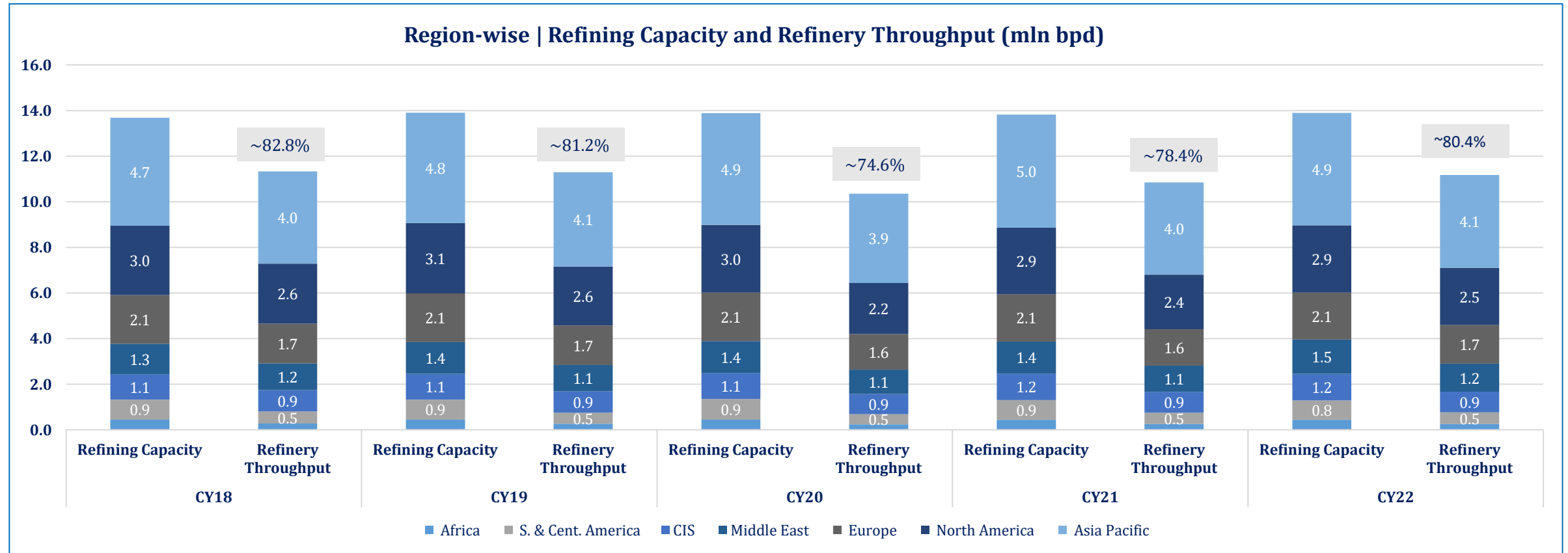
- Among POL products, MOGAS remained the highest-consumed product in CY22, with a share of ~30%, followed by HSD with a share of ~29%. With respect to White Oils, global POL consumption mix has stayed relatively the same in CY22, as compared against CY21. Demand for Jet Fuel in CY22 exhibited an increase, reflecting a boost in international flights.
- Black Oils, comprising Residual Fuel Oil and other petroleum liquids, formed ~20% of the global consumption mix, however, this had been previously recorded at ~25% during CY21.
- High Speed Diesel (HSD or simply Diesel) is mainly used as a fuel in engines operating above ~750rpm in commercial vehicles, stationery diesel engines (e.g. pumps, generators, factory machinery) and locomotives etc.

Global   POL Consumption Mix					
Period	CY18	CY19	CY20	CY21	CY22
<b>White Oils</b>	<b>95%</b>	<b>95%</b>	<b>94%</b>	<b>94%</b>	<b>94%</b>
MOGAS	42%	42%	43%	43%	42%
Diesel	40%	40%	43%	42%	41%
Jet Fuel	12%	12%	7%	8%	10%
Kerosene	1%	1%	1%	1%	1%
<b>Black Oils</b>	<b>5%</b>	<b>5%</b>	<b>6%</b>	<b>6%</b>	<b>6%</b>
Residual Fuel Oil	5%	5%	6%	6%	6%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

# Refineries

## Global | Refining Capacity & Throughput

- Middle East witnessed the highest increase in the global refining capacity due to the facility expansion under its greenfield policy, whereas, North America, amongst other regions, witnessed the highest increase in its utilized refining capacity.
- Furthermore, North America is expected to witness the highest renewable refinery production capacity increases by CY27 as part of zero-carbon emission targets.



*Note: bpd stands for barrels per day.*

# Refineries

## Global | Top Ten Companies

Global Refining Capacity   CY22				
Sr.	Refinery Name	Facility Owner Company	Country/ Region	Capacity (000 bpd)
1	Jamnagar Refinery	Reliance Industries	India	1,240
2	Paraguana Refinery Complex	PDVSA	Venezuela	971
3	SK Energy Co. Ltd. Ulsan Refinery	SK Energy	South Korea	840
4	GS Caltex Yeosu Refinery	GS Caltex	South Korea	730
5	S-OIL Onsen Refinery	S-OIL	South Korea	669
6	Singapore ExxonMobil	ExxonMobil	USA	605
7	ROW	-	-	96,847
<b>Total</b>				<b>101,902</b>

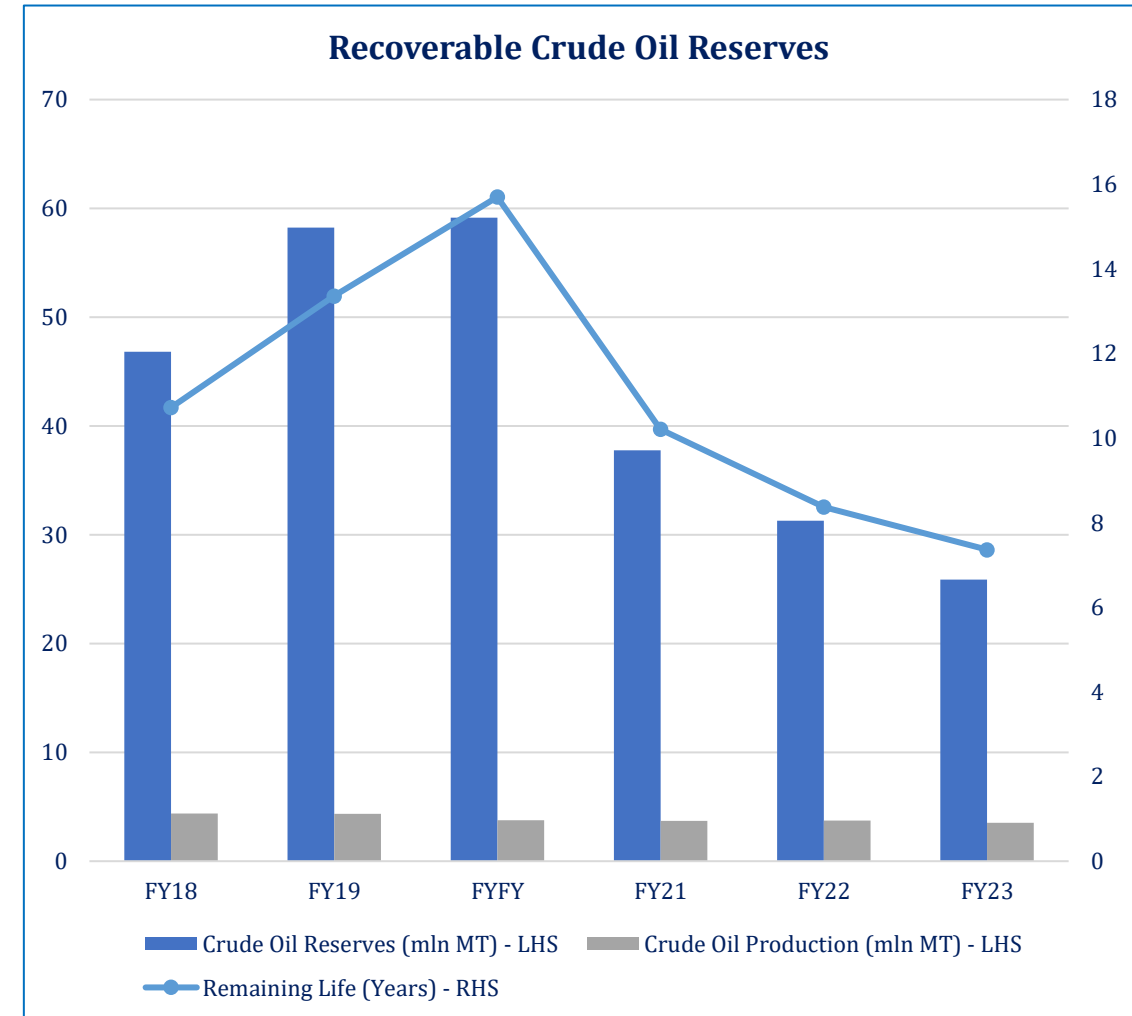
*Note: Refinery-wise data is available as of Apr'23, whereas total capacity is latest available as of CY22.*

# Refineries

## Local | Crude Oil Reserves

- Pakistan’s recoverable crude oil reserves are estimated at ~25.9mln MT (~192.9 MMbl) as at End-Jun’23 (SPLY: ~31.3mln MT; ~233.3 MMbl).
- Declining reserve life will significantly increase the reliance on imported fuel to meet local demand. Exploration of new wells and major discoveries is imperative to improve local crude supply.

Recoverable Crude Oil Reserves & Extraction						
Period	FY18	FY19	FY20	FY21	FY22	FY23
<b>Crude Oil Reserves (mln MT)</b>	46.8	58.2	59.2	37.8	31.3	25.9
<b>Local Crude Production (mln MT)</b>	4.4	4.4	3.8	3.7	3.7	3.5
<b>Remaining Life (Years)</b>	11	13	16	10	8	7



Note: MMbl stands for million barrels.

# Refineries

## Local | Players

- **Crude Oil:** Pakistan majorly relies on imports to meet its crude oil demand. Total crude oil consumption was recorded at ~11.1mln MT in FY23 (FY22: ~12.6mln MT) of which ~30% was locally produced and ~70% was imported.
- **Petroleum Products:** Pakistan’s consumption of Petroleum Products clocked in at ~17.1mln MT in FY23 (FY22: ~23.1mln MT), of which ~47% was produced locally and ~53% was imported. Refined POL products are produced by the following local refineries -



Incorporated in 1995



Incorporated in 1974



Incorporated in 1963



Incorporated in 1978



Incorporated in 1960



# Refineries

## Local | Industry Snapshot

- Currently, there are five refineries operating in the country namely (i) Attock Refinery Limited (ATRL); (ii) Pakistan Refinery Limited (PRL); (iii) National Refinery Limited (NRL); (iv) Pak Arab Refinery Limited (PARCO); and (v) Byco Petroleum Pakistan Limited (BYCO).
- The Sector's contribution in GDP during FY23 recorded at ~3.0% (FY22: ~2.2%). The Sector's revenue during FY23 registered a YoY growth of ~24.9% on account of increased POL product prices even though demand for petroleum products remained muted.
- Owing to declining local oil reserves amid low new discoveries, the dependence on imported POL products is increasing with each passing year. However, during FY23 owing to the import restrictions imposed by the SBP from May'22-Jun'23, POL products imports declined to ~8.2mln MT from ~13.1mln MT in FY22.

Overview	FY21	FY22	FY23	1QFY24
<b>Gross Revenue (PKR bln)</b>	<b>1,214.4</b>	<b>1,881.1</b>	<b>2,349.1</b>	<b>357.0*</b>
<b>Gross Revenue Growth (YoY%)</b>	15.8%	54.9%	24.9%	26.8%
<b>Sector Players</b>	5			
<b>Total Refining Capacity (mln MT)</b>	20.6	20.6	20.6	N/A
<b>Avg. Capacity Utilization</b>	57.5%	57.7%	54.0%	N/A
<b>Structure</b>	Oligopoly			
<b>Regulator</b>	OGRA			
<b>Association</b>	OCAC			

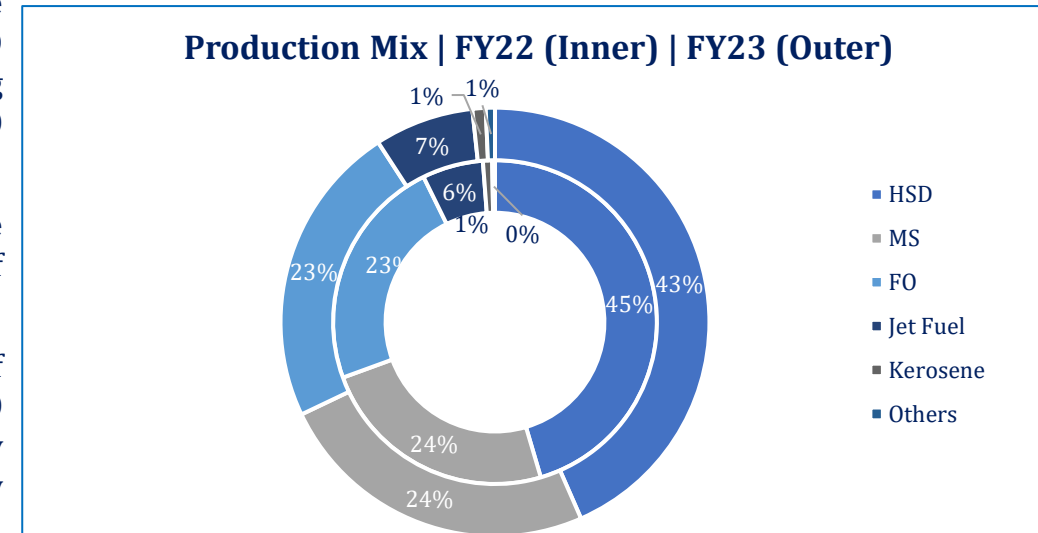
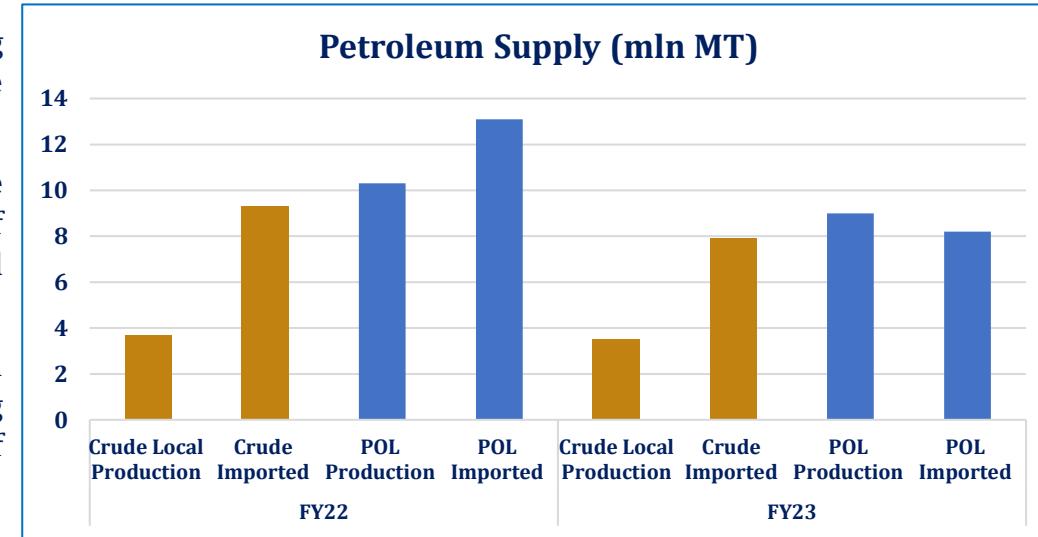
Upstream	FY21	FY22	FY23	1QFY24	Midstream	FY21	FY22	FY23	1QFY24	Downstream	FY21	FY22	FY23	1QFY24
<b>Est. Local Crude Production (mln MT)</b>	3.7	3.7	3.5	3.6	<b>Refinery Offtake/ Crude Processed (mln MT)</b>	12.2	12.6	11.1	5.0	<b>Local POL Production (mln MT)</b>	10.3	10.3	9.0	2.5
<b>Imported Crude (mln MT)</b>	8.8	9.3	7.9	1.5	<b>Refinery Production (mln MT)</b>	10.3	10.3	9.0	2.5	<b>POL Imports (mln MT)</b>	10.1	13.1	8.2	1.7
<b>Crude Condensate Exports (mln MT)</b>	0.3	0.4	0.3	0.1						<b>POL Product Exports (mln MT)</b>	0.2	0.3	0.1	0.1
<b>Crude Supply (mln MT)</b>	12.2	12.6	11.1	5.0						<b>Est. POL Storage (mln MT)</b>	0.1	0.0	0.0	0.2
										<b>POL Consumption (mln MT)</b>	20.1	23.1	17.1	3.9

*Note: Revenue figures are based on ~5 PACRA-rated/ listed Sector players. Crude Exports comprise Crude Condensates; POL Product Exports comprise Naptha and FO. \*1QFY24 Revenue reflects data of 3 PACRA-rated/ listed sector players.*

# Refineries

## Local | Supply

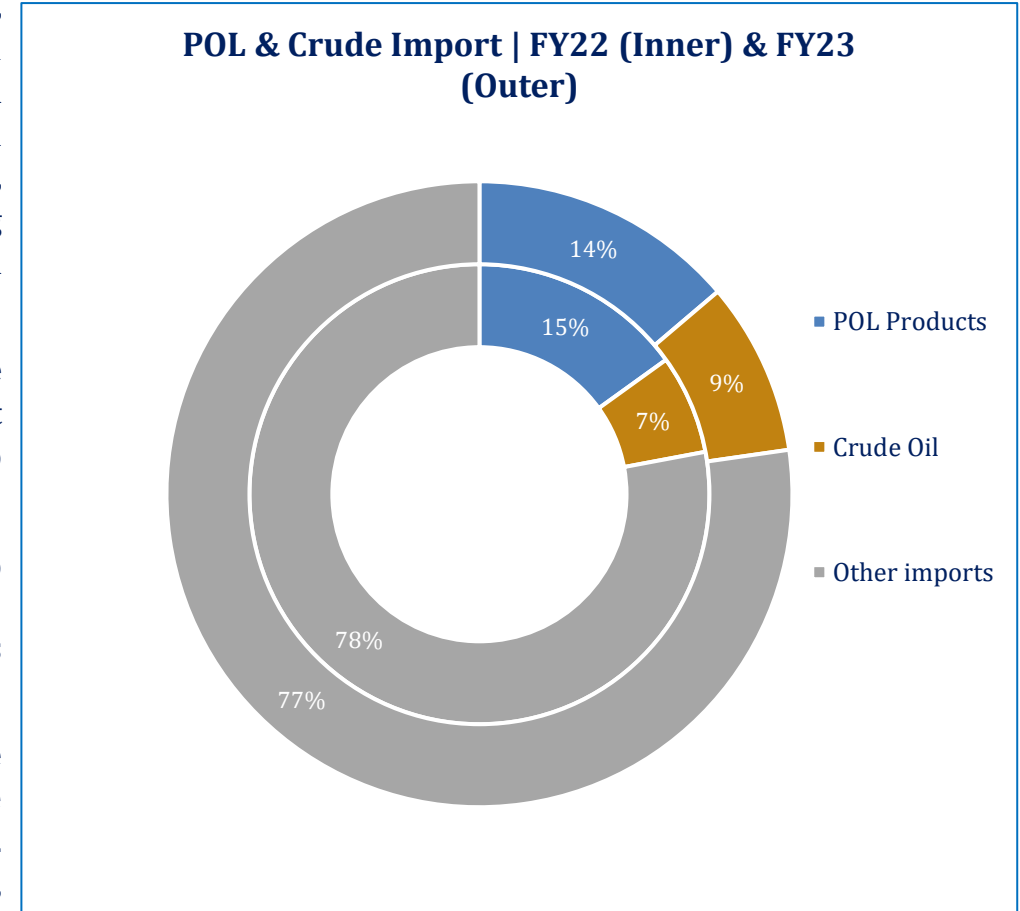
- In FY23, local crude production was recorded at ~3.5mln MT, a YoY decrease of ~5.4%. During the same year, ~7.9mln MT of crude oil was imported, marking a decline of ~15.1% YoY. Of the total crude supply, crude imports formed ~70.0% during FY23 (SPLY: ~79.9%).
- In FY23, the production of POL products stood at ~9.0mln MT (FY22: ~10.2mln MT). This can be linked with the lower crude extracted during the year. Thereby, a decline in the production of both Mogas and HSD of ~11.3% and ~17.0%, respectively, was recorded in FY23 when compared with SPLY.
- The largest dip (~12.5% YoY) was observed in the production of Furnace Oil from ~2.4mln MT in FY22 to ~2.1mln MT in FY23. This reduced production may be associated with the aim of moving towards the production of more environment-friendly POL products with the ultimate goal of producing fuels as per Euro-V specification. Moreover, during 1QFY24, there were no FO imports.
- In FY23, the production of HSD and Mogas stood at ~43.0% and ~24.0% respectively out of the total POL production, whereas, the proportion of FO clocked in at ~23.0%. However, the PD (Petroleum Division) has mandated the adoption of brownfield policy'23 whereby the existing refineries must produce a greater percentage of HSD and Mogas and a reduced percentage of FO production levels as per Euro V specifications within 6 years.
- Currently, local refineries use hydro-skimming technology to refine crude oil. Therefore, the production of Mogas and HSD is below the Euro V specification as per the requirements of Brownfield Policy.
- As per the initial detailed feasibility report mentioned in the Brownfield Policy, the production of Mogas and HSD is expected to increase by ~98.6% and ~47.3%. Whereas, the production of FO is estimated to decrease by ~351.6%. PRL has already initiated the process of adopting the policy by signing legally A binding agreement with OGRA, WHILE other refineries are expected to follow suit.



# Refineries

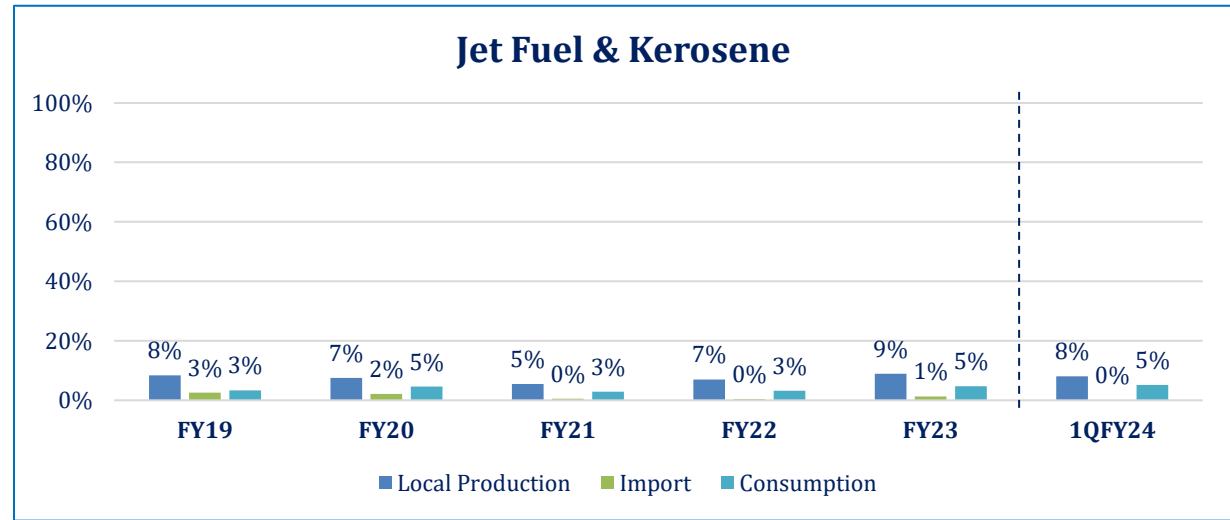
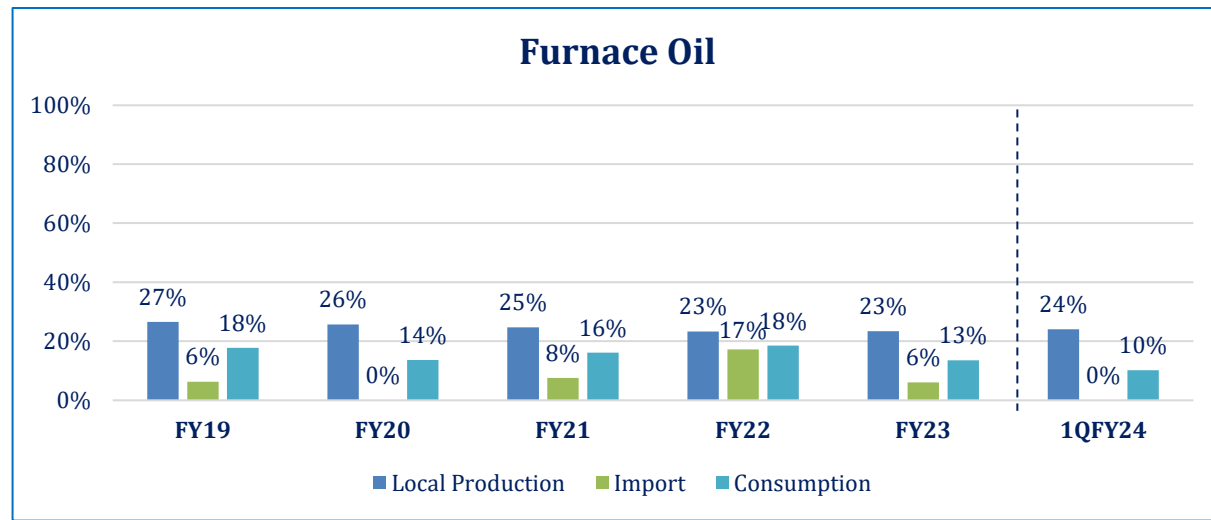
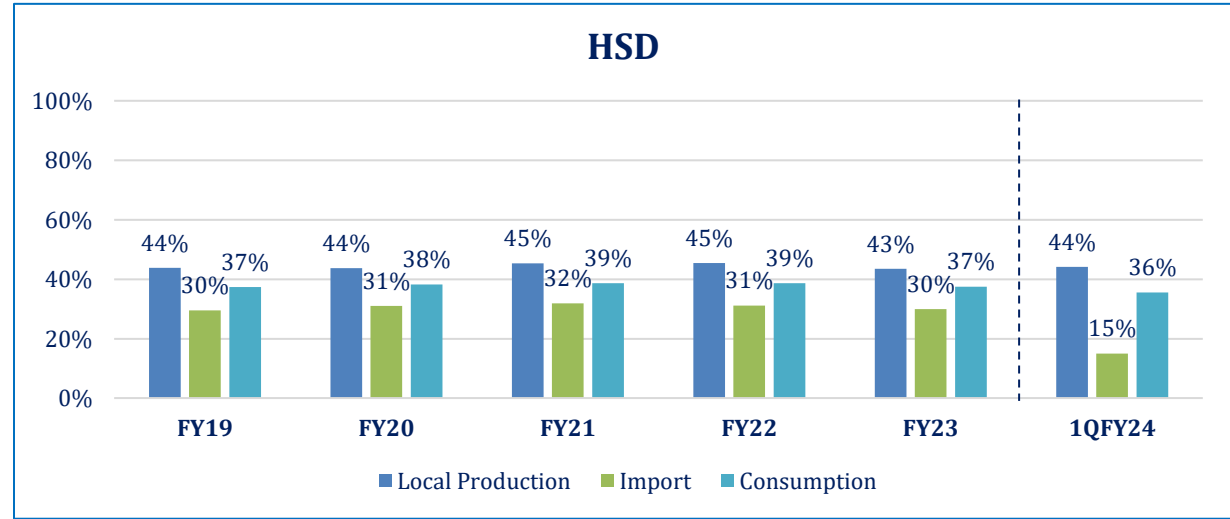
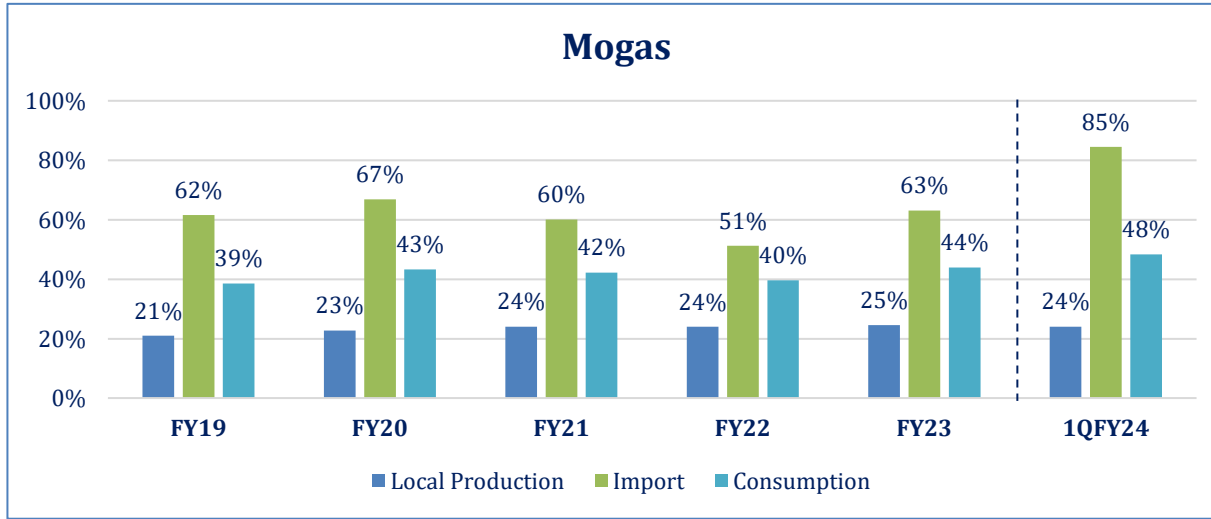
## Local | Imports

- Pakistan relies significantly on imports to meet its demand of crude oil. On average (FY19-22), ~8.0mln MT of crude oil was imported into the country. Crude imports made up ~70.0% of total crude supply in the country during FY23 representing ~7.0% of country's total import bill. In order to reduce this import bill the PD (Petroleum Division) has introduced the Brownfield Policy, additionally Pakistan is eyeing towards Russia to provide crude oil at a discounted price, since Russia's normal trade is affected due to the sanctions imposed on it amid the ongoing Ukraine-Russia conflict, Russia made a bilateral trade agreement in Jun'23 to provide crude oil at a discounted rate, however, it is yet to be materialized.
- Total crude oil imports in FY23 amounted to USD~4.9bln (FY22: USD~5.6bln) The volume imported declined by ~17.0% to ~9.3mln MT (FY22: ~7.9mln MT) owing largely to import restrictions imposed by SBP from May'22-Jun'23. Simultaneously, value of crude imports also went down ~12.5% YoY .
- POL products imports for FY23 fell to ~8.2mln MT (FY22: ~13.1mln MT), a decline of ~37.4% YoY. During the year, POL products' import bill amounted to USD~7.6bln (FY22: USD~12.1bln) representing ~13.8% (FY22: 15.1%) share in country's total imports. The value of POL products import fell by ~37.1%.
- The fall in value of imports in FY23 was mainly due to the import restrictions imposed by the SBP from May'22-Jun'23. Additionally, even though PKR depreciated by ~39.0% in FY23, the import bill still was lower due to the lower imports due to the aforementioned reason. Moreover, international Brent prices during FY23 averaged USD~86.5/bbl (SPLY: USD~90.5bbl), depicting a decline of ~4.4% YoY.
- In the first quarter of FY24, petroleum products' imports declined in quantity by ~26.0% QoQ (1QFY24: ~2.4mln MT; 1QFY23: ~3.2ml MT), due to currency devaluation that makes imports highly expensive.



# Refineries

## Local | Product-wise Supply (%)



# Refineries

## Demand | Product-wise POL Consumption

- Pakistan’s POL products demand is largely driven by the transport sector and level of industrial activity in the country. Automotive sales across all segments registered a decline owing to supply chain disruptions due to SBP-imposed import restrictions which led to an increase in vehicle prices and therefore a decline in sales. On the other hand, LSM also registered a dip of ~10.3% during FY23.
- Total consumption of petroleum products during FY23 was recorded at ~17.1mln MT (SPLY: ~23.1mln MT), declining by ~25.5% YoY. With respect to types of POL products, white oils comprised ~87% of the total POL products consumed, while black oils formed ~13% during FY23 (SPLY: ~81% and ~19%, respectively). The three major products, i.e., HSD, MOGAS and RFO cumulatively accounted for ~94.0% of the total POL products consumption in the country during FY23 (SPLY: ~97.0%).
- However, MOGAS and HSD consumption declined by ~74.6% and ~78.1% YoY, respectively, in FY23, signaling slowdown in demand and a concomitant dip in Automotive sales. Sales of Passenger Cars experienced a staggering YoY drop of ~59% during FY23, while those for Trucks and Buses also declined by ~41% YoY due to increasing prices of these vehicles.
- RFO consumption, during FY19-23, declined at a CAGR of ~24%, mainly due to government’s decision to reduce its use as a fuel for the power sector plants. During FY23, its consumption declined ~46.5% YoY to clock in at ~2.3mln MT.

POL Consumption (mln MT)						
Period	FY19	FY20	FY21	FY22	FY23	1QFY24
<b>White Oils</b>	<b>16.2</b>	<b>14.9</b>	<b>16.9</b>	<b>18.8</b>	<b>14.8</b>	<b>3.5</b>
MOGAS	7.6	7.5	8.4	9.0	7.5	1.9
HSD	7.4	6.6	7.8	8.9	6.4	1.4
JP-1/ JP-8	0.8	0.6	0.4	0.5	0.6	0.1
Others*	0.4	0.2	0.3	0.4	0.3	0.1
<b>Black Oils</b>	<b>3.5</b>	<b>2.4</b>	<b>3.2</b>	<b>4.3</b>	<b>2.3</b>	<b>0.4</b>
RFO	3.5	2.4	3.2	4.3	2.3	0.4
<b>Total</b>	<b>19.7</b>	<b>17.3</b>	<b>20.1</b>	<b>23.1</b>	<b>17.1</b>	<b>3.9</b>

POL Consumption Mix (%)						
Period	FY19	FY20	FY21	FY22	FY23	1QFY24
<b>White Oils</b>	<b>82%</b>	<b>86%</b>	<b>84%</b>	<b>81%</b>	<b>87%</b>	<b>90%</b>
MOGAS	39%	43%	42%	39%	44%	49%
HSD	38%	38%	39%	39%	37%	36%
JP-1/ JP-8	4%	3%	2%	2%	4%	3%
<b>Black Oils</b>	<b>18%</b>	<b>14%</b>	<b>16%</b>	<b>19%</b>	<b>13%</b>	<b>10%</b>
<b>RFO</b>	<b>18%</b>	<b>14%</b>	<b>16%</b>	<b>19%</b>	<b>13%</b>	<b>10%</b>
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

\*Others' include Kerosene, LDO and HOBC, and share in Consumption Mix amounts to ~0% for the stated time periods.

# Refineries

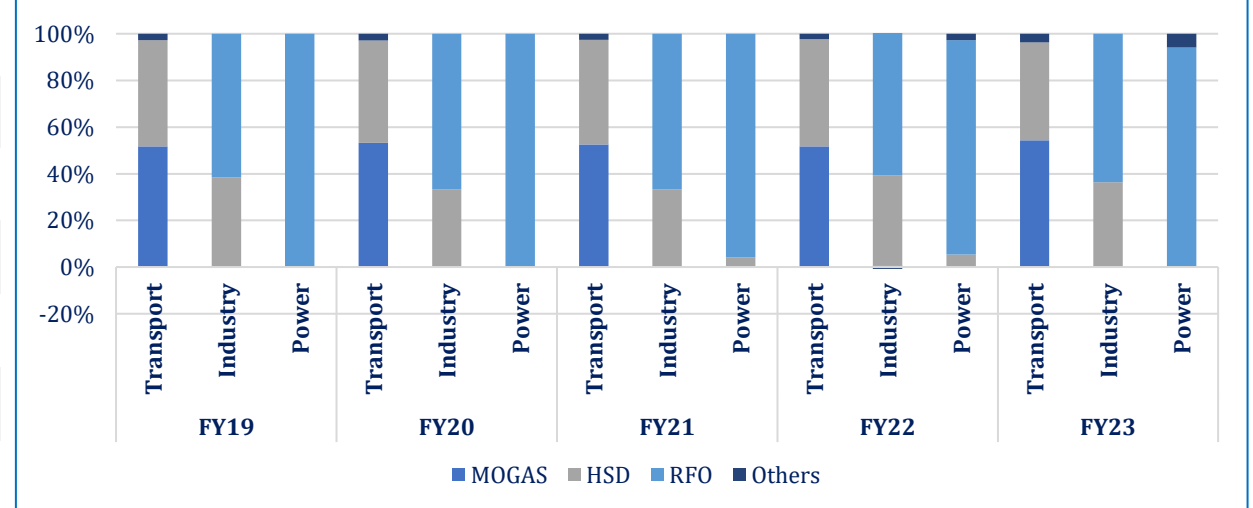
## Demand | POL Consumption

- The country's Transport sector remained the largest consumer of petroleum products in FY23, as it comprised ~79.7% of total POL products consumed during the year (~74.8% in FY22). The sector's stand-alone consumption stood at ~13.6mln MT, registering a YoY decline of ~21.8% during FY23. This dip in consumption could likely be due to reduced automotive sales and lower demand from the public, owing to double-digit inflation and high petrol prices.
- POL consumption by industries is largely driven by LSM growth. The industrial consumption of POL products comprised ~6.6% of country's total POL consumption (SPLY: ~5.7%) and stood at ~1.1mln MT, declining YoY by ~15.5% during FY23. The decline can be associated with the LSM exhibiting ~10.3% YoY dip during the same year, depicting slowdown in industrial activity, which had majorly resulted from SBP's imposed restrictions on imports. On the other hand, Power sector's POL consumption (comprising HSD and FO) declined ~54.1% YoY to ~1.7mln MT (SPLY: ~3.7mln MT) due to shift from FO to cheaper and environment-friendly alternatives (the sector consumed ~53.4% lower FO during the year).

Sector-wise POL Consumption (mln MT)

Period	Transport	Power	Industry	Others	Total
FY19	14.7	2.8	1.3	1.0	19.7
FY20	13.9	1.5	1.2	0.7	17.3
FY21	15.8	2.4	1.5	0.5	20.1
FY22	17.4	3.7	1.3	0.7	23.1
FY23	13.6	1.7	1.1	0.7	17.1
1QFY24	3.3	0.3	0.3	0.1	3.9

Product-wise | Sectoral POL Product Consumption



Note: Others in first chart represent household and government, whereas that in second chart represent kerosene and jet fuels.



# Refineries

## Capacity Utilization

- Pakistan's total refining capacity was recorded at ~20.6mln MT p.a. during FY23 (FY22: ~20.6mln MT). All refineries are committed to upgradation of their refinery facilities. However, timing of that announcement is largely dependent on approval of the new refining policy that is under consideration.

*Capacity figures are in mln MT*

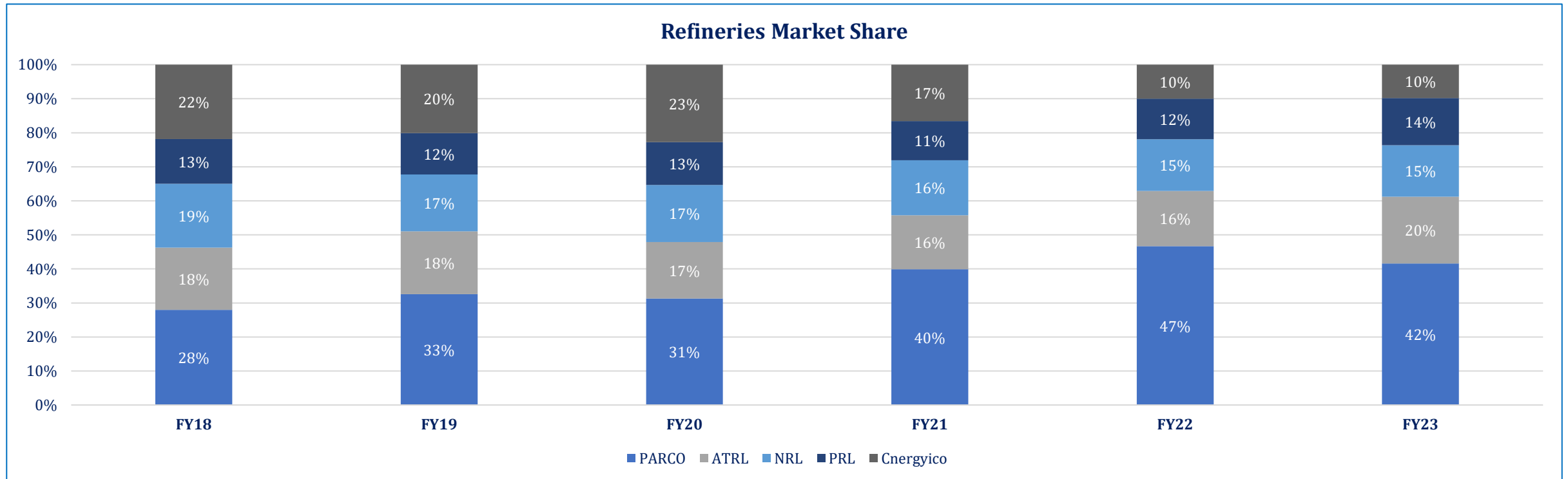
Period	FY18		FY19		FY20		FY21		FY22		FY23	
	Capacity	Utilization	Capacity	Utilization	Capacity	Utilization	Capacity	Utilization	Capacity	Utilization	Capacity	Utilization
<b>Cnergyico (formerly Byco)</b>	7.6	35.6%	7.6	32.5%	7.6	30.8%	7.6	26.4%	7.6	16.3%	7.6*	13.0*%
<b>PARCO</b>	5.3	101.2%	5.3	87.9%	5.3	57.0%	5.3	88.3%	5.3	103.0%	5.3*	100.0*%
<b>NRL</b>	2.9	84.8%	2.9	76.9%	2.9	58.7%	3.1	63.3%	3.1	62.2%	3.1	52.0%
<b>ATRL</b>	2.5	93.9%	2.5	93.5%	2.5	69.5%	2.5	77.0%	2.5	78.7%	2.5	78.0%
<b>PRL</b>	2.1	79.4%	2.1	76.3%	2.1	59.3%	2.1	61.0%	2.1	62.7%	2.1	62.9%
<b>Total</b>	<b>20.4</b>	<b>71.1%</b>	<b>20.4</b>	<b>65.0%</b>	<b>20.4</b>	<b>49.2%</b>	<b>20.6</b>	<b>57.5%</b>	<b>20.6</b>	<b>57.7%</b>	<b>20.6</b>	<b>54.0%</b>

\*Values are as at 9MFY23

# Refineries

## Market Share

- PARCO comprised the highest market share (~42%) in FY23 in terms of gross revenue, the share trend being in line with FY22. Among all refineries, ATRL and PARCO are based in the North, while all other refineries are based in the South, i.e., Karachi, near port.
- ATRL mostly consumes ~100% of local crude oil to meet its demand, whereas all other refineries are largely dependent on imported crude to meet demand.



# Refineries

## Local | Pricing Mechanism

- The pricing structure of POL products (MOGAS & HSD) is a computation of six different price components (discussed in previous slide) embedded in a price formula.
- While OMC Margins and Dealer Commission are fixed, the Petroleum Levy, Sales Tax and IFEM are variable components, the former two depending on the GoP's discretion, and the latter computed through a freight pool mechanism.
- The starting point for pricing mechanism is the '**Ex-Refinery Price**'. This price is determined by OGRA and was earlier determined based on PSO's weighted average costs of POL products in the preceding monthly and ~30 days International prices published in the Platt's Oilgram.
- Since September 01, 2020, the pricing mechanism has been shifted from monthly basis to fortnightly basis and the price benchmark based on PSO's oil imports has been shifted to Platt's Index. This development is expected to shield the Industry from Inventory losses.
- As per OGRA Rules, OMCs are required to build storage/ depots at different areas of the country in order to maintain a stock of at least 20 days so as not to end up with dry petrol stations. Ex-Refinery Price, PL, IFEM and OMC margin add up to Ex-Depot Price, while Dealer Commission is added on the next step. Sales Tax is applied to an aggregate of Ex-Depot Price and Dealer Commission.

# Refineries

## Local | Price per Litre Breakdown

**Ex-Refinery Price:** The refinery output price for finished inventories of HSD and MOGAS

**Petroleum Levy (PL) & Sales Tax (ST):** PL is a **variable** development tax imposed by the GoP subject to variations on the GoP's disposal. Sales Tax is collected by the OMCs at a monthly fixed percentage charged to the Ex-Depot price and dealer commission.

**In-Land Freight Equalization Margin (IFEM):** The element of pricing structure which allows pricing of petroleum products to remain at par across the country. A freight pool managed by OGRA is developed to keep the prices equalized countrywide.

**Distribution Margin (OMCs):** Fixed Commission per liter earned by the OMCs upon sales of HSD and MOGAS to Industrial and retail clients.

**Dealer's Commission:** Fixed Commission per liter earned by the dealer or owner of the petrol pump.

# Refineries

## Local | Fuel Retail Prices

- For FY23, OMC margins averaged at PKR~4.9/liter, compared to PKR~3.3/liter SPLY in the case of MOGAS, whereas for HSD, these clocked in at ~4.8% (SPLY: ~3.4%). For MOGAS, share of OMC margins as % of average retail prices declined from ~2.3% in FY22 to ~2.0% in FY23. Similarly, in the case of HSD, the share of OMC margins recorded at ~1.9% during FY23 (SPLY: ~2.2%).
- Moreover, the ex-refinery price for MOGAS increased ~41.3% and ~84.4% YoY, despite international Brent crude prices falling ~4.4% YoY. The increase, therefore, can tentatively be linked to PKR depreciation of ~39.0% YoY during FY23.
- Another significant component of fuel prices during FY23 was the petroleum levy which was increased to an average of ~43.5% for MOGAS during FY23 and ~28.6% for HSD. The petroleum levy as of Oct;23 stands at PKR~60/litre for MOGAS and PKR~52.5/litre for HSD and remains contingent upon IMF's conditions of the 9-month Stand-By Agreement signed in Jun'23. Furthermore, there is currently no sales tax applicable on Sector players for sale of MOGAS and HSD.

MOGAS – Average Retail Price/ Liter (Composition)							
Price Components	FY19	FY20	FY21	FY22	FY23	FY24	
						1QFY24	Oct'23
Cost of Supply	71.9	61.5	60.5	131.3	185.5	211.7	222.7
IFEM Margin	3.3	3.4	3.6	4.0	3.1	4.3	5.5
OMC Margin	2.6	2.8	2.9	3.3	4.9	6.1	7.2
Dealer Commission	3.5	3.6	3.7	4.4	6.9	7.1	8.0
Petroleum Levy	15	19.8	20.3	5.4	43.5	56.7	60.0
Sales Tax	16.4	15.5	15.5	4.6	0.0	0.0	0.0
Max Ex-Depot Sales Price	112.7	106.6	106.6	145.1	243.9	285.9	303.4

HSD – Average Retail Price/ Liter (Composition)							
Price Components	FY19	FY20	FY21	FY22	FY23	FY24	
						1QFY24	Oct'23
Cost of Supply	85.7	66.3	65.0	135.0	218.0	228.4	242.1
IFEM Margin	1.1	1.2	1	-1.3	-3.5	-1.9	0.9
OMC Margin	2.6	2.8	2.9	3.4	4.8	6.1	7.2
Dealer Commission	2.9	3.1	3.2	3.8	6.6	7.1	8.0
Petroleum Levy	16	21.1	21.1	5.2	28.6	50.0	52.5
Sales Tax	18.4	16	15.8	6.9	0.0	0.0	0.0
Max Ex-Depot Sales Price	126.8	110.4	108.9	153.0	254.5	289.7	310.7

# Refineries

## Greenfield Refinery Policy

- There have been numerous developments towards the proverbial “New Refinery Policy”, aimed at resolving the prevailing shortcomings in refining capabilities (cracking and coking) of market players.
- As per the latest development, the Government is more inclined toward incentivizing greenfield refineries rather than the existing refineries.
- Following are the salient features of the Greenfield Policy -
  - Duty protection in the form of 10% import duty on MS and diesel of all grades as well as imports of any other white product used for fuel of any kind of motor or engine. The protection will be effective Jan’22 through Dec’27.
  - The government aims to restrict its share in overall investment to ~30%, with refineries expected to contribute the remaining ~70%.
  - A special reserve account for upgradation/ modernization/ expansion will be maintained by each refinery in a separate bank account to be opened in National Bank of Pakistan. The refineries will transfer any incremental revenue (net of taxes) based on the revised tariff structure to the special reserve account.
  - The refineries will be entitled to withdraw from the reserve account once the EPC (engineering, procurement and construction) contract has been awarded for the relevant project. The withdrawal from the reserve account will be on a proportionate basis.
  - To be eligible for the incentives, the existing refineries had to commit before December 31, 2021 and provide an undertaking to the PD (Petroleum Division) with a proposed timeline along with potential size, configuration, product slate and all relevant information, ensuring production of Euro-V MS and HSD. The refineries that do not provide such an understanding and do not have a waiver, will not be allowed to sell their products in Pakistan after June 30, 2022. However, since there were no new refineries that registered during this period, therefore PD (petroleum Division) introduced the brownfield policy ‘23 (discussed later in the report) that requires the existing refineries to upgrade their refining facility to produce POL products as per Euro V specifications.

# Refineries

## Brownfield Refinery Policy

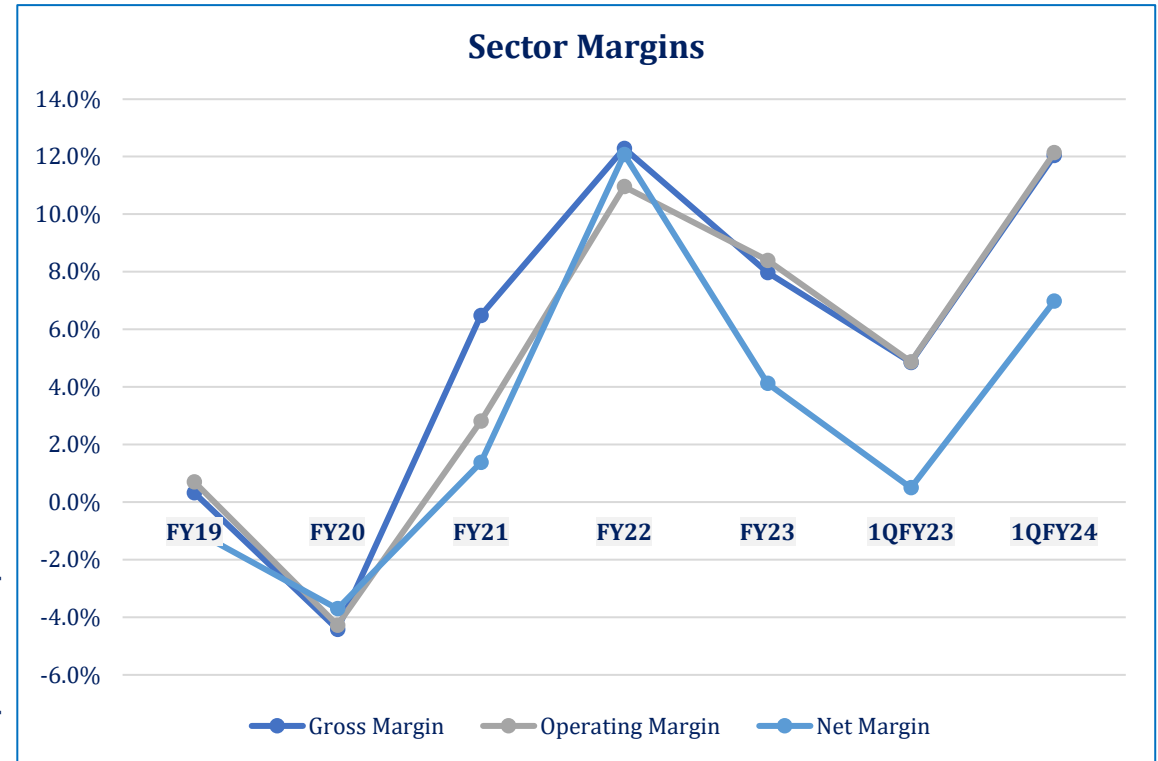
- Therefore, the Brownfield Policy has been formulated to provide the incentives and tariff protection to the existing refineries to upgrade their plants to produce increased quantity of cleaner fuels (Euro V Fuels- Motor Spirit and Diesel) and reduce the production of less environmentally-friendly fuels such as Furnace Oil (FO).
- The maximum time stipulated for the upgradation of plants from hydro-skimming in to deep conversion is 6 years, after which, the refineries will not be allowed to produce products not meeting Euro-V specification. The Policy also aims to achieve energy security and reduce dependence on imports of refined products which at present fulfills ~55% of the local demand.
- Following are the salient features of the upcoming refinery policy -
  - For an existing refinery to be eligible for the fiscal incentives provided in the Brownfield Policy, it shall have to execute a legally binding Upgrade Agreement with OGRA within 3 months after the notification of this Policy (i.e., August 11, 2023). There will be a minimum customs duty of 10% on Motor Gasoline and High-Speed Diesel imported for a period of 6 years from date of notification of this Policy. Any custom duty above ~10% will be reimbursed to the refineries through IFEM (Inland Freight Equalization Margin). OGRA will monitor the progress of the upgrade Projects. Failure to meet the timelines committed in the Upgrade Agreement will result in a default notice by OGRA to the respective refinery.
  - The respective refinery and OGRA will open a joint Escrow Account (special reserve account) within 3 months after the notification of this policy in National Bank of Pakistan. The refineries will transfer any incremental revenue (net of taxes) based on the revised tariff structure to the special reserve account. Additionally, refineries will submit a bank guarantee of PKR~1bln to OGRA.
  - The Escrow Account can only be used for the capital expenditure required on the upgradation of the plant (and no other purpose) and as follows:
    - i. To buy used Plant & Machinery, allowed withdrawal of up to ~22% of the total upgradation cost.
    - ii. To buy new Plant & Machinery, allowed withdrawal of up to ~25% of the total upgradation cost.



# Refineries

## Business Risk | Margins

- Total consumption of petroleum products during FY23 was recorded at ~17.1mln MT (SPLY: ~23.1mln MT), declining by ~25.5% YoY. Although local POL product production in FY23 fell by ~13.3% YoY (FY22: ~14.9%), Gross Revenue per MT of refined products grew by ~44.0% YoY (FY23: PKR~261,851.5). Even though Duties, Levies and Taxes per MT increased by ~230.0% YoY (FY23: PKR~18,442. Net Revenue per MT of POL products inched up by ~46.1% in FY23 (PKR ~235,352.3), while COGS per MT of POL Product grew by ~53.0% YoY (FY23: PKR~215,989).
- After achieving a multi-year (FY18-22) high gross profit margins of ~12.3% in FY22, the margin dropped to ~8.0% in FY23 owing to higher input costs. However, in 1QFY24 the gross profit margin increased to ~12.0% owing to healthy spreads between prices of refined products and crude oil. Increased selling and distribution expenses led to lower operating profit margins of ~8.4% in FY23 compared to FY22 (~11.0%). Additionally interest expense increased by ~57.5% that reduced the net profit margin by ~12.6% and was recorded at ~4.1% (FY22: ~12.1%). Moreover, exchange losses on the back of devaluation of PKR against USD in FY23 corroded average net profit margins.
- Gross refining margin (GRM) is an important indicator of operational efficiency of a refinery. It is the difference of the total revenue generated from sale of refined products and the cost of crude incurred. A higher GRM reflects that a refinery is able to add more value from each barrel of crude oil processed. With local refineries using hydro-skimming technology, their refining margins on average (CY17-CY22) are ~23% lower than refineries with more advanced deep-conversion capabilities (i.e. Cracking & Coking). However, the GoP, through its Brownfield Policy, has made it mandatory for all refineries to upgrade from hydro-skimming to deep conversion within stipulated period of ~6 years from Aug'23. This is likely to reduce the aforementioned delta in GRM.



# Refineries

## Business Risk | Petroleum Storage

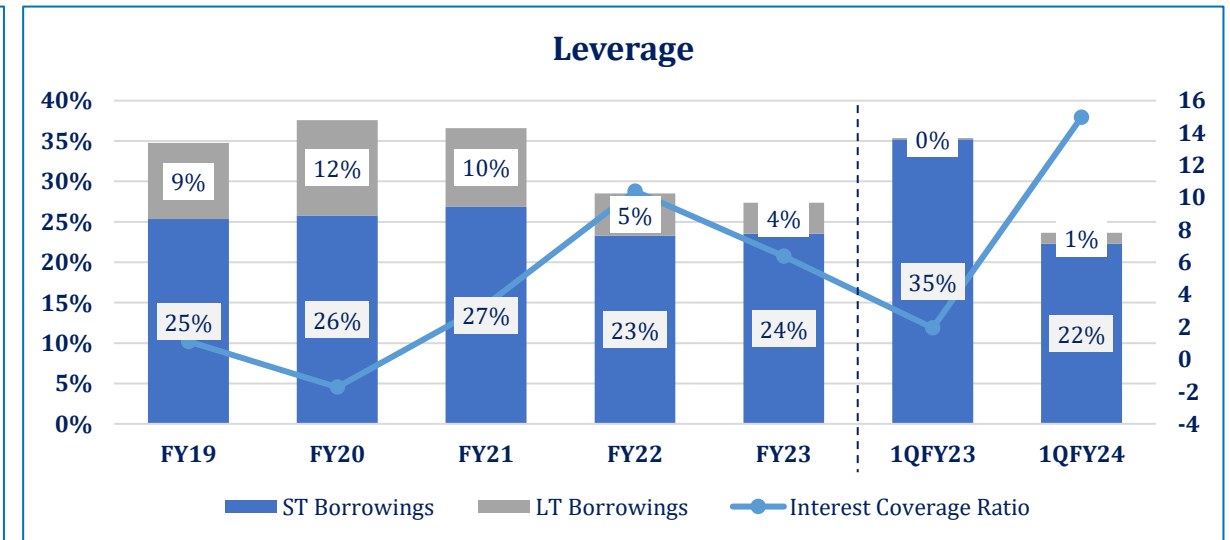
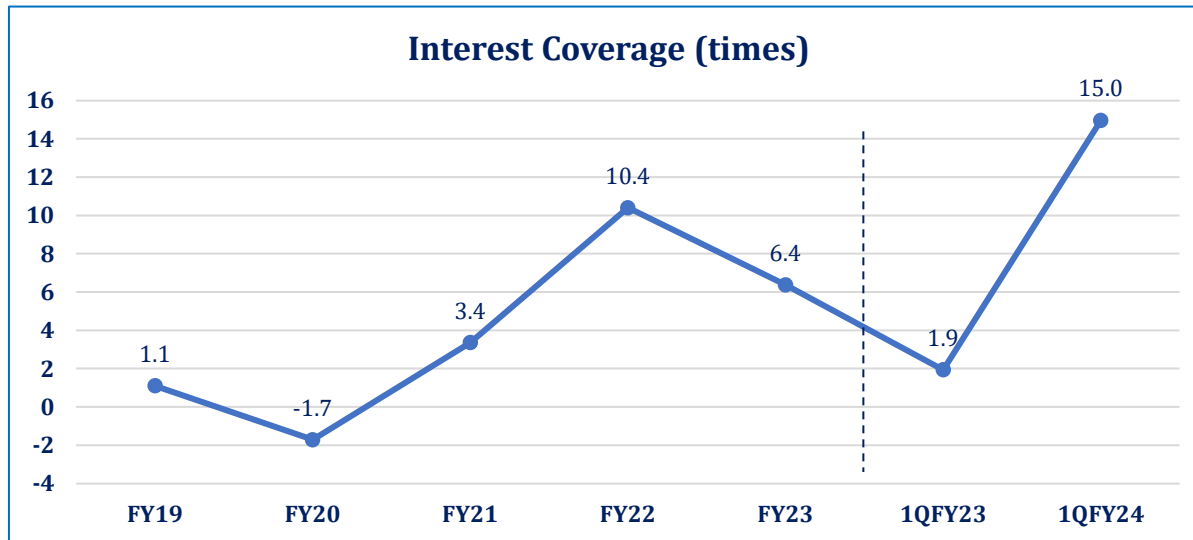
In FY22, the gross national petroleum storage capacity declined by ~1.8% to ~1.57mln MT from ~1.6 MT in FY21 . The decrease in storage capacity was due to the reduction of storage capacity of PRL in FY22.

Gross National Petroleum Storage Capacity (000 MT) – FY22*										
	OMCs Port Installations	OMCs Up Country	ATRL	Cnergyico	NRL	PRL	PARCO	Total OMCs	Total Refineries	Total Country
Crude	0	0	94	128	155	148	374	0	899	899
HSD	298	713	21	62	32	20	98	1,011	233	1,243
MS	535	439	22	33	16	12	25	974	109	1,083
FO	345	101	49	36	34	26	56	446	202	648
Jet Fuel	15	10	14	1	8	4	19	25	45	69
Kerosene	3	13	7	1	1	3	6	15	19	34
Naphtha	0	0	20	0	19	19	0	0	58	58
Others	26	13	1	1	0	0	10	39	12	51
<b>Total</b>	<b>1,221</b>	<b>1,288</b>	<b>228</b>	<b>262</b>	<b>265</b>	<b>231</b>	<b>588</b>	<b>2,509</b>	<b>1,575</b>	<b>4,084</b>

# Refineries

## Financial Risk

- The SBP in perusing its hawkish stance hiked its policy rates from ~13.8% by the end of FY22 to 22.0% in FY23. Resultantly, the average effective cost of debt for the Sector reached ~18.5% in FY23 (FY22: ~9.8%). Moreover, Sector's interest coverage dropped to ~6.4x in FY23 from ~10.4x in FY22. Conversely, in 1QFY24, increase in the operating profits due to improved cost management resulted in improved interest coverage to ~15.0x (1QFY23: ~1.9x).
- Sector's borrowings comprise a higher proportion of short-term borrowings compared to long-term borrowings. In FY23, the Sector reduced its long-term borrowings by ~20.0%, while short-term borrowings grew by ~4.4% YoY. On the other hand, increased investment in assets led to ~23.0% growth in equity in FY23, leading to Sector's leverage declining to ~27.0% (FY22: ~23.1%).
- Going forward, Sector's leverage and cost of debt is expected to increase owing to accumulation of debt which would be required for expansion and upgradation under the Brownfield Policy. However, the amount required to be borrowed by the local players would depend upon the required cost of upgradation. Meanwhile, these players are currently undergoing the stage of feasibility report for this purpose.

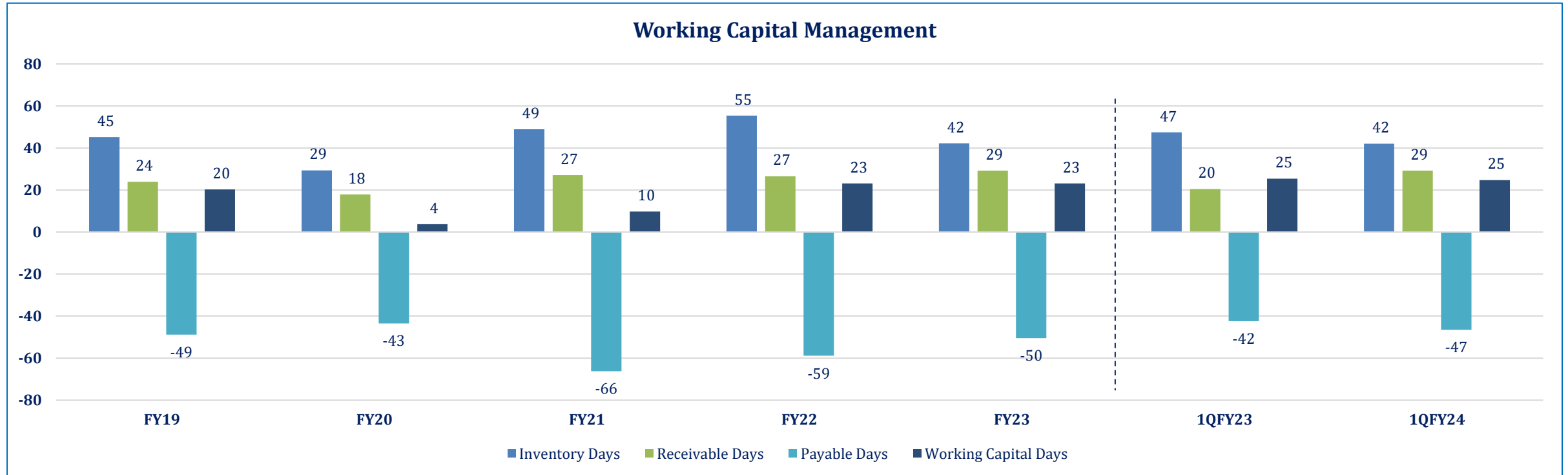


Note: 1QFY24 and 1QFY23 reflects data of 3 refineries only.

# Refineries

## Financial Risk | Working Capital

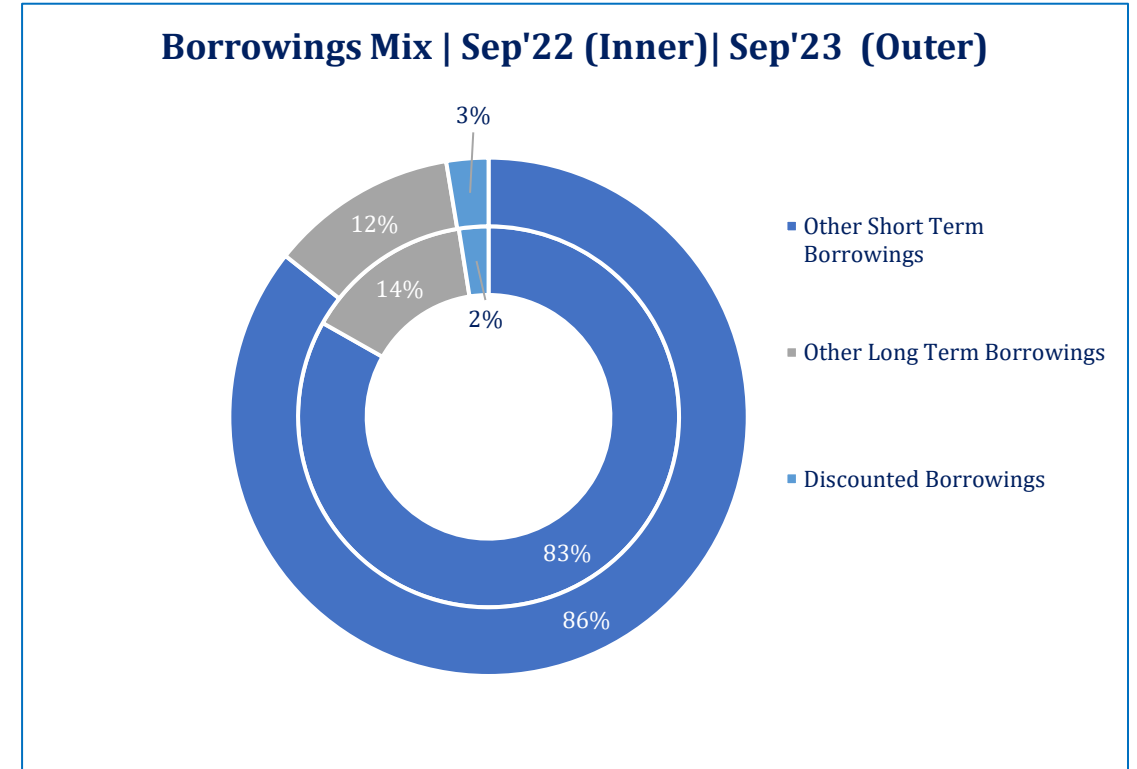
- The working capital cycle is important in assessing the requirement to fund both the acquisition of crude oil inventory and outstanding payable.
- In FY23, Sector’s average inventory days stood at ~42 days (FY22: ~55 days), with a YoY decline of ~13 days, whereas average receivable days of were recorded at ~29 days (FY22: ~27 days). Moreover, payable days in FY23 stood at ~50 days (FY22: ~59 days); the working capital days however remained the same as FY22 at ~23 days.



# Refineries

## Financial Risk | Borrowing Mix

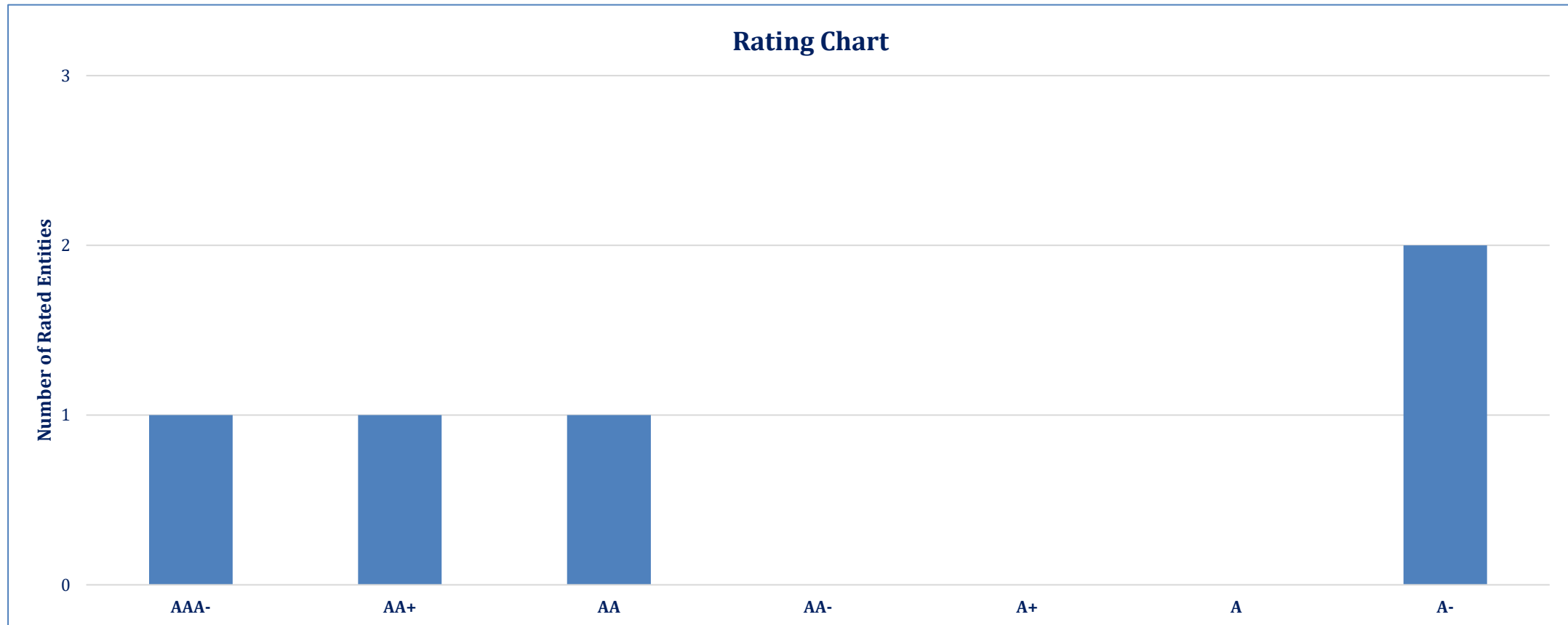
- As per SBP data for Sep'23, Sector's borrowings stood at PKR~136bln (Sep'22: PKR~147bln), declining by ~7.5% YoY.
- Total short-term borrowings used for financing working capital made up ~87.0% of the total borrowings, while the remaining ~13.0% accounted for the long-term borrowings.
- In Sep'23, short-term borrowings include ~73.0% (SPLY: ~74.0%) other short term loans whereas, import financing comprises of ~20.0% (SPLY: ~18.0%) of the short term borrowings. Amid import restrictions imposed by SBP from May'22-Jun'23 import financing only grew meagerly by ~0.2% YoY.
- Meanwhile, long-term borrowings comprise ~86.0% (SPLY: ~90.0%) of other long-term loans.



# Refineries

## Rating Curve

PACRA rates 5 players in the Sector, all listed on PSX, in the bandwidth of rating ranges from A- to AAA.



# Refineries

## Duty Structure

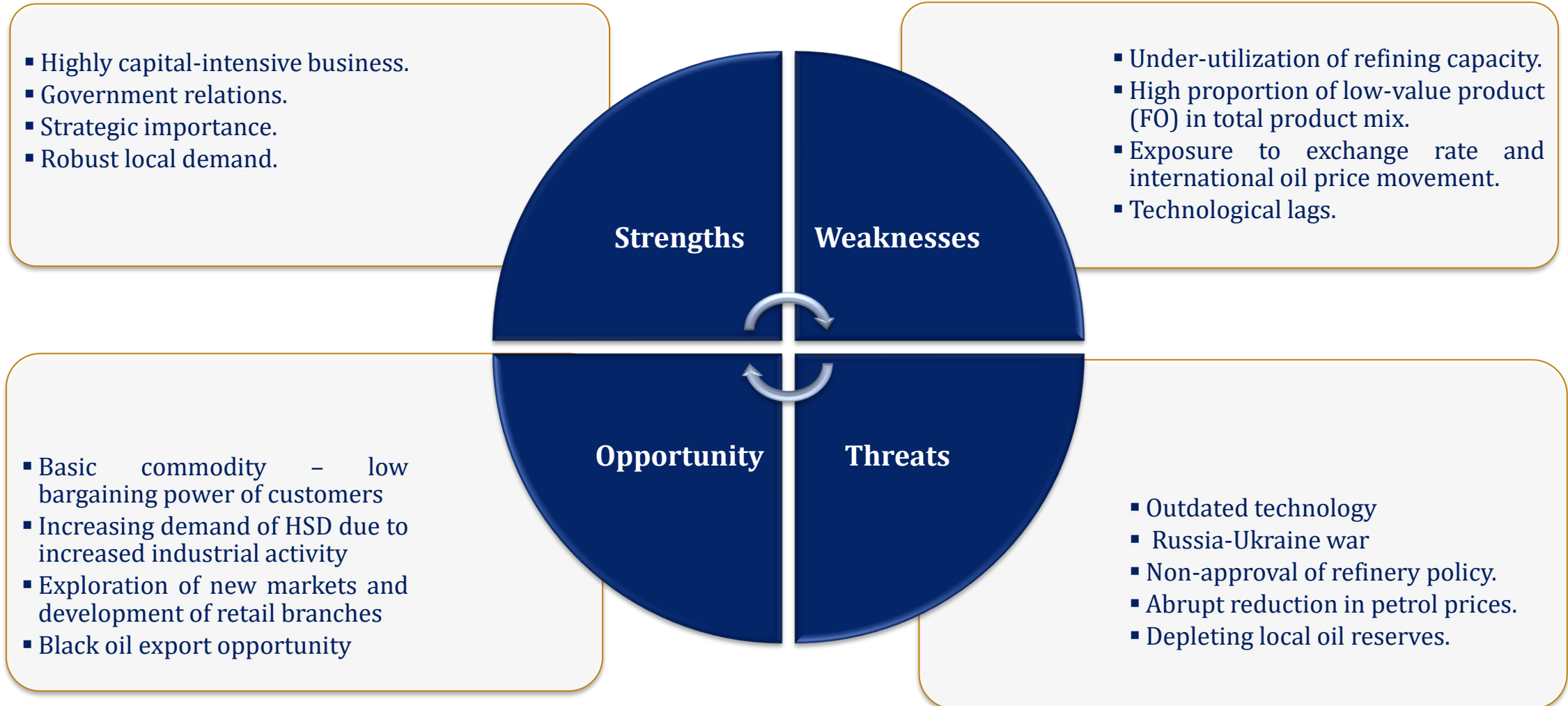
- The Petroleum Division has mandated the refineries to upgrade their facilities as per the Brownfield Policy in order to produce products under the Euro-V specifications within 6 years from the date of the policy (August 11, 2023) and thereby have provided incentives and tariff protection to the refineries as also mentioned earlier in the report.
- There will be a minimum customs duty of 10% for a period of 6 years from date of notification of the Policy on Motor Gasoline and High-Speed Diesel imported into the country. Any customs duty imposed over 10% reflected in the Ex-refinery price will be deposited in the Inland Freight Equalization Margin (IFEM) pool. Any customs duty on crude oil will be reimbursed to refineries through IFEM.
- The refineries will be allowed 10% tariff protection (deemed duty) applicable on Motor Gasoline and Diesel’s ex-refinery price for 6 years from the date of notification of the Policy.
- The current duty structure is as follows:

HS Code	Description	Custom Duty	Additional Custom Duty	Regulatory Duty	Total   FY24
2710.1210	Motor Spirit (MS/MG)	0%	2%	10%	12%
2710.1931	High Speed Diesel HSD (HSD)	11%	2%	-	13%
2710.1921	Light Diesel Oil (LDO)	3%	2%	-	5%
2710.1941	Furnace Oil (FO)	11%	2%	-	13%



# Refineries

## SWOT



# Refineries

## Outlook: Stable

- Pakistan's economy posted a real GDP growth of ~0.29% (FY22: ~6.1%) in FY23, while LSM declined by ~10.3% (FY22: ~11.8%) owing majorly to supply chain disruptions which resulted from SBP-imposed import restrictions and consequent sluggish demand across major industrial sectors. The Sector's contribution in GDP during FY23 recorded at ~3.0% (FY22: ~2.2%), while revenue registered a YoY growth of ~24.9% on account of increased POL product prices even though demand for petroleum products remained muted.
- Pakistan's total refining capacity was recorded at ~20.6mln MT p.a. during FY23 (FY22: ~20.6mln MT). In FY23, local crude production was recorded at ~3.5mln MT, a YoY decrease of ~5.4%. During the same year, ~7.9mln MT of crude oil was imported, marking a decline of ~15.1% YoY. Of the total crude supply, crude imports formed ~70.0% during FY23 (SPLY: ~79.9%).
- Meanwhile, production of POL products stood at ~9.0mln MT (FY22: ~10.2mln MT). This can be linked with the lower crude extracted during the year. Thereby, a decline in the production of both Mogas and HSD of ~11.3% and ~17.0%, respectively, was recorded in FY23 when compared with SPLY. The largest dip (~12.5% YoY) was observed in the production of Furnace Oil from ~2.4mln MT in FY22 to ~2.1mln MT in FY23. This reduced production may be associated with the aim of moving towards the production of more environment-friendly POL products with the ultimate goal of producing fuels as per Euro-V specification. Moreover, during 1QFY24, there were no FO imports.
- Although local POL product production in FY23 fell by ~13.3% YoY (FY22: ~14.9%), Gross Revenue per MT of refined products grew by ~44.0% YoY (FY23: PKR~261,851.5). Even though Duties, Levies and Taxes per MT increased by ~230.0% YoY. With local refineries using hydro-skimming technology, their refining margins on average (CY17-CY22) are ~23% lower than refineries with more advanced deep-conversion capabilities (i.e. Cracking & Coking). However, the GoP, through its Brownfield Policy, has made it mandatory for all refineries to upgrade from hydro-skimming to deep conversion within stipulated period of 6 years from Aug'23. This is likely to reduce the aforementioned delta in GRM.
- Sector's borrowings comprise a higher proportion of short-term borrowings compared to long-term borrowings. Going forward, Sector's leverage and cost of debt is expected to increase owing to accumulation of debt which would be required for expansion and upgradation under the Brownfield Policy. However, the amount required to be borrowed by the local players would depend upon the required cost of upgradation. Meanwhile, these players are currently undergoing the stage of feasibility report for this purpose.
- With the economy starting to exhibit early signs of recovery post- FY23 (LSM posted ~0.68% growth in 1QFY24), lower fuel prices, stable interest rates (these are expected to be revised downwards) and anchored inflationary expectations, POL consumption is expected to pick up pace in FY24. Moreover, with the GoP's mandate in place on technology upgradation for local refineries, product yields are likely to improve, hence lowering country's dependence on imports to meet local demand for POL products.

# Refineries

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