

ENERGY SECURITY: CHALLENGES AND OUTLOOK

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As we bid farewell to 2022 and enter 2023, the challenges for Pakistan do not seem to be relenting. Pakistan has faced a number of economic challenges in recent years. Some of the main issues facing the Pakistani economy include:

- **High levels of debt:** Pakistan has a large public debt, which has put pressure on the country's budget and has limited its ability to invest in infrastructure and other development projects.
- **Low levels of growth:** Pakistan's economic growth has been relatively low in recent years, which has limited the country's ability to create new jobs and reduce poverty.
- **Inflation:** Inflation in Pakistan has been relatively high, which has eroded the purchasing power of the country's consumers and has made it more difficult for people to afford basic goods and services.
- **Balance of trade:** Pakistan has a trade deficit, which means that the country imports more goods and services than it exports. The main reason for this deficit is the country's reliance on imported oil to meet its energy needs. Pakistan also imports a significant amount of manufactured goods and capital goods, which has contributed to the trade deficit.
- **Foreign Exchange Reserves:** The trade deficit in Pakistan has put

pressure on the country's foreign exchange reserves and has contributed to a balance of payments crisis. In order to address this issue, the Government has implemented a number of measures, including devaluing the currency, seeking financial assistance from international organizations, and negotiating trade agreements with other countries.

Overall, these economic challenges have had a negative impact on the standard of living in Pakistan and have limited the country's ability to achieve its development goals.

Oil Sector

The oil sector in Pakistan has faced several financial challenges in recent years. Some of the main challenges include:

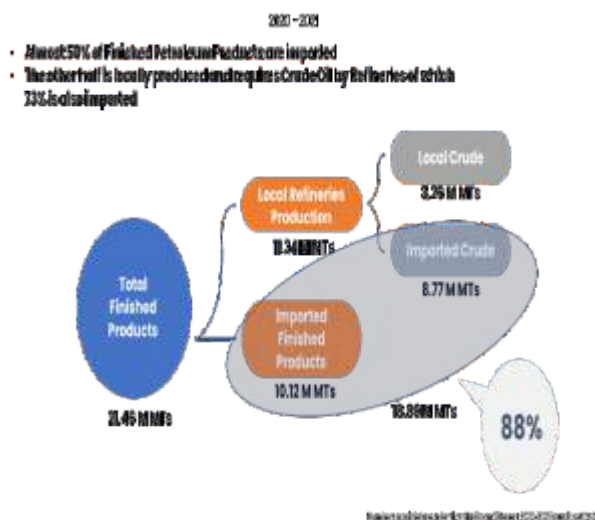
1. **Dependence on imports:** Pakistan is heavily dependent on imports to meet its domestic demand for oil. This dependence has led to a trade deficit and put pressure on the country's foreign exchange reserves.
2. **Volatility in global oil prices:** Global oil prices are highly volatile, which can have a significant impact on Pakistan's

balance of payments and inflation.

3. Limited domestic production: Pakistan's domestic oil production is limited, and the country must rely on imports to meet its domestic demand. This has led to high production costs and a lack of competitiveness in the domestic market.
4. Lack of investment in the sector: The oil sector in Pakistan has not received sufficient investment, which has led to a lack of modern infrastructure and technological advancement. This has limited the country's ability to explore and produce oil domestically.

Overall, these challenges have had a negative impact on the financial performance of the oil sector in Pakistan and have limited the country's ability to meet its domestic demand for oil.

Overview of Oil Supply Chain



Based on the above, it is clear that:

- Pakistan is heavily dependent on imported refined products
- Refineries must also import a significant portion of crude oil

In addition, out of approximate refining capacity of 450,000 BBL/Day, only 55% was utilized. This is due to a variety of reasons such as constraints of older technology, working capital issues, storage issues and challenges resulting from lower off take of certain products such as Furnace Oil.

In our view, the oil industry faces a number of challenges that must be addressed for it to modernize and contribute to the growing energy needs of the country.

1. Refining Capacity

The refining capacity in the country has been plagued by under investment primarily due to a lack of direction setting. There is a need to rollout an investor friendly Petroleum policy to attract investment in not only adding new capacity in the county but also to modernize the existing infrastructure for e.g., although the imported petrol and diesel must comply with Euro5 specifications, our local products hardly come close to these specifications.

2. Storage

Storage assets in the country have increased after the influx of new oil marketing companies in the country.

However, the storage still faces the following issues:

- Significant storage assets are in the south in the Sindh province and storage in other parts of the country does not correspond to their consumption
- In the last decade, significant additions to the storage have been done by emerging OMCs. Due to the lack of investment in storage by the large well-established OMCs, their storage is very old.
- Very limited storage exists in KPK, AJK and GB.

3. Transport

The transport of refined petroleum continues to present major challenges. HSD is transported through the White Oil Pipeline (WOP) and Mehmoodkot-Faisalabad-Machike (MFM) line. However, due to available capacity in the line, a project was implemented to make this line Multi-Product and introduce MS in the same line. However, the project had limited success primarily due port constraints. In order to lower the burden on public, there is a need to implement this project as soon as possible..

4. Marketing

Due to the Oil Marketing Companies bearing the brunt of different policies under various governments and the country's foreign exchange position, the sector has been under tremendous pressure. Major issues faced by the industry include:

- OMC Margins approved by the ECC are pending implementation
- Industry continues to suffer FX losses due to the depreciation and anomalies in the pricing formula currently in place
- Industry is also suffering losses due to demurrage resulting from port congestions, line losses from WOP/MFM and costs of holding their mandatory stocks which have been approved in principle by the Government but have yet to see implementation.

2023 - Caution, with a touch of optimism

Despite the challenges faced by the oil industry, we believe the very high prices witnessed in 2022 are behind us and in 2023; the international prices will be lower albeit with higher volatility in the first half due to the impact of sanctions against Russian oil.

However, Pakistan will continue to face challenges due to its high import bill which is only likely to be managed if the FX situation improves on the back of international community coming to the country's rescue.

In terms of volumes, we believe that despite the challenges and efforts to curb consumption, oil consumption will continue to grow, albeit modestly by around 3-3.5%. If the Government is successful in implementing its energy saving plan, this growth may come down to around 1-1.5%.

Several policies being considered by the Government are steps in the right direction and will improve the situation in the long term but the year 2023 looks set to put a big dent to the country's growth. These initiatives include:

- Early closure of markets to conserve energy
- Switch to solar
- Crackdown on electricity theft
- Steps to save fuel consumption by Government departments

Furthermore, to reduce the import bill, the Government is also considering the introduction of an inferior grade petrol for motorcyclists, RON82. However, we feel that this would be a major step backwards due to the environmental impact and its implementation would pose huge logistical challenges. Furthermore, we believe that the savings anticipated, Rs 30 per liter, are unrealistic and are likely to be less than half of projections with significant risks. *(Detailed assessment of this proposal is given separately later in this document)*

Cutting the import bill for oil

There are several ways that Pakistan could reduce its fossil fuel consumption. We believe that with different measures, success can be achieved in different periods as follows:

Immediate

- Encourage and provide support to the refineries in the country to maximize their production. This will save on import of refined petroleum

products that can be produced in Pakistan. Similarly, previously nonviable oil fields could be reviewed to see if local crude production can be increased.

- Introduce Work from Home (WFH) legislation across the country to limit the consumption of energy in offices and commuting. This can also be achieved by moving to a 4 day work week for schools and offices by increasing the hours over the 4 days.
- Introduce revised timings for offices and commercial establishments to take full benefit of day light. This could be further streamlined by having varying times for different categories so the traffic congestion and therefore fuel consumption can be reduced. However, this will require detailed planning at the District levels.
- Encouraging car-pooling and incentivizing ride sharing business.

Short Term

- Encouraging roll out of solar projects on war footing to replace fossil fuel consumption.
- Encouraging local production of Electric Bikes and Electric cars
- Encouraging the use of public transportation such as buses and trains can help reduce the number of gasoline-powered vehicles on the road and decrease gasoline consumption.
- The government could implement policies that encourage the use of fuel-efficient vehicles.

Long Term

- The government could incentivize the use of electric vehicles by providing tax breaks or subsidies to consumers who purchase electric vehicles. This would help to reduce gasoline consumption and improve air quality. However, in the short term, this is likely to increase FX outflows and decrease government revenues collected in lieu of customs duty, etc.
- Investing in the development and production of alternative fuels such as solar, electric or bio-fuels could help to reduce the country's reliance on gasoline.

Analysis of proposal to introduce RON82 for motorcyclists

RON (Research Octane Number) is a measure of the octane rating of gasoline, which indicates its ability to resist "knocking" or "pinging" during combustion. Gasolines with higher octane ratings are generally more resistant to knocking and are used in high-performance engines that are more prone to knocking. In general, RON92 gasoline is more expensive than RON82 gasoline. This is because RON92 gasoline has a higher-octane rating and is therefore more resistant to knocking. It is typically used in high-performance engines and is more expensive to produce.

It is important to note that the price difference between RON92 and RON82 gasoline can vary depending on a number of factors, including the location

and the supplier. In some cases, the price difference may be small, while in other cases it may be more significant. It is also worth noting that using the incorrect type of gasoline (e.g., using RON82 in an engine that requires RON92) can damage the engine and may void the manufacturer's warranty. We give below the pros and cons of this proposal below:

Pros

- Lower cost, however, it should be noted that the difference between RON92 & RON95 price is approximately US\$3.4/barrel. This translates to Rs4.85/liter. If we take the similar approach, RON82 product price would not be Rs30/liter but only Rs16.16/liter. The savings of Rs16.16 are also believed to be on the higher side.

Cons

- Additionally, unless the above savings are planned to be retained by the Government, the cheaper product will also result in lower Customs Duty and Sales Tax (when implemented).
- Availability of product. We are not aware of refineries making this inferior RON82 product MS anymore.
- Pricing of such product if made to order for the country is likely to carry premiums that will offset the deemed benefit of such product

- The decrease in efficiency of RON82 vs decrease in price are expected to be disproportionately against the financial case for introduction
- The carbon footprint of RON82 product is expected to be higher than the current MS grades sold in the country and is also likely to contribute to smog and other pollutants in the atmosphere. This will be a direct impact on the health of the population.
- Refineries and OMCs will be required to dedicate part of their storage to this additional fuel grade. This may compromise the maintenance of adequate stocks in the country due to strategic reserve reasons.
- Petrol Pumps will also be required to either build new tanks for this new grade or repurpose their existing tanks to two separate grades, for eg repurposing one of the HSD or HOBC (if it exists). Since most pumps have MS and HSD storage, in case of repurposing, the pumps doing so will not be able to offer and HSD to customers. Since more than 11,000 petrol pumps across the country would be required to do this at a cost of billions and take a long time, making it impractical.
- Availability of low-quality fuel at lower prices would encourage its mixing with fuels for cars and other such vehicles
- Lastly, engines of motorcycles are designed to efficiently work on at least RON87 and with RON82, the engine knocking would not only cause wear and tear, but would also increase the maintenance cost of the users, hurting the lower income group the most, the users of motorcycles and rickshaws, etc.

Power Sector:

In the broader energy sector, a constant of 2022 was record-high energy prices. This is in part due to structural reasons of Pakistan's energy sector –electricity, LNG and oil. In 2022, challenge of pricing was compounded due to rise in global oil and LNG prices as a fallout of Russia-Ukraine conflict. As European nations went on LNG buying spree, developing countries like Pakistan couldn't keep up with escalating prices in the LNG market. Meanwhile mismanaged oil and gas imports led to supply chain disruptions throughout the country, burdening consumers with additional costs.

Gas Sector

In the gas sector, Oil and Gas Regulatory Authority (OGRA), the regulator had recommended increase of gas price by up to 45 percent, in early June. Five months later, in November, OGRA approved gas price increase by 75 percent. The last time, gas prices were increased was in September 2020, and for next 18 months, PTI government maintained a freeze on gas prices. Now the current government is also dithering on gas price increase.

Two gas utilities, Sui Northern Gas Pipelines Limited (SNGPL) and Sui Southern Gas Company Limited (SSGCL) have put forward a demand to generate 660 billion in additional funds during 2022-23.

SNGPL, the Lahore-based company serving Punjab and Khyber-Pakhtunkhwa province had sought an increase of Rs.1294 per mmBtu or 237 percent from the current prices, and that too with effect from July, 2022. Meanwhile, the Karachi-based SSGCL, had demanded an increase of Rs 668 or 96 percent to meet its revenue requirements. Additionally, SNGPL, had sought another Rs 1016 per unit as cost of services for RLNG. Now in January, 2023, regulator has allowed both companies an increase of upto 75 percent, which is Rs 406/mmBtu for SNGPL and Rs 499/mmBtu for SSGCL.

All in all, the average gas prices of SNGPL consumer would be Rs 952/mmBtu and Rs 1161/mmBtu for SSGCL consumers for 2023. These prices are uniform across all classes of consumers including domestic, industry, export sector, commercial and others. However, the tariff increase will hurt domestic consumers the most, with tripling of prices. It remains, to be seen, if government will notify the price increase recommended by OGRA. Government had earlier chosen not to escalate the gas price despite commitment made to IMF, and now it looks increasingly unlikely that government will actually pass on the gas price, as country enters into prolonged election cycle.

In 2022, the gas circular debt increased steadily and now has reached up to Rs. 1.5 trillion, and it needs to be addressed. In August 2022, government had made a commitment to the IMF that it would recover nearly 780 billion rupees from gas consumers and scale down the circular debt. SNGPL has to pay nearly Rs 300 billion by March 2023 to the Pakistan State Oil (PSO) for LNG already imported. PSO's total receivables have touched Rs. 650 billion. And now PSO is calling for taking over SNGPL's shares while share prices are down in stock market.

Besides, the two companies have not been able to address the challenge of 'unaccounted for gas' (UFG) despite targets set by OGRA. Experts have noted that two countries account UFG 600-650 mmcf/d which can potentially produce 1200MW of cheap electricity and is more than half of the LNG imports of about 1000mmcf/d, and almost third of total domestic gas production.

Electricity Sector

The electricity generation sector remained plagued with transmission losses, lack of prudent planning to use both domestic and imported resources, rising circular debt, and ballooning capacity payments. These challenges were worsened by the rise in cost of imported furnace oil, coal and RLNG used to produce electricity.

At present, the installed power generation capacity of National Transmission and Dispatch System (NTDC) stands at 34500 MWs, and out of

this, at the peak demand in summer about 30000 MWs remain available.

The electricity sector circular debt stands at Rs. 2.27 trillion, as of December 2022. In this nearly Rs 300 billion are owed to power plants set up under the China-Pakistan Economic Corridor (CPEC) framework. The independent power producers (IPPs) are facing servicing challenges, and in turn have reduce power generation despite huge existing capacity.

In 2022, 2600MWs of domestic-coal based power plants in Thar came online. In 2023, 1300 MWs of Thai-coal based power generation will be ready for use, and a 4th LNG based project at Trimmu will be online. However, the challenge of procuring LNG will remain as top supplier have diverted LNG cargoes to European markets.

In the face of rising oil and LNG prices, the current government have focused on energy conversation measures such as closing market early, moving towards solar power generation with ambition of generating 10000MWs using solar and other renewable sources to lower

electricity generation cost. These measures, so far, remain announcements, as government is still looking for investors to tap into the solar and other renewables market.

Despite that, impact of solar and wind energy to reducing cost of electricity will be negligible given the fact that capacity payments for the existing plants are already committed and on average they cost Rs 10 per unit (range is between Rs 6 to 20 per unit for different plants). In 2022, the financial impact of capacity payments touched Rs 720 billion, up from Rs 600 in 2021. These payments are set to increase further as more CPEC power plants become operation over the next couple of years. In 2023 the financial impact of capacity payments will increase further and government will be forced to impose new surcharges to raise up to Rs 700 billion. This situation doesn't foresee a potential improvement as economic and political instability will only deepen further in 2023.

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