Pakistan Power

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Pakistan
Power Generation & Distribution

Shift in power sector dynamics underway

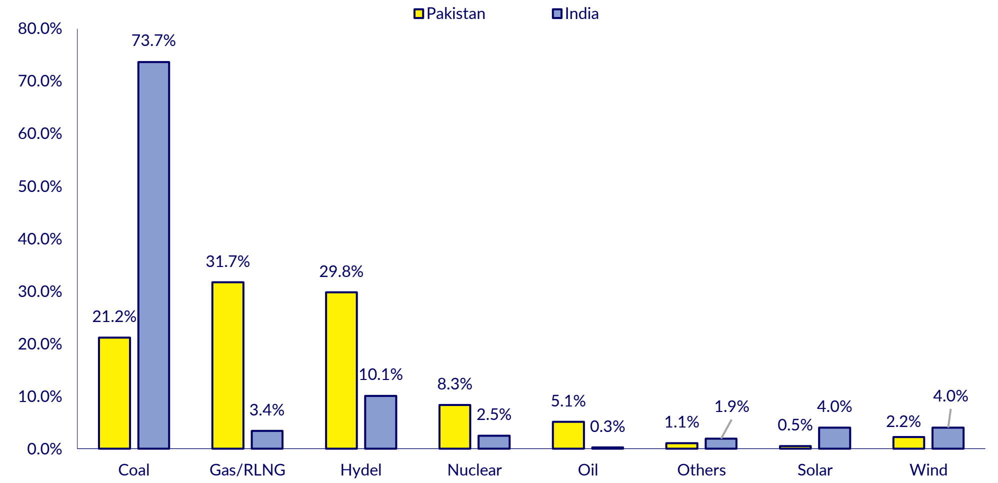
Increased reliance on indigenous fuels to help arrest CAD and circular debt flow

Over the past few years, Pakistan has continued to face the same set of recurring issues — balance of payment strains accompanied by falling forex reserves and plunging PKR/USD value. Even from an equity market vantage point, index performance hasn't been very exciting with heavy-weight sectors, including E&Ps, OMCs, and Power (21% weight in KSE-100 index), underperforming the market by ~6% from FY18-FY22 mainly due to the prolonged circular debt issue. One key reason behind both the weak external position and mounting circular debt is the country's misguided energy mix that is heavily dependent on imported fossil fuels and therefore, sensitive to price volatility in the international market. However, in this report, we highlight that in the coming few years, the power sector landscape is likely to witness major improvements as the country shifts its focus towards more indigenous solutions to meet energy demand.

Too much reliance on imported fuels: Unfortunately, Pakistan's energy conundrum has always been as much of a political/governance issue as one of supply-demand mismatch. Despite having abundant hydel potential and vast Thar coal fields, the country has an import-dependent power generation set-up, with coal and RLNG constituting ~39% of the energy mix (as of 2021). Whereas, in comparison, neighbouring India has relatively fared better in terms of developing locally available resources as imported fuels make up less than 25% of their generation mix.

Figure 1

Pakistan vs. India energy generation mix (2021)



Source: Global Electricity Review 2022 (Ember), Nepra, Alfalah CLSA Research

Costly energy imports adding to external account woes: Power capacity expansions after FY17 were lopsidedly led by imported RLNG & coal-based plants (7,593MW), which at the time of installation made sense given the low gas/coal prices and acute energy shortfall in the country (6,000MW as reported by Reuters). The government at that point in time opted for short-term fixes instead of relying on hydel and local coal resources, which would have taken a longer time to develop and required significant investment (refer to Fig.2).

Figure 2

Fuel-wise project cost of power plants (based on gross capacity)

	USDMn per MW
RLNG	0.59
Imported Coal	1.34
Local Coal	1.44
Solar	1.51
Hydel	2.39
Wind	2.51

Source: Nepra, CPEC Authority, Alfalah CLSA Research
*Note that renewable energy plants have low-capacity factors

The recent spike in international energy prices has rendered these plants ineffective in the wake of ongoing power shortfall of ~5000-6000MW in the country. Currently, RLNG and imported coal-based power generation costs have more than tripled from FY18 levels (fuel charges break-up in Fig.3), thereby, giving rise to current account crisis and prompting a fall in USD/PKR value.

Figure 3

Source-wise break-up of power fuel charges

	PKR/Kwh
Hydel	-
Imported Coal	24.21
Local Coal	9.34
HSD	-
RFO	36.20
Gas	8.93
RLNG	28.38
Nuclear	1.12
Import Iran	19.58
Wind	-
Bagasse	5.99
Solar	-
Energy generation cost	-

Source: Nepra, Alfalah CLSA Research
*prices are as of June'22

A brief analysis of historical power data shows that around USD4.5Bn outflow (~26% of CAD) in FY22 was on account of fuel expenses related to import of RLNG & coal for power generation, whereas a cumulative of USD12.0bn (31% of CAD) has been spent on these energy sources since FY19.

Note that technical faults in indigenous fuel based plants (EPTL-2 months/Neelum Jhelum-6 months/K-2 Nuclear plant-2 months) are alone expected to have added ~PKR103bn (@ June'22 benchmark prices) in fuel expenses as the government has to rely on imported resources to bridge the gap.

Figure 4

Imported power fuel cost as % of CAD

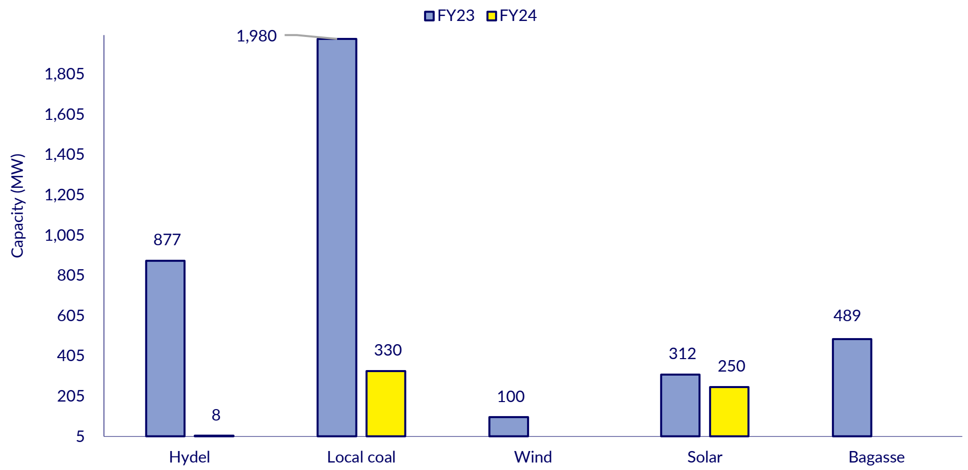
	FY19	**FY20**	**FY21**	**FY22**
Fuel expenses for imported RLNG & Coal (PKRBn)	384.4	372.9	369.4	796.9
Fuel expenses for imported RLNG & Coal (USDBn)	2.8	2.4	2.3	4.5
Current account deficit (USDBn)	13.4	4.4	2.8	17.4
Imported power fuel cost as % of CAD	21%	53%	82%	26%

Source: Nepra, PBS, Alfalah CLSA Research

Power sector dynamics to take a turn for the better: The country's existing energy crisis is expected to draw out for another few months amid government struggling to attract LNG bids at reasonable rates in spot market, coal prices refusing to taper down (USD300/ton+), and PKR plunging against USD. However, we opine that the power sector dynamics are likely to undergo major improvements over the coming few years.

Figure 5

Several new power capacities are in pipeline over the next two years



Source: Nepra, Alfalah CLSA Research

Nearly 4,345MW capacities are scheduled to come online over the next two years, with major focus on exploring local fuel sources (Thar coal & hydel) for power generation. Note that a hydel power plant of 720MW capacity and a nuclear plant of 1,100MW capacity have already come online in 4QFY22. The addition of new plants in the system is likely to improve the contribution of indigenous fuels in the generation mix to 75%-85% (from current share of ~65%).

Figure 6

Shift in energy generation mix underway

Generation Sources	FY21	FY22	FY23E	FY24E
Hydel	29.8%	24.9%	31.1%	32.7%
Imported Coal	18.2%	15.9%	22.7%	13.8%
Local Coal	3.0%	2.7%	5.7%	16.1%
HSD	0.3%	0.8%	0.0%	0.0%
RFO	4.8%	9.2%	4.7%	4.6%
Gas	11.0%	10.3%	9.3%	9.0%
RLNG	20.7%	18.8%	2.0%	0.0%
Nuclear	8.3%	12.7%	17.7%	17.1%
Import Iran	0.4%	0.4%	0.3%	0.3%
Mixed	0.2%	0.1%	0.0%	0.0%
Wind	2.2%	3.2%	3.4%	3.3%
Bagasse	0.5%	0.6%	2.0%	1.9%
Solar	0.5%	0.5%	1.0%	1.2%

Source: Nepra, Alfalah CLSA Research

Share of renewable energy in the mix likely to improve: Pakistan is still a laggard in terms of deployment of renewable energy sources (wind, solar & biofuels) for power generation when compared to India and China, which have significantly improved their share of non-fossil fuels in electricity supply over the last decade (refer to

Fig.7). However, the situation is likely to improve a bit as 26% of the upcoming plant additions in the country are based on clean energy sources.

Figure 7

Share of renewables in the energy mix of regional markets

	Hydel		Solar		Wind		Other renewables		Total renewable share	
	2011	2021	2011	2021	2011	2021	2011	2021	2011	2021
Bangladesh	2.2%	0.6%	0.1%	0.7%	0.0%	0.0%	0.0%	0.0%	2.4%	1.4%
India	12.7%	10.1%	0.1%	4.0%	2.3%	4.0%	1.7%	1.9%	16.8%	20.1%
China	14.7%	15.3%	0.1%	3.9%	1.6%	7.3%	0.6%	1.7%	16.9%	28.2%
Sri Lanka	40.8%	31.2%	0.2%	0.7%	0.8%	2.2%	0.4%	1.6%	42.2%	35.7%
Vietnam	40.6%	26.0%	0.0%	9.9%	0.1%	0.8%	0.1%	0.0%	40.7%	36.7%
Indonesia	6.8%	7.1%	0.0%	0.0%	0.0%	0.2%	5.2%	5.8%	12.0%	13.1%
Pakistan	31.5%	29.8%	0.0%	0.6%	0.0%	2.2%	1.1%	0.6%	32.6%	33.1%

Source: Global Electricity Review 2022 (Ember), Nepra, Alfalah CLSA Research
*Latest data for Sri Lanka & Indonesia is as of Year 2020

Outlook — Import substitution to bring down fuel cost: As per our estimates and taking Jun'22 numbers as benchmark (@USD/PKR 204.80), increased use of local resources in the energy mix alone is expected to bring down fuel cost to PKR9.43/7.47 per KWh in FY23/FY24 (from existing PKR14.72/KWh in June'22). This will roughly lead to a yearly saving of ~USD1.4bn in current account balance. Any drop in international energy prices will provide further respite and help arrest the outflow of foreign exchange reserves.

Hence, we opine that the shift in power sector dynamics going forward will bode well for the economy as not only will it improve the country's balance of payment position but it will also curtail the accumulation of circular debt assuming USD/PKR will stabilize. Note that the increase in capacity payments due to new plant additions in the system is likely to be limited given the fuel savings from shift in energy mix. Therefore, reduction in overall generation cost is expected to contain the increase in circular debt, and may even decrease the balance if the government timely passes on the increase in capacity charges to consumers.

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