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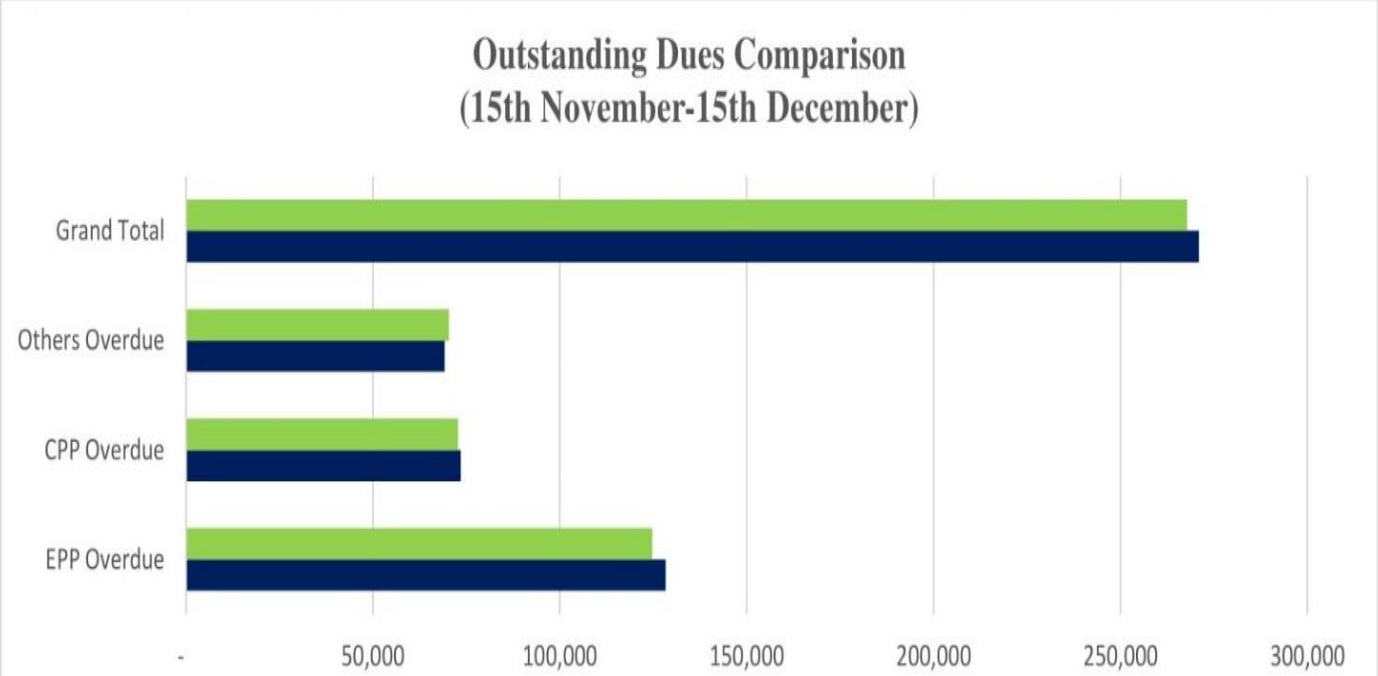
INDEPENDENT POWER PRODUCERS ASSOCIATION

MONTHLY NEWSLETTER

Welcome to the twenty-second edition of Independent Power Producers Association (IPPA) Newsletter. The newsletter is published on a monthly basis to ensure regular dissemination of information to Member IPPs and other stakeholders, and also to provide a platform to discuss issues pertinent to the energy sector of Pakistan. We would like you to send us your feedback and comments on how to improve the monthly newsletter.

Monthly Infographics

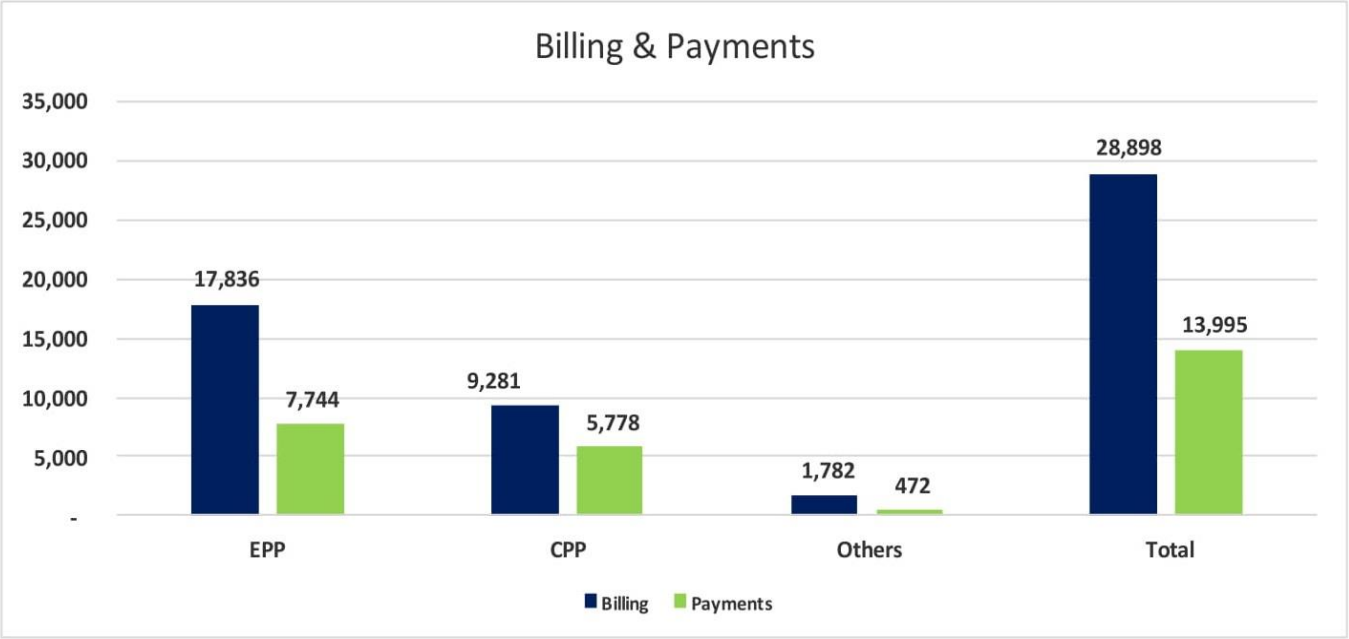
Outstanding Dues as of 15th December, 2018 in PKR Millions



	EPP Overdue	CPP Overdue	Others Overdue	Grand Total
December	124,760	72,737	70,316	267,813
November	128,280	73,503	69,223	271,007

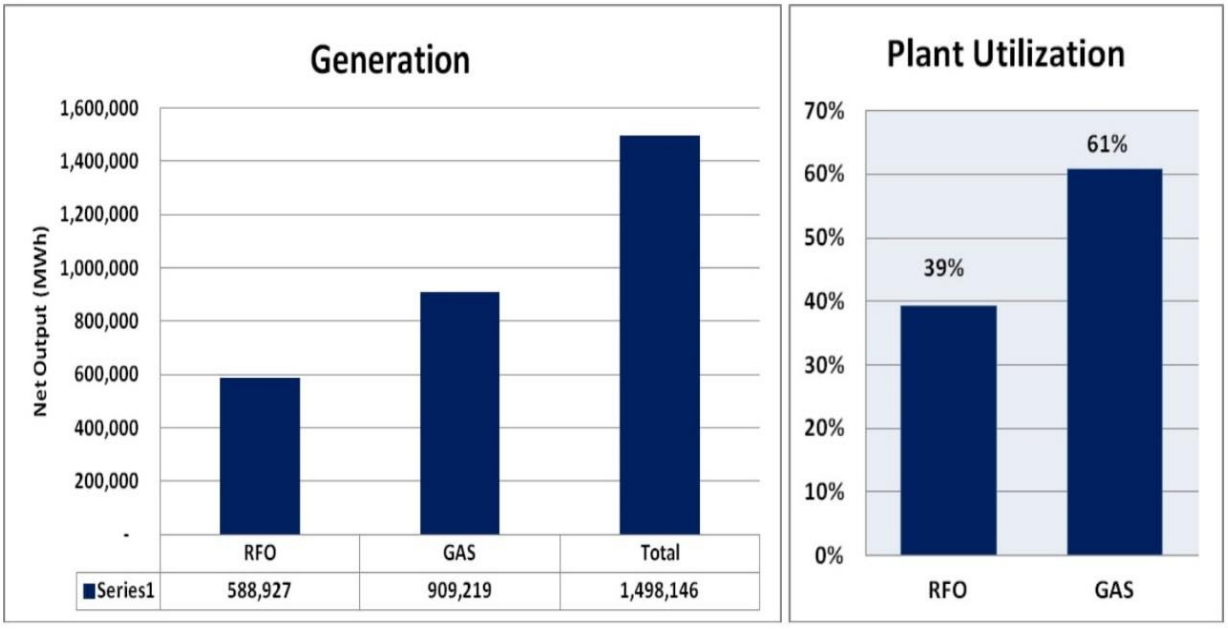
Source: Member and Subsidiary IPPs

Billing and Payments in December 2018 in PKR Millions



Source: Member and Subsidiary IPPs

Net Generation and Plant Utilization in December 2018



Source: Member and Subsidiary IPPs

Local News

Inter RAO Engineering willing to invest $2 billion into the power generation

Source: Pakistan Today

Islamabad: Inter ROA Engineering has offered to invest up to $2 billion into Pakistan's water and power projects. The Russian state-run entity has requested a government-to-government (G2G) agreement between Russia and Pakistan. Inter RAO Engineering officials met with WAPDA officials as well as Minister for Power, Mr. Omer Ayub Khan. The entity is willing to invest in Thermal Power plants such as Jamshoro Power Plant. Moreover support for Hydropower projects such as the 7,100MW Bulji Hydro Power Project and 2,800 MW Yulbo Power project. Both financial and technical support is on the table. The company is willing to start with small projects. Pakistan can benefit from experience of building a dam on the Afghan side of Kabul River.

Agreement signed for $100 million Solar Energy Project.

Source: The News

Karachi: World Bank and Pakistan signed a $100 million financing agreement for Sindh Solar Project. Pakistani side included the repsentatives of Federal and Sindh government. This financing agreement covers small utility scale as well as distributed generation projects. The $105 million project will include a $5 million investment from the Sindh government. The utility-scale projects include 50 MW projects while 20 MW of distributed system electricity is expected to be installed on rooftops. Solar power will help in the electrification of rural Sindh. Moreover, the project will introduce international best practices and reduce the headline cost of renewables. The project will be implemented in different districts of Sindh.

1320 Coal-fired power plant achieves synchronization with the national grid

Source: Dawn News

Karachi: China Power Hub Generation Company (CPHGC) successfully synchronized the first unit of its 1320 MW coal power plant with the national grid. Currently, the plant is supplying electricity on a pre-commissioning trial basis. The plant consists of two units of 660 MW each. The second unit is expected to be synced with the national grid by the first half of 2019. CPHGC is a joint venture between CPIH and HUBCO. It is the first foreign coal power project under BRI. Under the contract, the commercial operation date (COD) for the first and second units were February and August respectively. The $1.9 billion project will take Pakistan towards a cheaper fuel mix while maintaining the reliability of thermal based power generation.

NTDC issuing tenders for the installation of anti-fog insulators

Source: Dawn News

ISLAMABAD: Punjab has been wrecked with a cascading failure of grid caused due to smog. Smoggy weather led to the tripping of power plants and 500 KV transmission lines. This has led to blackouts in parts of Punjab and Federal Capital. To counter the tripping, NTDC issued a tender for installation of anti-fog insulators on transmission lines. NTDC expects that the insulators will be installed in Port Qasim by March 2019. From there on, the insulators will be installed throughout the national transmission network. A similar tender last year received no bids because of lack of technical expertise. It is pertinent to mention that NTDC operates more than 16,000 KM of transmission lines. According to Managing-Director-NTDC, Zafar Abbas, each of these insulators cost $20, and there is a need for millions of insulators throughout the nation. Though they are expensive, they will be a significant future requirement in light of the ever-increasing levels of air pollution.

National Action against Power theft underway

Source: Dawn, The News

ISLAMABAD: PM Imran Khan had ordered a crackdown on the power theft in the country in October 2018. The rational was that controlling power theft will reduce transmission and distribution losses. This will then pave the way for tariff rationalization plans. These tariff rationalization plans are part of the 25-year plan being developed by the Energy Task Force. Therefore controlling electricity theft plays into the long term plan to help Pakistan out of its power crisis.

With that plan, the front-guard of the anti-power theft drive consists of two technological projects. The first move includes installation of two million smart meters. The installation is being funded by a $900 million loan from ADB. The project will first be implemented in IESCO and LESCO with a cost of $400 million. Afterwards, the scope of the project can be spread to other Distribution companies. Minister for Energy Omer Ayub has supported the project. Meanwhile, the terms and conditions of the project are being negotiated.

The second effort consists of a system developed at UET Peshawar. It's named ElectroCure and has been tested by the Pakistan Army. The device detects electricity theft in power lines. ElectroCure has delivered on its promise by reducing the line losses at Army facilities by up to 35 percent. ElectroCure has the advantage of being domestically developed and being much cheaper as compared to the smart meter. Dr. Gul Muhammad, the project head on ElectroCure, claims that its nationwide adoption would cost Rs. 125 billion.

For now, Mr. Omer Ayub Khan has directed electricity distribution companies to install 100,000 meters on all 11-kilovolt feeders. In addition, a geographic information system (GIS) mapping of these feeders has also been ordered. GIS mapping and replacement of electromagnetic meters will help curtail power losses which feed into overall transmission and distribution losses.

International News

Contract signed for World's cheapest wind power plant

Source: Forbes

The contract for the world's cheapest wind power electric rate has just been signed in Saudi Arabia. The contract has been awarded to a joint venture between Masdar and EDF. The 400 MW wind power facility will supply the electricity at a cost of 2.13 cents per kilowatt-hour. Masdar owns 49% share in this project while EDF owns the rest. The venture will operate under a 20 year Power Purchase Agreement (PPA) with Saudi Power Procurement Company. Saudi Power Procurement Company is a subsidiary of SEC (Saudi Electricity Company). EDF and Masdar outbid 3 other firms for the ambitious project.

The $500 million project is part of a new renewable initiative launched by the Saudi government. Saudi Arabia aims to add 9,500 MW of power by 2023. However, these green ambitions may ride higher on the back of ever cheaper green technologies. Saudi Arabia's plans are part of a regional effort by the Gulf Co-operation Council (GCC). By installing renewable energy, GCC aims to save 354 million barrels of oil equivalent (MBOE), while creating 220,000 new jobs. GCC's move towards renewable energy will add momentum towards the global push for renewable energy.

2018 a Green Year for Energy Investments

Source: Forbes

ISLAMABAD: Globally, a total of £332.1 Billion was invested in clean energy in 2018. Out of this, China and the US invested $164.2 billion. It is pertinent to mention that China beat the US by a margin of almost $36 billion. However, the figures understate the strength of the movement because green energy capital costs are falling monotonically. Within the sector, the focus of investments shifted from the wind towards the solar market. Apart from its massive investment portfolio, China has also contributed to the market by becoming the price maker. The global market has been flooded with Chinese PV cells. Subsequently, the price of PV's went down. Other global leaders in Green investment include Japan, India, Germany, and the UK.

Burnt PG&E filing for bankruptcy

Source: Forbes, PG&E website.

Pacific Gas and Electric Company (PG&E) has declared bankruptcy. The San-Francisco based integrated utility has been a victim of the California fires. But some accounts also

place PG&E as the suspect in starting these destructive fires. The utility is blamed for failing to maintain wilderness gap along its transmission lines. The bankruptcy comes amid the aggressive move towards green energy which leaves little space for future price increases. Currently, PG&E has to deal with both the fire claims and installation of facilities to avoid future fires.

Two California fires in 2017 and 2018 burned through 186,000 acres, 24,600 structures and claimed 108 lives. Both of these fires have been blamed on the wires of PG&E's equipment. The resulting $30 billion in claims would be hard to fund. The utility just missed an interest payment on its bonds. Claiming a rate hike from the regulator while competing with ever cheaper renewables would be a tough act to pull. Letting consumers foot the bill for the fire claims might not sit well with the regulator.

The 1600 victims of PG&E are claiming that the utility should have learned from the past mistakes. The utility could have invested in a range of safety measures. The included better vegetation management, line protection and shutting down power in case of strong winds. This is the second time that PG&E is filling for bankruptcy. How the company comes out of this bankruptcy will be important for the shareholders as well as electricity consumers of California.

Smart Benches are coming to London and Middle East.

Source: Forbes

Strawberry Energy is looking for forward to expanding its network of smart benches. These smart benches harness the solar energy to provide pedestrians with Wi-Fi, information services and mobile charging services. Currently, Strawberry Energy has installed its benches in 17 countries. It serves corporate clients like Orange and Ford. Its Bureaucratic customers include the United Nations Development Program (UNDP). The start-up hopes to reduce air pollution while providing pedestrians with free energy.

Strawberry Energy is a Serbian startup that is an inspiration to environmentalists and businessmen alike. The founder and CEO, Milos Milisavljevic, saw the lack of chargers for phones while holding lectures in high school. By collaborating with other individuals, Milo created a crowd-funded startup. This startup had dual aims of public service and renewable energy exploitation. Currently, Strawberry Energy is on the path to achieving both of these aims.

GE starts testing 12 MW wind turbine

Source: CNBC

General Electric's Renewable Energy subsidiary has started testing a 12 MW wind turbine on the shores of Maasvlakte-Rotterdam in Netherland. The 260-meters tall wind turbine is aptly named as Haliade-X. The turbine will have 107 meter long blades. GE claims to have spent $400 million on the development of this turbine. Currently, the turbine is installed on-shore

for testing purposes. Once the testing has been completed, the turbine will be shifted to offshore environments.

The installation of the turbine came as a result of an agreement between GE and Future Wind. The deal includes five years of testing and a fifteen year O&M contract. GE will get a Type Certificate from the testing phase which will be used to commercialize the product by 2021. It is pertinent to mention that Future Wind itself is a JV between SIF Holding Netherlands and Pondera Development.

Germany says good bye to Coal

Source: LA Times

Germany has decided to close all of its coal fired power plants by 2038. The 84 coal fired power plants will be closed in order to meet the environmental targets. The closure of these plants came as a result of 21-hour long negotiations by a 28-member government commission. A total of $45 billion will be spent to accommodate the Germans affected by this move. Approximately 60,000 workers owe their employment to German coal fired power generation. Angela Markel is expected to adopt the commission's findings.

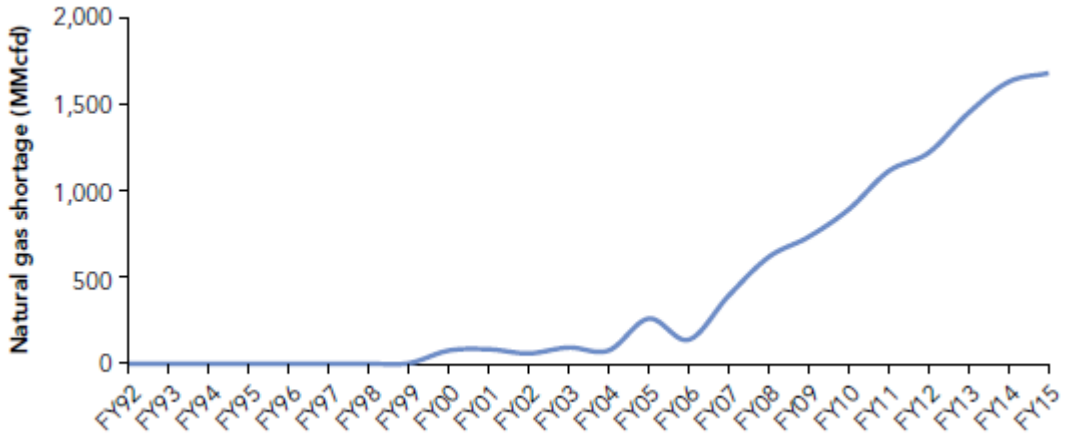
Currently, coal fuels 40% of German power production. There was a time when this figure was above 40%. The European industrial leader has been on a mission to meet CO2 emission goals. Cutting coal out of fuel mix is only one of its many moves. Previously Germany had decided to phase out nuclear power generation by the year 2022. That goal is on its way to completion with decommissioning of 12 of the country's 19 nuclear power plants. Departure of coal and nuclear fuel will leave the power sector wide open for renewables. By 2040, more than 65% of the power generation is expected to be sourced from renewables.

Germany is a signatory of the Paris Climate Accord and has been a pioneer in emission reductions. 1990 emission levels form the base line for CO2 emission reduction targets. Early targets were met by closing down the polluting East German industries. However, recently the country was on its way to missing its target of 40% reduction in emissions as compared to the 1990 levels. The Paris Agreement envisions a world where global warming is limited to below 2 degree Celsius. Reduction of C02 emission plays into the realization of this goal.

GAS REFORMS AND POWER SECTOR

The need for Gas Reforms

It's a no brainer that gas reforms are the need of the hour and there are economic, political and industrial arguments for the same. The economic argument rests on the concept of opportunity cost i.e. gas reforms are expected to bring the consumption in line with allocative and technical efficiency. Whereas, political argument is based on an expectation of gas availability. While, industrial argument rests on the positive effects of gas reform for different sectors. In Pakistan, households use gas for basic cooking and heating. The households expect gas to flow through their stoves and this expectation makes gas shortage politically expensive.



Source: World Bank and Ministry of Finance

As evident from graph above, the gas shortage has been a growing problem for the past 12 years. Currently, Pakistan is going through a 2000 MMcfd[1] shortage of gas. This shortage is expected to increase to 6000 MMcfd by fiscal 2030[2]. In order to analyze the same, this article outlines the reforms needed as well as few benefits of these reforms for the power sector.

[1] million cubic feet per day

[2] According to Government of Pakistan

Reforms and their effects

On the regulatory side, the gas sector needs to 1) Bring gas prices at par with international standards 2) Ease the sale of gas among third parties[3] 3) Reduce the rate of allowable UFG 4) Change the payment mechanism to the monopolistic distribution companies. On the institutional side, the gas sector needs to 1) Address cross-subsidization 2) Dilute government ownership 3) Rationalize gas allocation 4) Split the gas sector firms into sub-firms. The rationale of each reform suggested is elaborated in following paragraphs.

Price increase: On average, the current sale price of gas is barely enough for distributors to recover their costs. However, there is an appalling difference between the cost of local gas and imported LNG[4]. Low local prices discourage E&P activities in the gas sector. In return, prolonged lack of enthusiasm in E&P activities leads to gas shortages. Bringing local gas price at par with international standards will encourage gas E&P and address future gas shortages.

Competition: Currently gas companies can only sell 10% of their output to third parties. The sale of gas is subject to government approval. Moreover, the gas company has to pay a 40% windfall tax on negotiated price above the regulated one. Allowing gas companies to sell all of their output to third parties would promote competition. SNGPL and SSGC would have to compete with E&P sector firms to provide gas to industries and households. Such competition will force these two distributors to minimize their inefficiencies in order to maintain profit margins at competitive rates. Hence, competition will lead to reduced inefficiencies in the gas distribution sector.

UFG rate reduction: The current allowable Unaccounted for Gas (UFG) rate stands at 6.3% for FY 2018-19. When gas leakage is above 3%, the environmental effects of gas become more detrimental than coal. Decreasing the tariff recoverable UFG would decrease the price of gas and make it environmentally sustainable. The UFG rates for gas distribution are depicted below.

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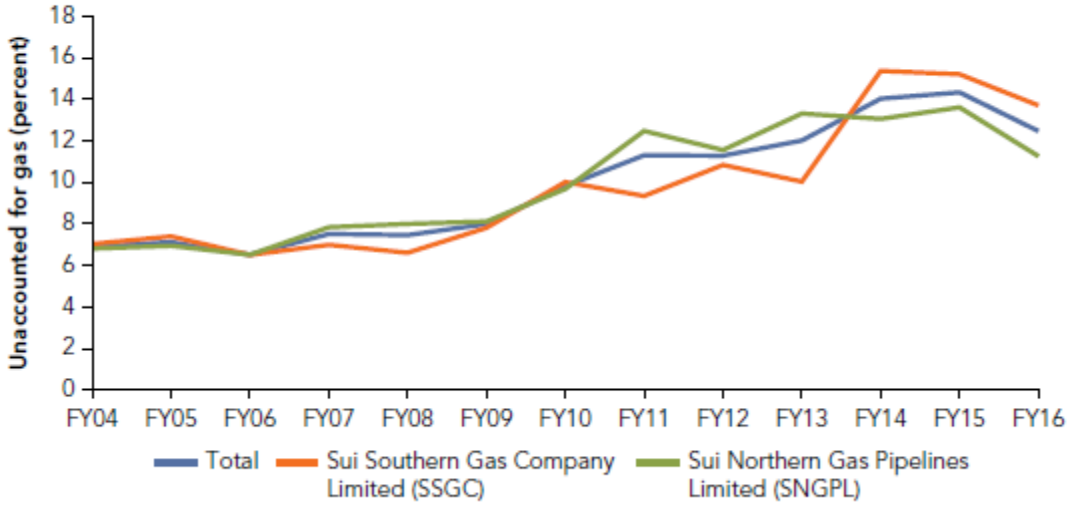
[3] i.e. customers other than SNGPL and SSGC

[4] For 2017 the weighted average cost of gas per Million British thermal units (MMBtu) was $2.63 for domestic gas and $8.30 for international gas.

FIGURE 5.7 A large share of gas is lost during transmission and distribution in Pakistan



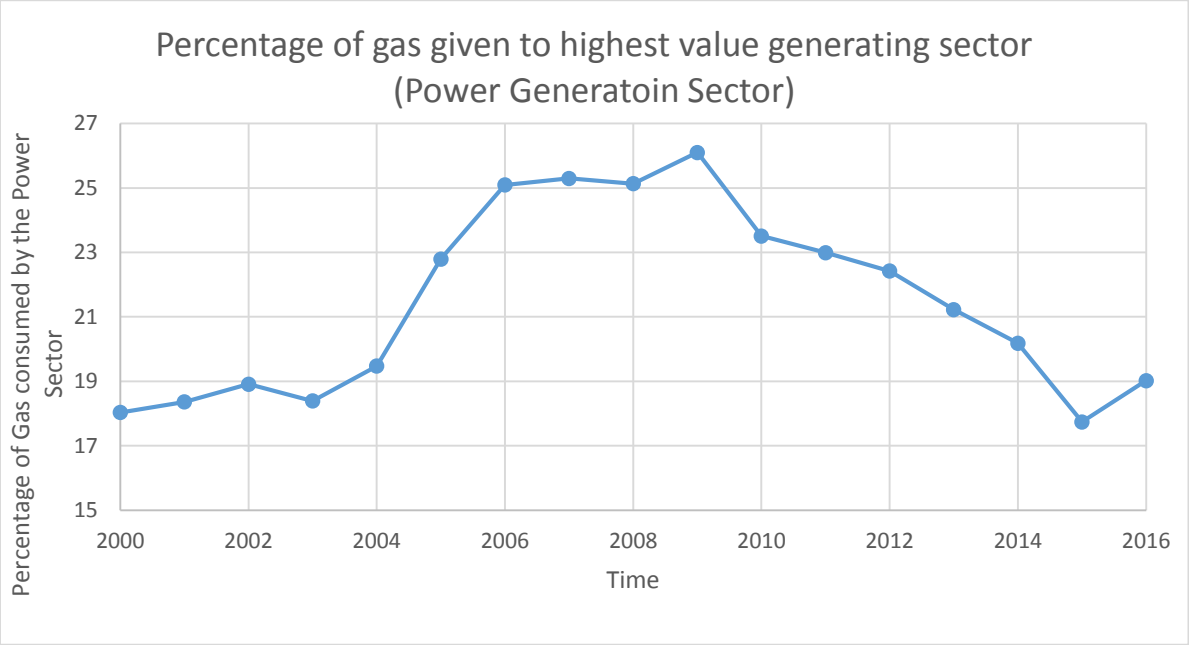
Source: KMPG

Correcting Financial Incentives: Currently, gas distribution companies are guaranteed a 17% rate of return on current assets. Such returns incentivize network expansion over maintenance and revenue generation. Changing the fixed income sources of gas distribution companies will help improve the sector. According to KPMG, SSGC has 4.9 leaks/km of gas pipeline. In comparison, the average leaks per kilometer is 0.215 for Germany and 0.36 for the US[5].

Remove cross-subsidization: The distribution companies are overcharging some sectors including power sector. The profits from overcharging are used to subsidize other sectors. Uninterrupted Power supply is a pre-requisite for all manufacturing concerns. Pakistani power sector works on a cost-plus model. Therefore, when gas for the power sector is overcharged, the cost of electricity increases leading to cost-push inflation of manufactured goods. As a result, domestic households suffer from inflation and industries suffer from underproduction. In essence, removing cross-subsidy for the residential sector would reduce inflation for household and input costs for industries.

[5] Only figures or Germany and UK were quoted.

Allocate more gas to power sector: Gas is allocated among sectors to manage gas shortages in the country. This rationing forces the government to prioritize the gas delivery to different sectors. At present, domestic users are preferred over other sectors. However, in order to promote economic activity and exports, gas allocation to the power generation sector needs to be improved. The following graph indicates the low share of gas provided to power generation.



Source: Ministry of Finance

Remove political factor from gas distribution business: The government has majority stakes in both SNGPL and SSGC. This leaves gas distribution in Pakistan politically vulnerable. Two principal political motives exacerbate the issues of Pakistani gas sector. First, there is a motive to increase the number of gas connections. Political bodies force the gas distribution companies to divert gas to low use activities such as household connections. Second, these political bodies do not allow the gas prices to increase to increase in line with international prices. In essence, diluting government share would allow Gas distribution companies to operate on economic principles.

The following analysis assumes that the aforementioned gas reforms will achieve two outputs. First, domestic gas availability will increase because gas price rise will increase the rate of return on domestic gas exploration and production activities. Second, inefficiencies in the system such

as large allowable UFG and cross subsidization will be removed. Given these assumptions hold, Gas sector reforms would reap political, economic and industrial advantages. Moreover, these reforms will also lead to increased reliability of electricity and decreased cost of generation. Increased reliability and decreased cost of generation would come through following channels.

A decrease in Captive power generation: With gas reforms, gas supply to electric power generation is expected to increase. With increased gas-fueled power generation, electricity reliability will improve. Increased reliability of power supply would decrease the incentive to install captive power. Captive power generation has many disadvantages to the nation. First, they are more polluting than large scale producers as they are near cities and have low masts to expel fumes. Second, captive power generation is also inefficient in terms of converting fuel to electricity. This makes them more expensive to nation in terms of import bill for fuel. With reduction in use of captive power, both Pakistan's exposure to extra import bill and urban pollution will decrease.

Power generation shifted to efficient technology: Gas powered electricity generation is not only more efficient but also environmentally sustainable as compared to other thermal power technologies. It is especially true for Pakistan, where the country's most efficient plants are Gas powered[6]. With gas sector reforms, the electricity generation in the country would shift towards efficient fuel mix. Moreover, Pakistan has cost-plus pricing policy therefore, shifting power generation to gas-based power plants would also reduce the cost of electricity generation in the country.

Exploit the gas pipeline to reduce fuel cost component: The fuel for thermal power plant has to be constantly transported to the production facility. For oil, that transport medium is expensive tanker trailers. Transportation cost is built in generation tariff, as part of the variable Operations and Maintenance cost. Minimizing the O&M cost component is expected to decrease generation tariffs. Currently, the country does not possess appropriate oil pipeline infrastructure to cheaply transport fuel to oil based power plants. However, Pakistan has one of the most longest gas

[6] The word gas is used for both pipeline gas and LNG.

pipeline networks in the world. This implies lower fuel transportation costs for gas based power plants and subsequently reduced tariffs.

Low-cost electricity eliminating circular debt: With gas reforms, the cost savings from eliminating upstream efficiencies are expected to have a trickle down effect. With dependable and cheaper electricity, the share of industry as power purchaser is expected to increase. Increased share of industrial customers will increase the recovery rates of distribution companies. Higher recovery rates will reduce the transmission and distribution losses which will aid in the tackling circular debt.

Conclusion

Pakistan is in dire need of Gas sector reforms as they will lead to positive economic effect of removing allocative inefficiencies. Moreover these reforms will also have positive political effect by alleviating gas shortage. Industry will also benefit from increased gas availability. In a nutshell, power sector will experience reduction in costs and increase in reliability of power production.

These reforms will entail a series of regulatory and institutional measures. 1) Government will have to dilute its shares in SNGPL and SSGC to minimize political interference 2) competition needs to be promoted 3) Difference between domestic and international gas price needs to be minimized 4) The current allowable tariff recoverable UFG will have to be reduced and 5) Finally cross subsidization to the domestic gas users will have to be phased out.

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Our Members

	Member IPPs	Primary Fuel	Alternate Fuel	Gross Capacity (MW)	Net Capacity (MW)
1	The Hub Power Company (Tehsil Hub)	RFO	HSD	1292	1200
2	Pakgen Private Limited	RFO	-	365	350
3	Lalpir Private Limited	RFO	-	362	350
4	Kohinoor Energy Limited	RFO	-	131	126
5	TNB Liberty Power Limited	GAS	HSD	235	211
6	Uch Power (Private) Limited	GAS	-	586	551
7	Rousch (Pakistan) Power Limited	GAS	HSD	412	395
8	Habibullah Coastal Power (Pvt.) Co.	GAS	HSD	140	126
9	Attock Gen Limited	RFO	HSD	165	156
10	Atlas Power Limited	RFO	HSD	225	214
11	Nishat Power Limited	RFO	HSD	200	195
12	Nishat Chunain Limited	RFO	HSD	200	195.6
13	Liberty Power Tech. Limited	RFO	HSD	200	195
14	Orient Power Company Limited	GAS	HSD	229	213
15	Saif Power Limited	GAS	HSD	229	209
16	Sapphire Electric Company Limited	GAS	HSD	225	209
17	Halmore Power Generation Co. Ltd.	GAS	HSD	225	209
18	Engro Powergen Qadirpur Limited	GAS	HSD	227	217
20	Uch-II Power (Pvt) Ltd	GAS	-	404	375.2
21	Saba Power Company (Private) Limited	RFO	-	134	125.5

Established in 2010, IPPA serves as an advisory body for Independent Power Producers (IPPs) in Pakistan. IPPA liaises with the government and related departments such as NEPRA, SECP, WAPDA, CPPA-G, NTDC and PPIB and also serves as a facilitator between various IPPs and stakeholders within the power sector.

If you have any suggestions or feedback, kindly write to us at feedback@ippa.com.pk