



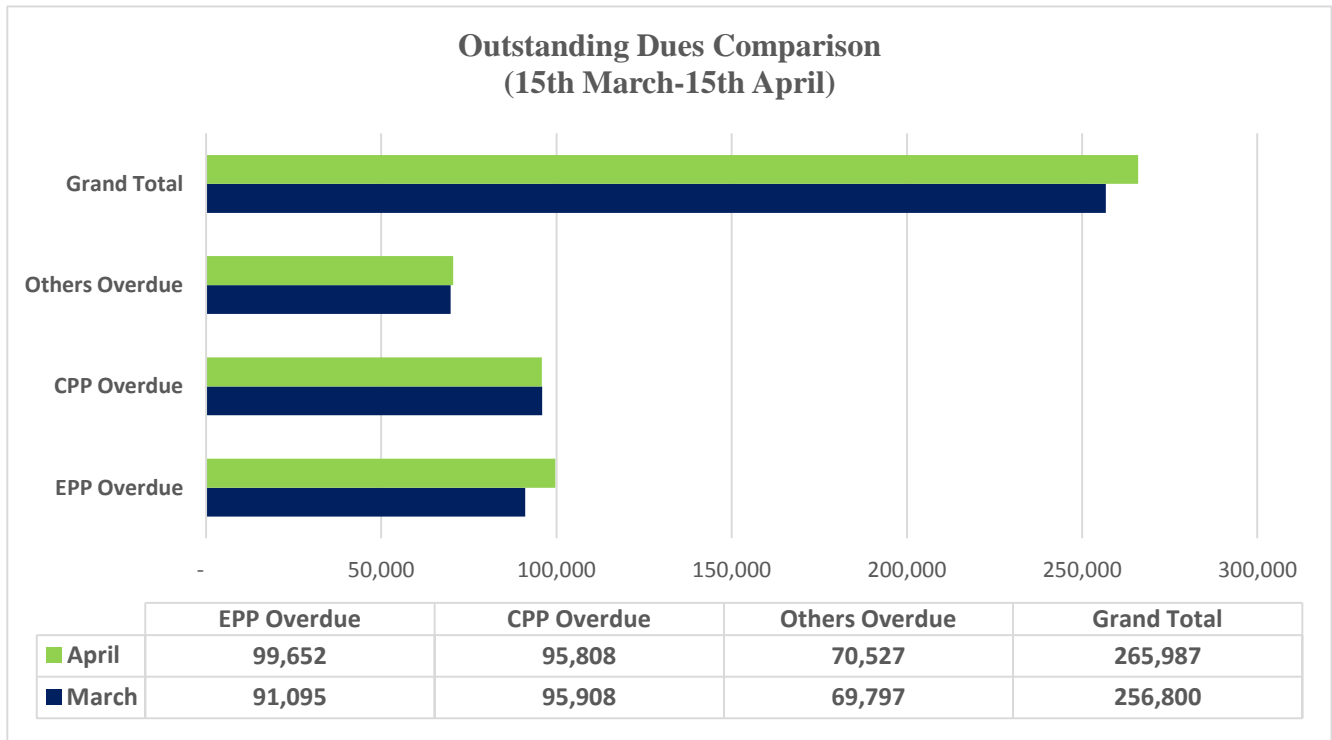
# INDEPENDENT POWER PRODUCERS ASSOCIATION

## MONTHLY NEWSLETTER

Welcome to the twenty-sixth 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

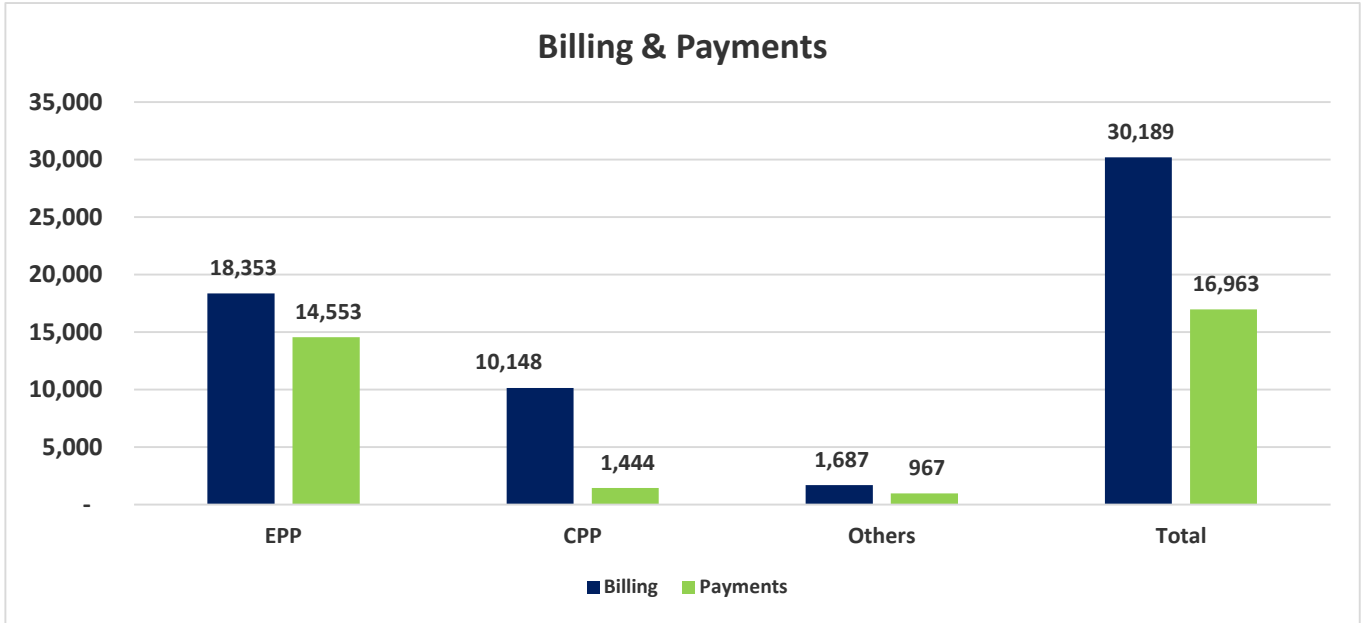
#### Outstanding Dues as of 15<sup>th</sup> April, 2019 in PKR Millions



Source: Member and Subsidiary IPPs

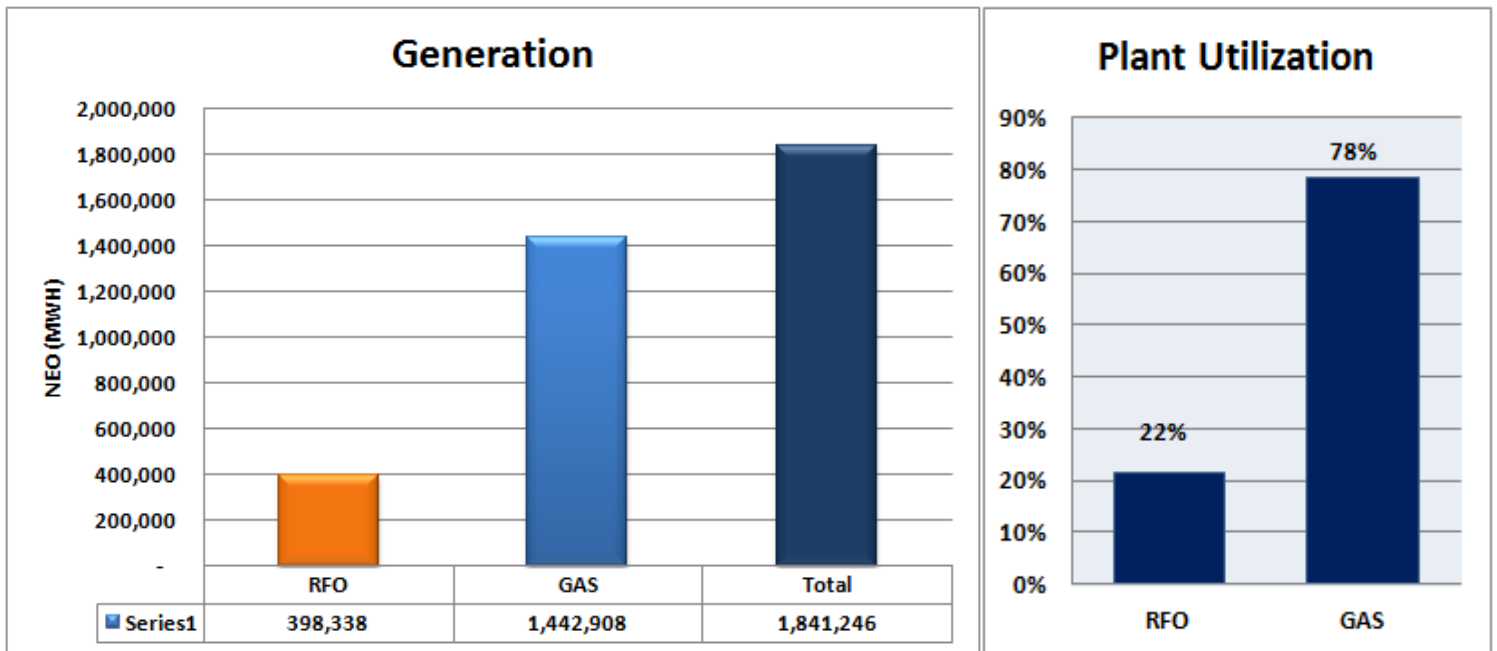
# Monthly Infographics

## Billing and Payments in April 2019 in PKR Millions



Source: Member and Subsidiary IPPs

## Net Generation and Plant Utilization in April 2019



Source: Member and Subsidiary IPPs

## Defaulting on electric power bills lies at the heart of Circular Debt Crises and the Power Crisis

Lahore: Defaulting on electric power bills lies at the heart of Circular Debt Crises and the Power Crisis. In a bid to control defaults, the ten power distribution companies (DISCOS) have published the names of the defaulters. Apart from public listing, these defaulters have also been given a deadline to clear their dues. It is pertinent to mention that 4,693 of these defaulters have already been disconnected because of non-payment of due bills. Most of these defaulters are tube well operators that use the tube wells for agricultural purposes.

The 10 disco companies have a combined default sum of Rs 293.3 billion. Ninety-two percent of these defaults are owed to SEPCO and QESCO. QESCO is owed a whopping Rs 211.33 billion. Meanwhile, SEPCO is owed 59.29 billion. This figure is surprising considering the small coverage area for the Sargodha based power distributor.

The ten distributors share more than 45000 defaulters among them. In terms of the greatest number of defaulters, QESCO took the lead with more than twenty-seven thousand defaulters. In-terms of depth of defaults (average due-payment per defaulter), LESCO stood at the top with an average defaulter owing more than Rs 9 million.

Federal Energy Secretary Irfan Ali clarified the intention behind public listing of names stating that aim was not to humiliate the defaulters but to remind them of their duty towards their nation. The full list of default sums and number of defaulters for this DISCOS is summarized as follows.

DISCOS	DEFAULTERS	DUES
Qesco	27,042	Rs211.33 billion
Pesco	8,219	Rs13.34 billion
Tesco	2,421	Rs4.72 billion
Sepco	6,494	Rs59.29 billion
Hesco	395	Rs730 million
Lesco	460	Rs3.5 billion
lesco	30	Rs107.1 million
Mepco	324	Rs170.13 million
Gepco	30	Rs166.2 million

Source: Express tribune

## Discos Ordered to Protect Fasting Customers during Selected Times

MD PEPCO, Mr. Waseem Mukhtar directed all CEOs of DISCOS to ensure that no load shedding is not scheduled during times of sehar, aftaar and taraweeh. Furthermore, there should be no load management in category I and II feeders. Meanwhile, load management in category III, IV, V, VI and VII feeders should be limited to 1, 3, 5, 6, 5 and 7.5 hours respectively.

In case of system constraints, it should be ensured that no same feeder sees consecutive load management during aftaar and sehar. In addition, the CEOs were also instructed to be available for relevant liaison with the power ministry as well as chambers for industries and business. Moreover, CEOs are also expected to be available in case of any forced load shedding. Furthermore, it was announced that zero rated industries, continuous processing industries and prime-users would see no load shedding.

Karachi Electric (KE) responded to the order by asking for electricity from the national grid. KE stated that it will release its sehar and aftaar plans as soon as it receives

confirmation on the delivery of additional power from the national grid.

*Source: Express tribune*

## **150 MW of Power Allocated to Ke to Ensure Smooth Supply to Consumers**

ISLAMABAD: Islamabad: The ECC convened its meeting under the chairmanship of Dr Abdul Hafeez Shaikh to discuss the various economic matters. These matters included power shortage in Karachi, for which the ECC approved a 150 MW power supply from the main grid.

*Source: Pakistan Today*

## **Karot Power Project**

BEIJING: In a statement to the China Daily, China Three Gorges Corp reported that construction on the Karot power project will complete by April 2021. The \$1.74 billion project will help Pakistan come-up with a green solution to the national power shortage. The project commenced construction in 2015 and is the first investment project of the Silk Road Fund. The hydro project will employ up to 2200 locals during the construction phase. Once the 720 Mega-watt projects are completed, it is expected to produce up to 3.2 billion kilowatt hours of clean annual power supply.

*Source: China Daily*

## **Power China Resources Limited Considering Further Investment in Pakistan**

Karachi: Power China Resources limited and Port Qasim Coal-Fired Power Plant Chairman Sheng Yuming announced that Power China was considering further investment opportunities in the country's power sector. She said that the company was interested in development of Industrial Parks, Hydel, wind and solar power projects.

Port Qasim is a 1320 MW power plant that consists of two 660 MW units. According to Sheng "The construction of the project officially started on May 21, 2015, and the understanding of the project was signed between Pakistan and China when President Xi visited Pakistan in 2015". He also said that the company was collaborating with CPPAG and NTDC in order to resolve matters pertaining to non-payment of dues.

*Source: Daily Time*

## Oil Prices Climb on the Back of

Tensions within the Gulf have increased the oil price by more than \$3 per barrel. The Brent Crude oil index moved from \$69 earlier in the month to \$72 per barrel. The American and Iranian administration have been trading barbs at each other since the US president Donald Trump pulled out of The Joint Comprehensive Plan of Action (JCPOA) deal.

Tensions reached their nadir after four oil tankers were attacked near the strategic strait of Hormuz. Two of these ships were flying Saudi Flags. Saudi and American officials alleged Iranian involvement in the attacks. Meanwhile Irani officials claim these attacks to be false flag operations designed to lure Iran into a geo-political war.

Saudi Arabi has an alternate route for exporting oil via east of the country. This oil is expected to be transported via oil pipelines running from the east to west of the country. Global alarms started ringing when a Houthi drone damaged one section of the aforementioned pipeline. Therefore, it seems that a war will debilitate all of oil supply from Saudi Arabia to the global market.

War in the region will have negative implications for the power sector since oil is used as a basic input in thermal powered power generation and as a supplementary input in the construction and operation of other types of power projects. The Strait of Hormuz sees the majority of the world's oil tankers pass through its waters and a war in this region will have global implications through its impact on oil prices. The following image of the Strait of Hormuz underlines the strategic importance of the Gulf strait.

*Source: CNN, BBC, CNBC*

## Chile inaugurates Stored Electricity Power Project.

A Chilean utility (AES Gener) has initiated the project to install a 50 mega watt-hour (MWh)

battery storage that will allow storage of energy without the creation of a reservoir. This mechanism will allow a supply of 10 MW of power for a period of five hours. The project was implemented at a 178 MW run-of-the river project at the Alfafal hydroelectric plant.

Such batteries use lithium ion technology in order to store electricity for later use. Since these facilities can store potential energy without the need for physical infrastructure, these dams are often called "virtual dams". These virtual dams are expected to circumvent the usual social and regulatory friction associated with physical dams.

Currently, more than 95 percent of the world's stored energy comes in the form of pumped storage. In this technology, a turbine is placed between two reservoirs. Water is transferred from one reservoir to another via use of pumps. This energy is then released from the reservoir to implement power generation.

*Source: Forbes Energy*

## Pacific Gas and Electric (PG&E) seeking approvals for GWh worth of battery projects

Pacific Gas and Electric (PG&E) is seeking approval for four battery projects for industrial scale storage of batteries. These four projects will be located in the vicinity of the Moss Landing Power Plant which is located in California's Central Coast near Monterey. Combined together, they will have storage capacity totaling 567 MW / 2.27 gigawatt-hours (GWh). PG&E has received more than 90 variations of the battery arrangement. These 90 variations were presented in the form of 29 projects from different developers. The biggest of these four projects will be operated by Vistra Energy Corp.

Other firms vying for this project include Tesla Energy Power Plant. Tesla Energy power plant will be built on a six-acre space. The project will use infrastructure that was previously allocated towards fossil fuel power generation. The facility will be

sized at around 182.5 MW / 730 MWh which makes it the second largest acknowledged storage energy project. The largest electricity storage project in the world is the 200 MW / 800 MWh flow battery project currently under construction in China. Elon's battery has the option of adding an extension and increasing it to more than 1 GWh. This would corroborate with the minutes of Tesla's recent earnings call.

Industrial Batteries are used to store energy during low demand hours and releasing that stored energy during the peak hours. In the long run, such a mechanism will have the effect of decreasing the cost of peak energy hours

All of these projects are under construction because California has ordered the state's three investor-owned utilities to procure 1,325 MW of storage. This storage has to be procured by 2020. Within this 1325 MW of storage, 580 MW MW is owned by PG&E.

*Source: PV Magazine*

# A GREEN FUTURE POWERED BY NON-RENEWABLES

It's a no brainer Renewable energies (RE) are the future. Being the sources of clean, inexhaustible and increasingly competitive energy, RE differs from fossil fuels principally in their diversity, abundance and potential for use anywhere on the planet. Moreover, they neither produce greenhouse gases nor polluting emissions and more so their costs are also falling and at a sustainable rate.

The Conventional narrative paints non-renewable power generation (NRPG) technologies as transitional fuels. These transitional fuels are labelled as a temporary inconvenience while the world switches towards renewable energy generation. However, once the transition is complete, i.e. RE capacity has been installed, the world will move to RE technology. Therefore, the contemporary narrative sees no space for NRPG in the future. The following discussion will beg to differ. Not only will NRPG play an important role in speeding up the transition for RE but it will also play an important role, once the complete transition has taken place.

## Moving towards a Green Future

Before analyzing the transition towards RE, it is important to make a distinction between two major types of RE and the issues that they introduce into power calculation. RE can be classified into Variable Renewable Energies (VRE) and Non-Variable Renewable Energies (NVRE). VRE includes solar and wind power while NVRE comprises of more dependable sources like hydel energy. NVRE has matured since the last six decades therefore most of the touted growth in RE is actually is actually growth of VRE. Since VRE will form the front guard of RE revolution, therefore it might be worthwhile to focus on the symbiotic relationship between non-renewable power generations (NRPG) and Variable Renewable Energies (VRE).

VRE power sources are non-dispatchable<sup>1</sup> because they don't have a potential source of stored energy<sup>2</sup>. This lack of storage ability forces VRE producers to contend with reliability (refers to the predictability of power generation supply) and variability (refers to the fact that output from a VRE generation facility can largely vary during small time periods) issues.

NRPG can help the renewables sector during transition by using sliding pressure mechanism to maintain efficiency, via cross-subsidization, and hybridization.

***Using sliding pressure mechanism to maintain higher efficiency:*** A power system operator has to constantly match the demand and supply within a system. The supply from VRE can vary suddenly and unexpectedly due to weather changes. When that variation happens, the supply-shortfall has to be replaced by NRPG. With the current technology for NRPG, system operators have to use Peaker plants. Peaker plants can start at short time notice but have the disadvantage of being inefficient. Lower efficiency plants cause more pollution. Therefore, shifting power production to Peaker power plants might have the unintended effect of increasing emissions<sup>3</sup>. NRPG technology can help the VRE avoid this increase in emissions by using power plants whose efficiency is independent of their starting times<sup>4</sup>.

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<sup>1</sup> Cannot be generated at will.

<sup>2</sup> For NVRE, that source of generation can be stored water or the caloric content in biomass energy content.

<sup>3</sup> <https://www.forbes.com/sites/bradtempleton/2019/03/13/putting-solar-on-your-roof-doesnt-make-your-electric-car-driving-green-but-this-might/>

<sup>4</sup> This is done via using sliding pressure mechanisms for NRPG firms. Sliding-pressure mechanisms allow the power output to decrease without decreasing the efficiency of power production. Such mechanisms can be included, in Nuclear, Oil and Gas based NRPGs.

**Cross-subsidization:** VREs have seen major subsidies from governments all over the world. The US alone spent close to \$11 billion in 2016. These subsidies are justified on the grounds of environmental impacts and early learning curves associated with manufacturing in a new industry. The more the subsidy to VREs, the faster will be their implementation. However, this argument does not sound very convincing to the tax payer that is funding the subsidies. NRPG can alleviate these tax payer concerns by becoming a vehicle for funding these subsidies. A carbon tax on NRPG can serve as a reliable source of funding for subsidies on VREs.

**Hybridization of Power:** Furthermore, NRPG facilities can become good customers for the VRE services. Every power generation facility has to fulfill an investment cost related to laying down the transmission network. This cost has already been paid by NRPG facilities. Therefore, installing additional solar power generation capacity at current NRPG facilities can create hybrid facilities that minimize Levelized Tariffs and maximize Return on Energy Investment (ROEI).

**Maintaining Critical Power Systems:** For many countries, the installed VRE capacity supersedes their current demand. However, the variability of VRE facilities means that they will not be able to meet peak demand even if they have the stated capacity to do so. In such a situation, maintaining NRPG facilities becomes important in order to ensure system stability. A practical example can be drawn from Germany, which had to roll back its NRPG decommissioning program in order to ensure required dependable power supply<sup>5</sup>.

Apart from playing a strong role in the short run, NRPG will also serve as a key component in long-term power generation market development.

## **Their role in the future**

In the long-run, NRPG will help VREs by 1.) forming a viable market for carbon emission markets. 2.) Fund the investment into transmission and 3.) Help VRE meet the demand for an electrified transport sector in the face of critical material shortages. Let's start with carbon emissions market.

**Carbon emissions market** - Currently the VRE market can ensure a high rate of return because the market is in growth stage. As VRE markets mature, Renewable Energy Power generators will need to find a source for increasing their rate of returns. At the same time, the world needs to control its carbon emissions. Luckily carbon cap and trade programs can come to the rescue of both parties. Legislation can allow VREs to monetize their benefit to the environment by allocating them emission quotas. NRPG firms can become reliable customers to VREs supplying these emission quotas. This way, NRPG can support the VREs by increasing their profitability.

**Fund investment into transmission** - Geographically, VREs can be implemented either as a distributed system or via a feed-in-tariff mechanism. In both the situations the levelized-cost of power generation for VREs have a higher transmission cost as compared to NRPGs. This is because installation of transmission cables is a fixed investment and that fixed investment lies dormant much longer for VREs as compared to NRPG. Transmission taxes on NRPGs can fund these investments into long range transmission lines as well mesh networks required for distributed generation networks.

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<sup>5</sup> <https://www.reuters.com/article/us-germany-energy-powerstations-idUSKCN1RD10V>



***Meet the demand of electrified transport sector*** - In the long-run, once fourth industrial revolution has been mainstreamed, VREs will face two new realities. First, they will find themselves needing to power an electrified transport sector. On an average, the global transportation network requires 155,556 tera watt hours of power every year<sup>6</sup>. With a VRE availability of 50 percent, that translates to a need of installing 35.5 Tera Watt hours of power generation facility. Second, the raw materials for VRE facilities will start to become ever scarce<sup>7</sup>. This will imply that the VRE market will not be in a position to completely provide for the newly electrified transport sector. NRPG can ensure that this need is met via its facilities.

## **Conclusion**

VREs are the future of power generation. However, this does not mean NRPG has become redundant. NRPG has important roles to play in the short as well as the long-run. In the short-run, NRPG will speed up global adoption of VREs. Meanwhile, in the long-run NRPG will aid VREs by helping them share the burden of an electrified transport sector while at the same time provide them with a source of funding the required transmission investments.

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<sup>6</sup> <https://www.sciencedirect.com/science/article/pii/B9780128167229000057>

<sup>7</sup> <https://www.metabolic.nl/publications/metal-demand-for-renewable-electricity-generation-in-the-netherlands/>

# 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
<b>Subsidiary IPPs</b>					
19	Hub Power Company Ltd (Narowal)	RFO	-	220	214
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](mailto:feedback@ippa.com.pk)**