



***“Circular Debt in Power Utilities and Strategies for Relief.  
A Case Study of Pakistan Power Sector.”***



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**Fall 2023**

*Majors: FIN*  
*S.No. F3*

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**Topic of Research:** Circular debt in power utilities and strategies for relief. A case study of Pakistan Power Sector.

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## **ABSTRACT**

The power sector is the mainstay of the nation's economy and has a positive relationship with the growth or GDP of the country thereby affecting the economic and social prosperity of the citizens. Nations that are now considered developed were able to attain this position due to emphasis on energy and particularly the power sector. In the Pakistani context, the power sector did not evolve to newer power technologies. Lack of vision for future requirements, political interference, and inconsistency of policies have affected the Pakistani Power Sector. The introduction of circular debt in the power sector has complicated the matter. The effects of circular debt could be seen in the country in the form of power outages, downsizing of businesses, inflation, and unemployment. In addition, the circular debt in the power sector has created a parallel circular debt in the energy sector too particularly in the petroleum and gas sectors. For example, PSO is facing acute financial difficulties in the purchase of RFO that is used for power generation.

The motive of this project is to suggest remedies to curtail the increase of circular debt such as the implementation of the CTBCM model without any further delay, and the privatization of DISCOs. In addition, this report also focused on the financial aspect that led us to the conclusion that inadequate cash inflow to DISCOs is one of the causes of mounting circular debt. One of the hallmarks of this project is that we were able to develop a model revealing the power sector's circular debt as the root cause of circular debt in the petroleum sector.

## **ACKNOWLEDGEMENT**

We begin with the name of God Almighty who is all-powerful, merciful, and helpful. HE blessed us with countless bounties and words fall short to express our gratitude for HIS blessings. HE may delay our prayers but there is never no from HIS KINGDOM. Surely, HE is all knowledgeable and has good plans for us which are beyond our imagination. HE Almighty created the most pious personalities that still exist to this date. These divine personalities not only connect us to GOD Almighty but they are also GOD-sent assistance and pray for us.

We begin our acknowledgment by expressing our gratitude to GOD Almighty who helped us in accomplishing this task. Without GOD's assistance, we couldn't have completed this project on time. We would take this opportunity to share the prayers of our parents to all our fellow students who may find this project useful in their project/research. Surely, parents' prayer changes the difficult times of a person. Our parents not only supported us with prayers but also financially who never let us feel the effects of financial downturns.

Our supervisor Sir Abdullah Hafeez deserves a high level of gratitude for being supportive during the entire course of the project. Sir Abdullah Hafeez encouraged us to prepare the project report following market trends that helped us in skill enhancement. The supervisor's openness to ideas helped us to select project topics and accomplish the tasks easily. Despite the workload, the supervisor held progress sessions to give feedback on the different milestones that we achieved on different timelines.

I would like to make a special dedication to my mother who motivated me to seek an MBA degree that has proved a turning point for me. I couldn't have achieved this corner without her prayers despite her illness. After a long battle with illness, my achievement makes my mother happier than ever before. (ASAD ALI).

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## **List of Abbreviations**

APR	Annual Performance Report
AECB	Abnormal Electricity Consumption Behavior
AMR	Automatic Meter Reading
ADB	Asian Development Bank
ARL	Attock Refinery limited
AJK	Azad Jammu Kashmir
BOO	Build Operate Own
BOOT	Build Operate Own Transfer
CHASNUPP	Chasma Nuclear Power Plant
CPPA-G	Central Power Purchasing Agency-Guarantee
CCC	Cash Conversation Cycle
CTC	Cost To Company
CTBCM	Competitive Trading Bilateral Contract Market
CPP	Captive Power Plant
DISCO	Distribution Company
ECC	Economic Coordination Committee
FY	Fiscal Year
FPA	Fuel Price Adjustment
FESCO	Faisalabad Electric Supply Company Limited
GENCO	Generation Company
GWh	Giga-Watt per hour
GDP	Gross Development Product
GEPCO	Gujranwala Electric Power Company Limited
GoP	Government of Pakistan
HUBCO	Hub Power Company Limited
HESCO	Hyderabad Electric Supply Company Limited
IMF	International Monetary Fund
IPP	Independent Power Producer
IESCO	Islamabad Electric Supply Company Limited
IAA	Independent Auction Administrator

KWh	Kilo-Watt per her
KV	Kilo-Volt
KPI	Key Performance Indicator
KESC	Karachi Electric Supply Company
K-Electric	Karachi Electric
KANUPP	Karachi Nuclear Power Plant
LESCO	Lahore Electric Supply Company Limited
MW	Mega-Watt
MWh	Mega-Watt per hour
MEPCO	Multan Electric Power Company Limited
MkWh	Million kilo-Watt per hour
MoF	Ministry of Finance
MVA	MegaVolt Ampere
NTDC	National Transmission and Dispatch Company
NEPRA	National Electric Power Regulatory Authority
NRL	National Refinery Limited
NEECA	National Energy Efficiency & Conservation Authority
OPEC	Organization of the Petroleum Exporting Countries
OGDCL	Oil and Gas Development Company Limited
O&M	Operation and Maintenance
PPIB	Private Power Investment Board
PPMC	Power Planning and Monitoring Company
PHL	Power Holding Company
PITC	Power Information Technology Company
PEPCO	Pakistan Electric Power Company Limited
PAEC	Pakistan Atomic Energy Commission
PTI	Pakistan Tehreek-e-Insaaf
PDM	Pakistan Democratic Movement
PPA	Power Purchase Agreement
PPL	Pakistan Refinery Limited
PSO	Pakistan State Oil
PSEDP	Private Sector Energy Development Program
PCRET	Pakistan Council of Renewable Energy Technologies

PHPL	Power Holding Private Limited
PESCO	Peshawar Electric Supply Company Limited
PMLTC	Pak Matiari Lahore Transmission Company Limited
QESCO	Quetta Electric Supply Company Limited
RFO	Residue Furnace Oil
RNLG	Regasified Liquefied Natural Gas
SDG	Sustainable Development Goal
SECP	Securities Exchange Commission Pakistan
SNGPL	Sui Northern Gas Pipeline Limited
SSGC	Sui Southern Gas Company
SEPCO	Sukkur Electric Power Company Limited
SDG	Sustainable Development Goal
SPP	Small Power Producer
T&D	Transmission and Distribution
TDS	Tariff Differential Subsidy
TOE	Tonnes Oil of Equivalent
UoSC	Use of System Charges
USA	United States of America
WAPDA	Water And Power Development Authority

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# Chapter 1: Introduction

## 1.1. Background

Energy has been playing a key role in the development of nations besides the availability of natural resources and skilled human resources (Shakeel et al., 2014). There has been a positive correlation between energy and GDP growth. Oil and Gas are considered important sources of energy that drive the economy of any nation. According to Mendes et al., 2023, both oil and gas are used in the production of electric power. The energy types are used as input in power plants to generate electricity that is distributed through powerlines for domestic and commercial purposes (Bhattarai et al., 2022). In recent years, the power sectors around the world have been transitioning to renewable energy that is environment friendly and production cost is cheap. There are two types of energy:

1. Non-renewable Energy comprises fossil fuel, coal, and natural gas
2. Renewable Energy consists of Solar, Geothermal, Biomass, and Wind

Most of the world's power generation comes from non-renewable energy and developed nations are still dependent on this source of energy. The non-renewable energy sources are depleting at a fast rate and steps are being taken worldwide to become less dependent on traditional energy sources and use alternate sources for generating power. Solar and wind power generation are examples of such transition from fossil fuel, natural gas, etc. (Hassan et al., 2023).

The primary reason for the transition from traditional energy sources are increased emission of carbon gas that is affecting the environment. This emission has caused deterioration of the OZONE layer and an increase in global temperature (Bhuiyan et al., 2022). The other reason is to become less dependent on fossil fuels, coal, and natural gas. Not every country is self-sufficient in natural resources. For example, Europe imports most of its gas from Russia. With the onset of the Russian and Ukraine War, a trade embargo has been on Russian enterprises by many Western and pro-Western countries. Similarly, according to (Mr. Andrea Pescatori and Nazer (2022) the world is mostly dependent on OPEC for production and price control. Any conflict in the Middle East greatly affects oil production and price resulting in price increases for different commodities and goods across the world (Arezki et al., 2017) (Zia-Ur-Rehman et al., 2018). Countries that are dependent on international donor agencies such as the IMF or World Bank have to comply with trade restrictions as these donor organizations are dominated by influential world powers such USA. Such dependent countries are left with no other option

except to buy sources of energy at higher prices from other nations. The transition from non-renewable energy sources to renewable energy sources is meant to reduce greenhouse gas emissions, produce power at a cheaper price than that produced by fossil fuel, coal, and natural gas, and become less dependent on exporting nations of these natural resources.

### 1.2. Power and effects on environment

Power generation by renewable energy sources has become the priority of every government as prevents environmental degradation (Trinh & Chung, 2023). The previous decade has witnessed rapid growth in economies. This growth was achieved by sacrificing the environment. This growth has not stopped and in recent years India has appeared as the world’s emerging economies. According to the International Energy Report published for the year 2022, carbon emissions rose to 0.9% setting a new emission record of 36.8GigaTons and it is estimated that this figure will rise in the year 2023. The highest contribution of carbon is the power sector at 1.8% and coal-based power plants were the highest producers of emissions. They produced 2.1% of emissions. This can be attributed to the fact that in the year 2022, global power demand rose to 2.7% (International Energy Agency, 2023). The following shows industry-wise emission

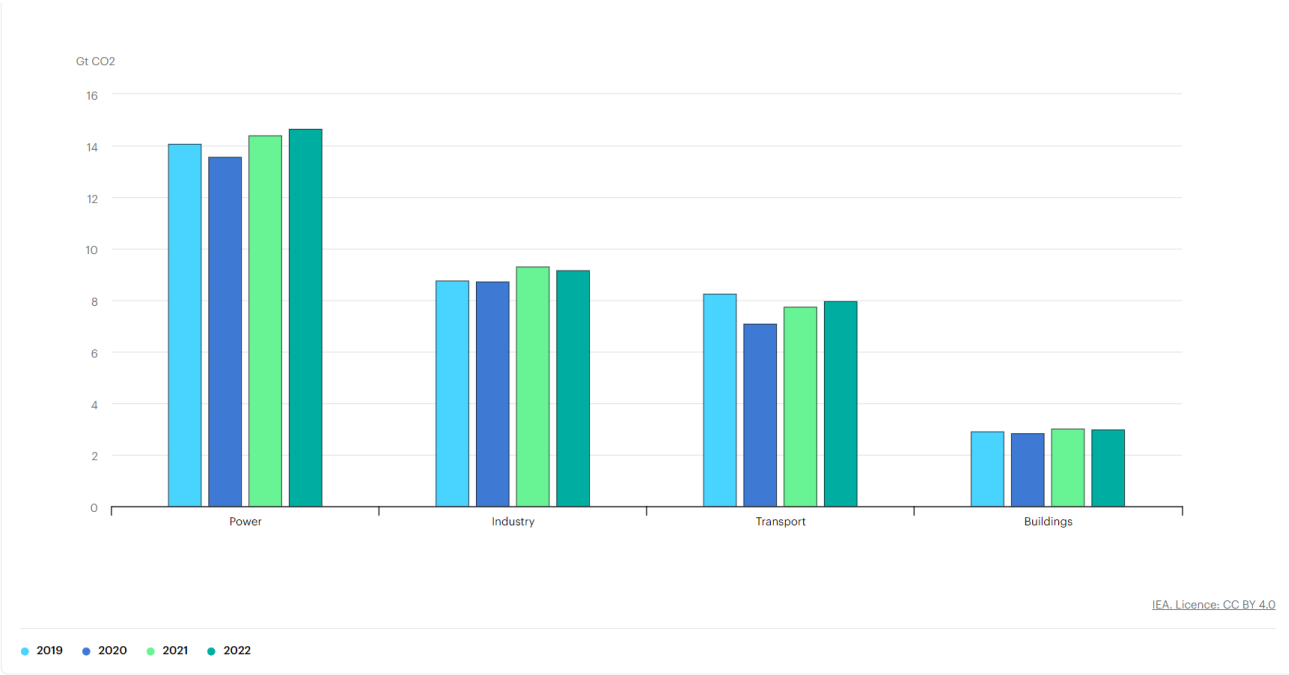


Figure 1: Industry-wise carbon emissions in the year 2022 Source ([www.iea.org](http://www.iea.org))

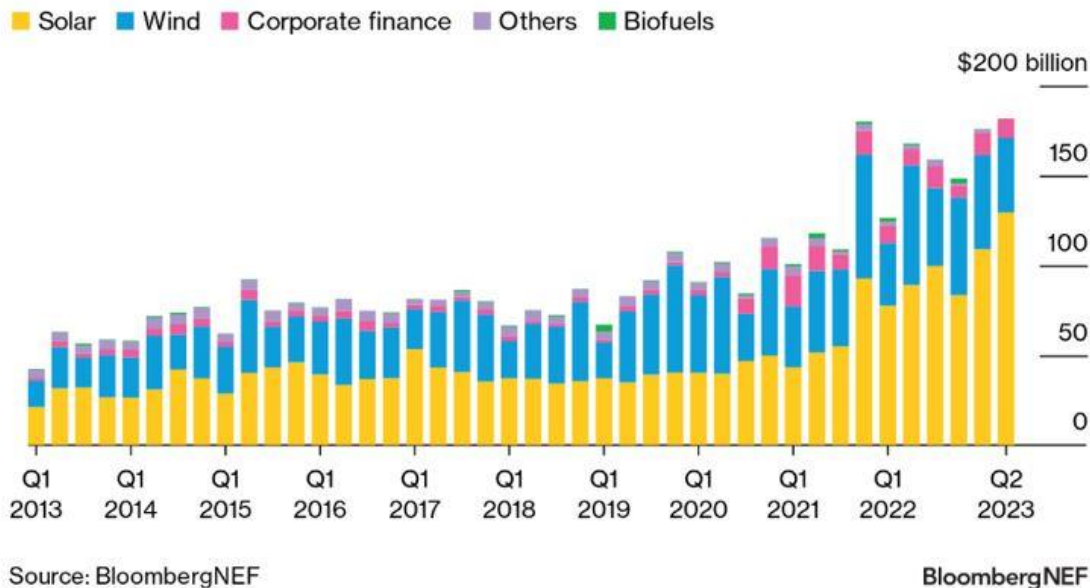


Many Countries have undertaken different steps to reduce emissions resulting from power generation. For example, in the year 2022, China invested \$495 Billion in renewable energy. The highest investment was in Solar power amounting to \$164 Billion and \$109 Billion in wind farms by China (*A Record \$495 Billion Invested in Renewable Energy in 2022*, 2023). According to (Rahman et al., 2021) China is amongst the highest CO2 producers. The US is the second highest contributor to renewable energy sources with 50 billion dollars in Solar parks. Besides investments made by developed economies in renewable energy sources, many developing countries are also undertaking projects to meet power requirements from solar, wind, and bioenergies. (Sjölander & Espling, 2023) (van der Leer et al. (2023)) Sweden has made more rapid progress in power generation from alternate energy sources than any other country and in the coming decades it will completely transition from fossil fuel, and gas to solar and wind power.

According to (Bhuiyan et al., 2022) (Shoirahon Odilova et al., 2023), the investment in renewable energy will not only help preserve the natural environment but also in economic growth and unemployment. Since power generation is dependent upon fuel, gas, and coal, these price increases of these resources greatly affect power production which causes overall price increases of all goods and services. Due to higher prices, the demand for goods decreases resulting in lower sales and high manufacturing and operating costs. Due to high cost and low demand, the companies scale down their businesses resulting in increased unemployment. Since every production cost is associated with a power tariff, switching power generation to alternate energy sources would lead to economic benefits and low unemployment.

## Renewable Energy Investment Hit Record \$358 Billion in 1H 2023

Global quarterly investment in renewable energy



**Figure 2: Renewable Energy Investments Year 2023.**Source(BloombergNEF)

### 1.3. History of the Power Sector of Pakistan

Pakistan had a 60 MW installed capacity for generating power when it gained independence from British rule in 1947 (Aslam et al. (2021)). After a decade of independence, under the Parliamentary Act of 1958, the Water and Power Development Authority (WAPDA) was established as an autonomous and statutory body under the control of the Federal government. The purpose of WAPDA was to produce and distribute power to consumers and manage water resources to limit water wastage, irrigation, water supply, and prevention of waterlogging. WAPDA was tasked to undertake projects that produced power from water to meet the growing demand for power in the country. Terbela, Mangla Dams, and Ghazi Brotha are examples of Hydel power projects

KESC (Karachi Electric Supply Company) now known as K-Electric was established in 1913 as a private company to meet the power demand of the people of Karachi. Soon after independence the independence KESE was nationalized in 1952. The flagship power project undertaken by KSEC since independence was Bin Qasim-1. This power plant is coal-fired. In 2002, the KESC was privatized and evolved into K-Electric.

Wapda and KSEC are been only two organizations that were vertically integrated meaning responsible for generating power and distributing power to households, commercial centers, industries, and other consumers. But recently the power sector in Pakistan has grown into a conglomerate of businesses (Ali & Beg, 2007). K-Electric (KSEC) is the only organization that maintains vertical integration. WAPDA on the other hand no longer distributes power to the country and its role is contained in power generation. The unbundling of WAPDA has led to the creation of power transmission and distribution companies. This also paved the way for the entrance of Independent Power Producers (IPPs) into the Pakistani Power Sector. Today the power sector is more complex than ever before. (Qazi & Jahanzaib, 2018)

### 1.4. Power Regulatory

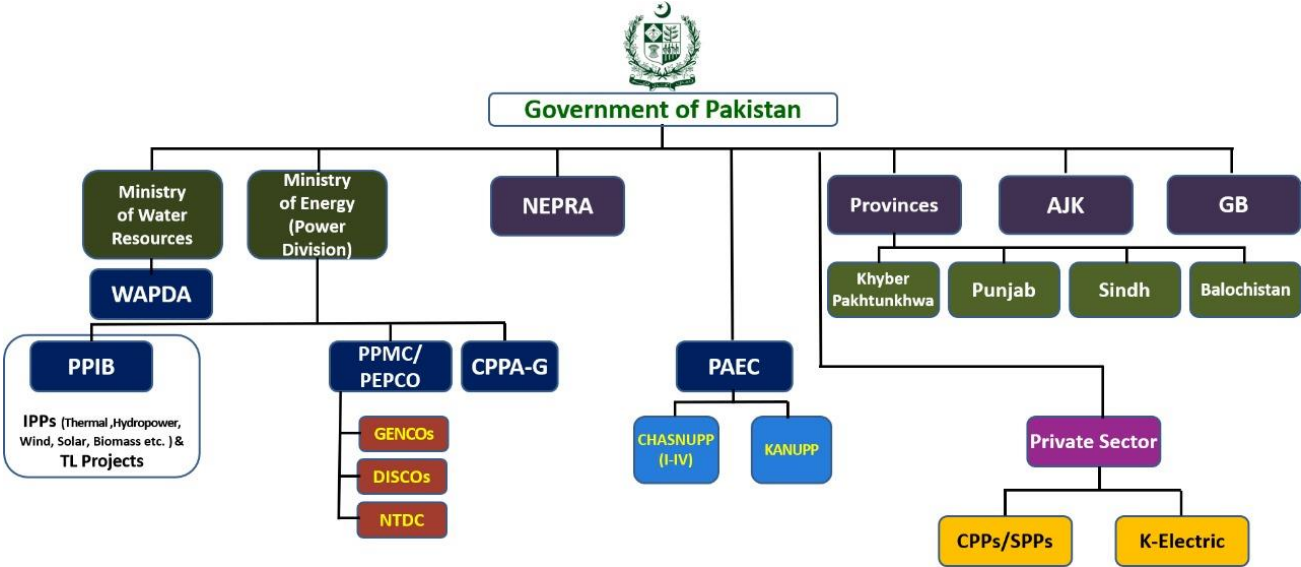


Figure 3: Key Power Players (Source: PPIB)

### 1.5. Value Chain of the Power Sector in Pakistan

Tauseef and Abdul Rehman (2022) The power sector structure consists of four components which are as follows:

1. Generation
2. Transmission
3. Distribution
4. Consumption

- a. **Generation:** Power is generated by power plants by nonrenewable and renewable sources. For example, power produced by coal, furnace oil, Gas, hydel, wind, solar, nuclear, etc. Independent Power Producers (IPPs), public sector power generation companies like WAPDA, K-Electric, generation companies (GENCOs), and the Pakistan Atomic Energy Commission (PAEC) are responsible for producing electricity for users.
- b. **Transmission:** The electricity produced by different power plants is transmitted for usage at longer distances using high-voltage transmission lines. The transmission of power from plants to Grid Stations is the responsibility of the National Transmission and Dispatch Company (NTDC) and K-Electric. The transmission lines are an important link between plants and power stations.
- c. **Distribution:** The power transmitted from high-voltage transmission lines is not usable. This voltage is reduced at Grid Stations through transformers and transmitted to users using low-voltage transmission lines. Distribution Companies (DISCOs) are responsible for power transmission to consumers.
- d. **Consumption:** The power is consumed by households, commercial centers, industries, agriculture, institutions, and government.

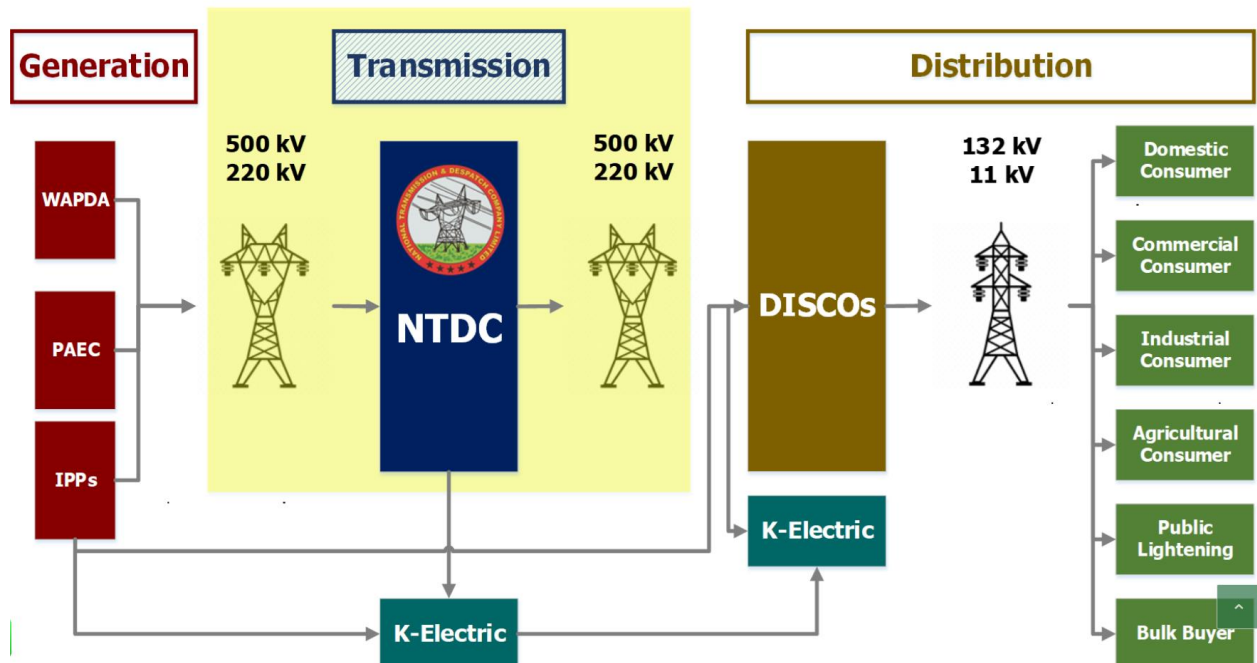


Figure 4: Value Chain of Power. (Source: PPIB)

## 1.6. Pakistan and its Energy Mix

Pakistan has a population of 241.49 million in the year 2023 with an annual growth rate of 2.55%. With the growing population, the power requirement of the country is also growing. The household sector has been the greatest consumer of power followed by the Industrial sector. The power generation for July-March FY2023 was 94,121 GWh compared to July-April FY2022 which was 122,934 GWh. The generation capacity for FY 2022 was 41,557 MW which was reduced to 41,000 MW. In FY2023, power generation from hydel, nuclear, and renewable sources contributed 53.8% of total power generation which has been beneficial both in terms of monetary and environmental aspects. The tables below specify the energy mix, capacities output, and power consumption by different sectors in Pakistan for FY2023 and FY2022 (Finance Division, 2023).

Rs. In million				
Fuel Type	2022-23	%age	2021-22	%age
WAPDA HYDEL	2,650	0.2%	2,447	0.2%
THERMAL	86,947	6.2%	83,126	5.5%
COAL	337,456	24.0%	360,937	23.7%
NUCLEAR	26,022	1.9%	19,880	1.3%
IPP HYDEL	5,162	0.4%	1,514	0.1%
RFO	169,080	12.0%	325,344	21.4%
RLNG/GAS/HSD	632,864	45.0%	607,395	39.9%
BAGASSE	5,971	0.4%	5,604	0.4%
SOLAR	30,706	2.2%	18,815	1.2%
IMPORT (IRAN)	10,364	0.7%	8,140	0.5%
WIND	96,880	6.9%	88,675	5.8%
MIXED	2,650	0.05%	686	0.05%
<b>TOTAL</b>	<b>1,404,859</b>	<b>100.0%</b>	<b>1,522,562</b>	<b>100.0%</b>

ENERGY MIX GENERATION 2022-23

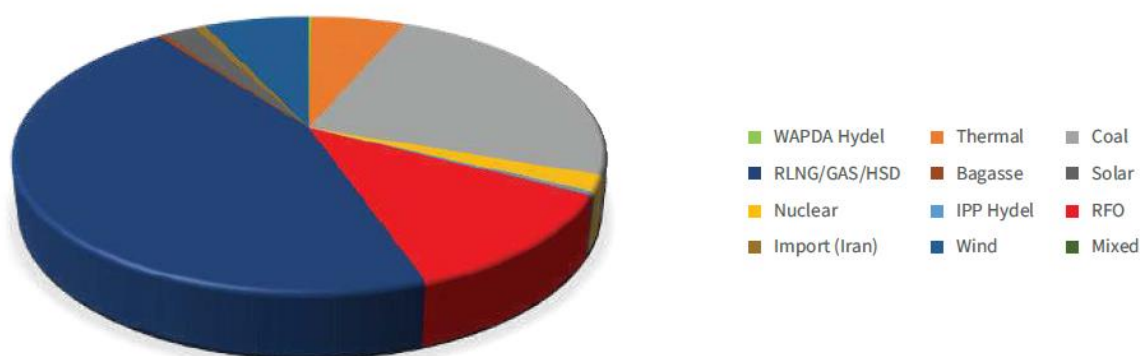


Figure 5: Energy Mix in Pakistan year 2023 (Source: CPPA-G Annual Report 2023)

Due to recent premature government change and political uncertainty in the country, there has been a negative impact on GDP of the Pakistan. During Pakistan Tehreek Insaaf (PTI) rule, the GDP was reported to be 6%, and this changed to -4% when the Pakistan Democratic Movement (PDM) took over and left the Government office in 2023. Furthermore, the regime change caused an abrupt increase in exchange rates particularly the dollar devalued the Pakistani Rupees. This increased dollar rate caused a new wave of inflation in the country. This also impacted the power sector. Since Pakistan's economy is primarily dependent on oil imports, the purchase of oil proved very costly for the exchequer. Some power plants in the country use furnace oil, and such power plants produce electricity at a higher cost. The power-purchasing companies had no other option except to purchase power units same price and distribute them to consumers. As a result, domestic consumers had to pay hefty amounts of bills even though their power consumption was not significant. Due to overbilling, there has been a growing trend for solar panels to reduce the power expense that consumers have to bear.

NEPRA reported a 9.5% decrease in power generation in FY2023. A 129,591 Gigwatt-hour (GWh) was produced in FY2023 compared to 143,193 Gigwatt-hour (GWh) produced in FY2022. Similarly, the economic survey for the year 2021-22 reported a decline in household power consumption from 49.1% to 47%. The power consumption in the commercial sector also declined from 7.4% to 7%. In FY2023, there was less power consumption across different sectors (Government of Pakistan, Finance Division, 2022).

## **1.7 The CPPA-G**

The Central Power Purchasing Agency (Guarantee) Limited (CPPA-G) was formed in 1984 under the Companies Ordinance of 1984. Later it was registered with the Security and Exchange Commission and Pakistan (SECP). It became incorporated in 2009 after it was segregated from NTDC in the year 2009. After being separated from the National Transmission and Dispatch Corporation (NTDC). CPPA-G worked under NTDC till June 2015. It became completely independent from the parent organization in June 2015 and to this date functions under the Ministry of Energy (Power division).

In the 1990s, the Government of Pakistan decided to reorganize WAPDA through the introduction of the NEPRA Act. The purpose of establishing NEPRA was to have a regulatory body to oversee generation, transmission, and distribution activities, monitor the competitive power environment, and decide power tariffs. From the years 2002 to 2005 numerous companies

entered the power sector each in generation, transmission, and distribution separately and WAPDA had no longer the right to procure power.

In addition to its basic responsibilities of transmission and system operation, NTDC was granted a license with two additional tasks in 2002, and a regulatory framework was put in place. These extra features were intended to be temporary solutions to adjust to the changing makeup of the power industry and the anticipated future power market:

1. the creation and application of markets for competitive power, including the function of contract registrars.
2. serving as the distribution companies' (DISCOs') representative in procurement matters following WAPDA's restructuring. WAPDA could no longer act as the buyer under Power Purchase Agreements (PPAs) with new generation companies, hence this was required. This agreement was supposed to last until the wholesale competition market launched, which was anticipated to happen by 2009 but not later than 2012. DISCOs would be in charge of autonomously negotiating and obtaining power once this market was operating.

In 2009, CPPA-G (Central Power Purchasing Agency Guarantee Limited) was founded as a power firm to take on the tasks of CPPA and manage market development, as initially specified in the 2002 NTDC License. This was done following the anticipated market evolution. In mid-2015, CPPA-G officially began conducting business, marking the formalization and completion of the transfer of NTDC's functions to CPPA-G. Under NEPRA Market Operator Rules, CPPA-G's operations and scope of jurisdiction are regulated.

### **1.7.1 Role of CPPA-G**

The role of CPPA-G in the power sector is of Market Operator. It purchases electricity on behalf of DISCOs and settles payments between all parties involved in generation, transmission, and distribution. It manages the power market transition from the current single-buyer to a competitive market.

1. Perform billing and settlement-related duties as part of the business's operations.
2. Obtain electricity for the DISCOs, including through obtaining power from overseas sources. Furthermore, complete the process of demand aggregation.
3. Check the generation invoices for accuracy by comparing them to dispatch scheduling reports or meter readings, and make sure you're following the terms specified in the relevant Power Purchase Agreements.

4. Invoice the DISCOs in compliance with the Commercial Code's established parameters, based on meter readings obtained at Common Delivery Points.
5. Gather money from the DISCOs and disburse settlements to the Market Participants in compliance with the Commercial Code's guidelines.
6. Monitoring of treasury operations, cash flow management, and other relevant banking activities to support the procedures for distribution and collection under the Commercial Code's requirements.
7. Supervising the draft Commercial Code and any amendments made, which are subsequently presented to NEPRA for formal approval.
8. Establishing and carrying out competitive power markets in compliance with NEPRA's regulatory regulations and federal policy guidelines.
9. Coordinating with groups that manage competitive power markets or have positions similar to that of the Market Operator.

### **1.7.2 CTBCM Model**

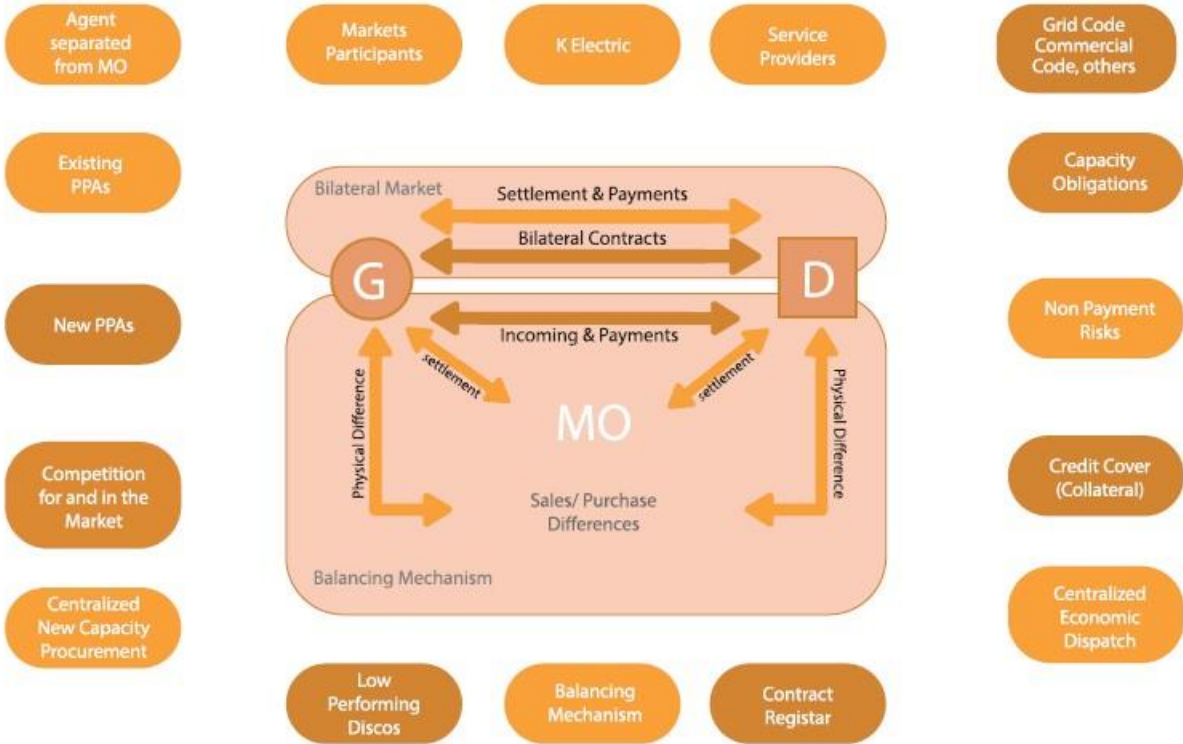
Competitive Trading Bilateral Contract Market (CTBCM) is a Competitive Wholesale Electricity Market wherein multiple buyers and sellers of electric power can participate by entering into bilateral contracts to purchase and sell electricity at the wholesale level. Nepra approved the draft of the CTBCM model prepared by CPPA-G with the help of international consultants in 2020 keeping in view the feasibility and ground realities. Through this model, a reliable payment chain will be established, and liabilities on government exchange.

In the CTBCM, a substantial price decrease is expected through measures such as (a) competitive bidding; (b) transparent economic dispatch; (c) forecast improvement resulting in the least cost expansion planning; (d) procurement discipline (e) bilateral contracts, etc. CTBCM ensures to development and alignment of the policy, regulatory framework, and institutional capacities, enhances transparency, contributes to improving wholesale market governance, brings in efficiencies, attracts investments on risk risk-sharing basis, encourages competition, and puts pressure on prices.

In the initial stage of the market opening, the contracts will still be backed by the government guarantees but their volume will be reduced significantly in CTBCM and would be limited only to DISCOs having low creditworthiness. Auctioneer functions for procuring generation capacity against the incremental demand, primarily for DISCOs. To undertake this function, PPIB/AEDB would need to get themselves registered with NEPRA as IAA.



However, in CTBCM contracts will be signed bilaterally between DISCOs and generator. Gradually sovereign guarantees will be withdrawn as DISCOs become credit-worthy. The procurement of generation capacity for creditworthy DISCOs will not be secured by Sovereign Guarantees, instead other credit risk mechanisms like credit covers will be introduced. For low creditworthy DISCOs guarantees backed by the government will be provided.



**Figure 6: CTBCM model framework (source CPPA-G)**

## **Chapter 2: Problem Definition and Requirement Analysis**

Our desire to undertake this project is to suggest viable solutions for curbing circular debt that is essential for economic growth. This subject has been resonating since the year 2006. The long-standing problem of circular debt has crippled the economic prosperity of Pakistan and hitches the power sector. High production costs and low revenue have resulted in liquidity issues in Pakistan's power Sector. CPPA-G acting as the market operator has a low receivable ratio from DISCOs. As a result power generation companies have insufficient finances to pay other government subsidiaries (PSO, OGDCL, etc) for the purchase of oil and gas from power generation. This has resulted in less power generation and the gap between the power supply and demand has increased. The problem of Line losses occurring due to unmetered/illegal connections means that people are utilizing electricity without any bills to pay (Akram, 2023).

### **2.1 Areas of Concentration**

This would help to focus firstly on what circular debt is and its roots. Secondly, spotlight the financial aspects in terms of revenue, profitability, fuel cost, revenue collection per year, and losses sustained by power distribution companies due to T&D loss. These numerical values would help in concluding how the financial health of power companies is contributing to the problem( rising circular debt). Moreover, we can able to differentiate profitable power companies from those that are least or operating at a loss.

To zero in on overbilling, a problem faced by Pakistani consumers, T&D losses would point to annual losses suffered by DISCOs. To make up for lost revenue due to T&D losses, power companies (DISCOs) have no option except to charge excess amounts to the consumers.

### **2.2 The Rationale**

Our rationale for undertaking this project is to come up with various mitigation strategies that would be executed in different phases to lower the circular debt and its impact on Pakistan. Suggesting mitigation strategies would improve the cash inflow streams to CPPA-G. With the improvement in receivables, the CPPA-G would pay GENCOs so that different energy sources could be purchased for power generation. This would also help energy suppliers to purchase more oil and gas thus improving supply to the power plant for generation. This will also help in the reducing production cost of power, improving power outages, and revival of economic activities in the country. We will also be identifying solutions that will prevent the recurring of circular debt in the power sector such as investment in alternate energy power projects.<sup>8</sup>

### 2.2.1 Understanding Circular Debt

Circular debt can be described as the inability of the customer to pay off the debt to suppliers affects the supplier's ability to pay off creditors. Alternatively, Circular debt refers to a financial situation in which one entity is unable to pay the debt to its supplier and the supplier is unable to clear its amount payable to its creditors resulting in the accumulation of payables (Ali et al., 2020). This may be referred to as *cascade debt*. The unpaid debt creates a bottleneck in the delivery of products and services and puts financial stress on cash and operational activities.

The biggest outcome of circular debt is a liquidity problem. Not only the firm is unable to pay the debt but affects the operational expenses, scaling down business, cost increase, and in the worst situation may lead to liquidation or buyouts. Circular debt has a negative relationship with GDP growth. Higher circular debt implies lower GDP and higher inflation (Faizi, 2013).

Circular debt has a deep association with the Pakistani power sector. The people of Pakistan were not aware of the term until 2006. The rising circular debt has significantly impacted the value chain of the Power Sector (Tauhidi & Chohan, 2020). Many factors led to the rise of the circular debt. According to (Hafeez, 2019):

- **Power theft:** Power is distributed from powerlines and transformers and when the path is rerouted this results in theft. It is also called *Transmission and Distribution (T&D)* loss. Power theft is a national problem. Despite being a criminal offense, theft continues across Pakistan. Some notable areas where theft is high are Bannu, Kasur, Noshahora, Ghotki, Tank, etc. Power theft is also high in areas where the population is dense. Meter tampering is another way of power theft in which the meter registers fewer units consumed. Power theft bypasses the bill payment leading to fewer recoveries from the consumers.
- **Nonpayments of Electricity bills:** Slow recoveries from consumers significantly impact the subsidiary's cash inflow resulting in delayed payments to suppliers. Due to high inflation, people face difficulty in bill payments and this has resulted in default.
- **Delay in payments to the government subsidiaries:** Due to slow and default recoveries from consumers, the DISCOs are unable to full payments to CPPA-G, which results in slow payments to GENCOs and ultimately to fuel suppliers.
- **Delay in tariff calculations by NEPRA:** The power tariff charged to the consumer was less than the unit production cost resulting insignificant amount of revenue collection. In addition, delays in tariff calculation at times when oil prices rose in the international market.

It reported that circular debt in FY2022 was Rs 2.25 trillion and in FY2023 it reached Rs 2.31 trillion. The fear is that if drastic measures are not taken as soon as possible, the debt amount will reach Rs 4 trillion in the year 2025. Already Pakistan’s economy has suffered blows due to political turmoil and the remaining harm is done by circular debt. The impact of circular debt has forced my industries to shut and people face long hours of power outages. The cost of living has significantly increased and production in the country has evaporated.

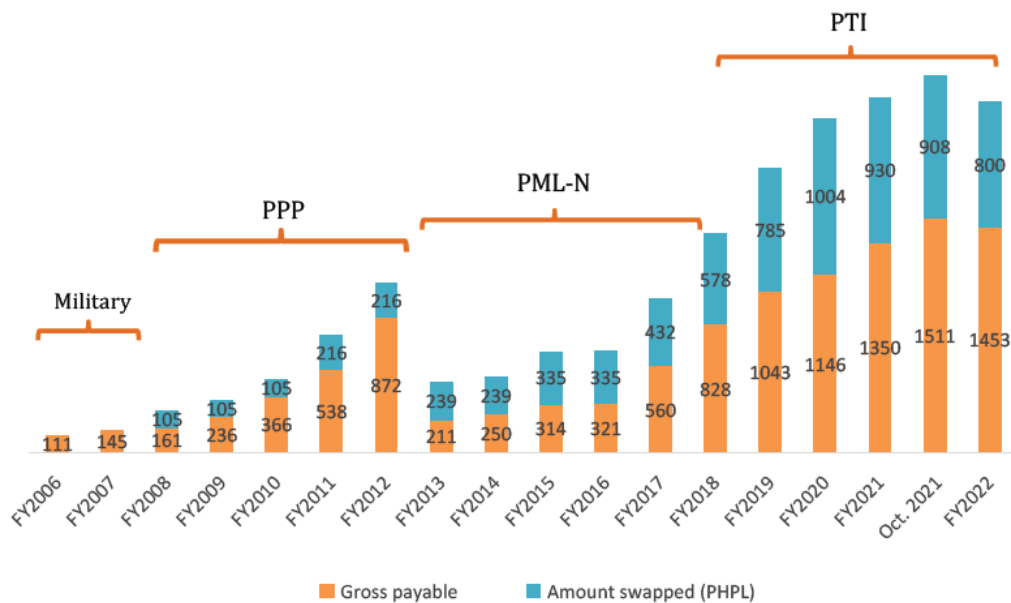
**Year-wise Details of the Circular Debt (Provisional) (Rs. in Million)**

S. No.	Description	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
1	Due for Payments against verified invoices of Power Generation Companies	441,412	694,261	1,038,115	1,244,835	1,351,023
2	Payable to GENCOs (Invoices based)	16,419	17,464	48,040	-	-
3	Payables to Fuel Suppliers by GENCOs	86,067	100,677	105,092	105,314	101,473
	<b>Total (Payables to IPPs/GENCOs)</b>	<b>543,898</b>	<b>812,402</b>	<b>1,143,207</b>	<b>1,350,149</b>	<b>1,452,497</b>
4	Energy Payable Swap by GOP through Loan from Commercial Banks by Power Holding (Pvt.) Limited	582,863	805,787	1,007,218	930,000	800,253
	<b>Grand Total (Circular Debt)</b>	<b>1,126,761</b>	<b>1,618,189</b>	<b>2,150,425</b>	<b>2,280,149</b>	<b>2,252,750</b>

Source: CPPA-G

**Figure 7: Year-Wise Circular Debt (Source: State of Industry Report 2022)**

The overall impact of circular debt has brought power inefficiencies in the power sector. Lack of maintenance of power plants, lower power generation, and increase in power deficit (supply deficit). Due to high demand and low supply of power, consumers are facing power outages, industry shutdowns, scaling down of businesses, lower production, and less or no foreign investments in the country. Many industries from Pakistan have shifted abroad due to the unavailability of power in the country. The power plants that are in operation to produce power are generating power at a higher cost because some plants have either temporarily or permanently shut down. In a nutshell, the circular has worsened the economic growth of Pakistan resulting in high inflation and unemployment.



Source: Malik (2020a) and NEPRA State of Industry Reports (2020, 2021, 2022)

**Figure 8: Circular Debt Government-wise (Source: Power Sector: An Enigma with no easy solution)**

### 2.3 Dynamics of Circular Debt in the Power Sector

- **Suppliers:** There are two primary energy sources in Pakistan, Oil, and Gas. Principal suppliers of these resources are OGDCL, PPL, ARL, NRL, SNGPL, SSGC, PSO, and Shell. These primary energy sources are used for power generation by GENCOs whose power plants operate on oil or gas.
- **GENCOs:** They generate power using renewable and nonrenewable energy sources. The GENCOs comprise both private and public power generation houses. NTDC is responsible for transporting this power to grid stations using high-tension cables. The Grid stations convert this high-power electricity to low-power electricity for consumption by consumers.
- **CPPA-G:** CPPA-G acting as a market operator purchases power from GENCOs on behalf of DISCOs. The DISCOs purchase power from CPPA for distribution to consumers.
- **DISCOs:** The DISCOs deliver power through powerlines to households, industries, commercial, government, and agricultural sectors.
- **Consumers:** The ultimate users of power and liable to make timely payments to DISCOs bills so that everyone in the process of able to deliver to others what it is responsible for.

If any of the above-mentioned players fail to make payments to others would lead to debt accumulation and affect the supply chain. Slow recoveries and power theft on the part of consumers mean that DISCOs will be unable to collect revenue from consumers and will not be able to make complete payments of dues to CPPA-G. Inadequate payment of bills by CPPA will cause GENCOs to purchase less furnace oil and gas from suppliers thus limiting power generation. Since Pakistan is dependent on oil imports, the PSO and OGDCL will have to purchase debt thus making import bills and interest payments to foreign suppliers (Ali et al., 2020).

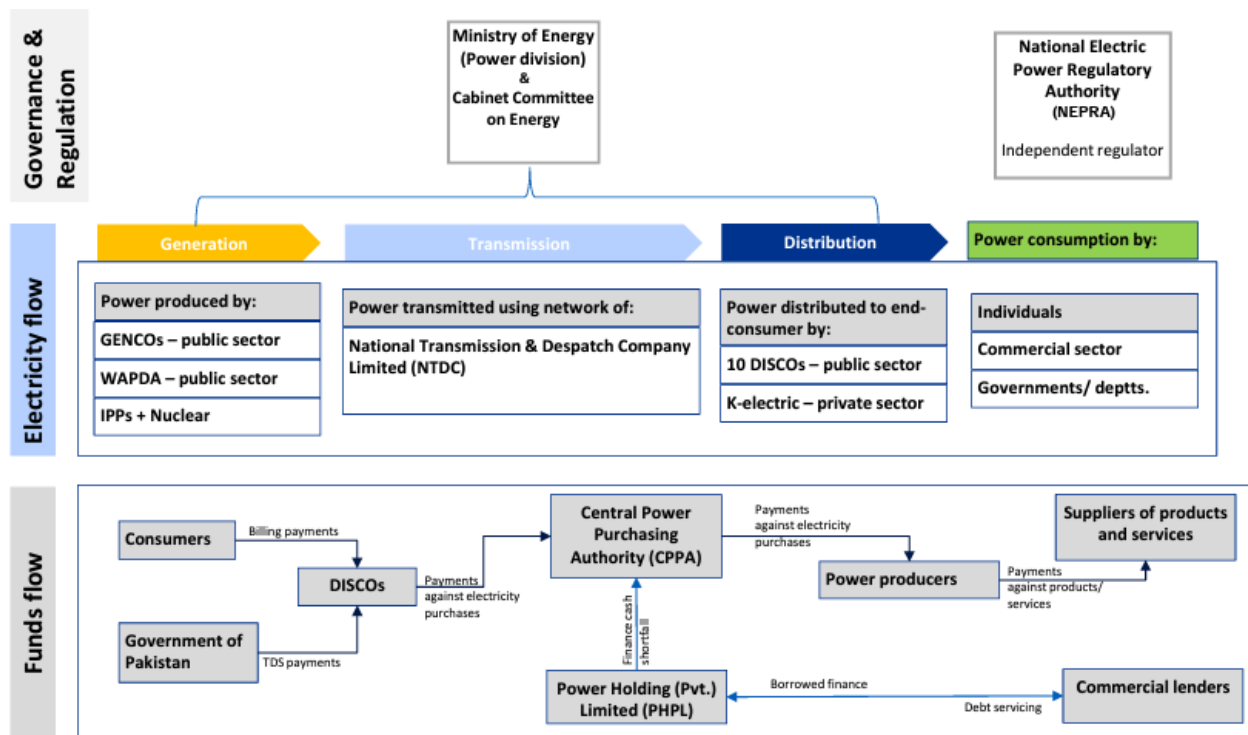
Due to incomplete payment, a power shortfall arises. Power shortfall is directly related to circular debt. Power shortfall coupled with circular debt means that power prices are passed on to consumers and less power is added to the national grid.

In 2014, the Economic Coordination Committee (ECC) officially defined circular debt according to which:

*Due to a cash shortage, the Central Power Purchasing Agency (CPPA) has been unable to make payments to power supplier businesses.*

- A. The difference between the actual cost and the tariff set by the National Electric Power Regulatory Authority (NEPRA), which represents the distribution company's losses and collections over NEPRA's allowance, is the primary cause of this overdue amount.*
- B. The delayed or non-receipt of government subsidies.*
- C. Delays in setting and notifying tariffs. The objective of the government's program is to gradually lessen the financial burden associated with the Circular Debt while reducing and finally eliminating the elements that contribute to it.*

The block diagram of different players in the energy sector is shown below;



DISCO = distribution company, GENCO = generation company, IPP = independent power producer, TDS = tariff differential subsidies, WAPDA = (Pakistan) Water & Power Development Authority.  
 Source: Asian Development Bank.

**Figure 9: Power Supply Chain (Source: Asian Development Bank)**

## 2.4 Beginning of Circular Debt in the Power Sector

The year 2006 marked the beginning of a new era in the history of the Pakistan Power Sector. The word “Circular Debt” started arising from the power sector and soon it started consuming everyone involved in the power sector’s value chain (Akram, 2023). Today, Pakistan is in hold of foreign debt and circular debt. The circular debt is nowhere close to falling but it continues to arise every year. The circulated debt in FY2022 amounted to Rs 2.25 trillion and according to CPPA-G, the amount is likely to reach Rs 4 trillion in 2025. Low recoveries from DISCOs, poor tariff policies by NEPRA, and stagnant power tariffs from 2003 to 2007 by the government despite the increase in oil and gas prices in the international market. FY2004-FY2008 again witnessed oil and gas prices globally but tariffs were barely able to recover the cost of production (Ali et al., 2020) (Tauhidi & Chohan, 2020).

DISCOs started facing slow recoveries and high-line losses. To prevent further deterioration of the situation, the government injected a tariff differential subsidy in the power sector to cover costs. However, this could not be sustained due to economic conditions, and the government is no longer able to give subsidies. DISCOs were unable to pay bills to GENCOs and the latter

soon started facing in purchasing oil and gas from suppliers due to insufficient funds. With no funds to purchase, the suppliers halted fuel supply resulting in oil and gas-operated power plants ceasing power generation resulting decrease in overall generation (Faizi, 2013).

## **2.5 Entrance of IPPs in the Power Sector**

In 1985, Pakistan then government embarked on an ambitious journey of reforming the power sector to meet the growing demand. The annual power demand was 12% but supply was 7% annually. The country soon came into the grip of the power outages. (Siddiqui, 1998) A power deficit of 2000MW appeared in the system. The government scrambled to address the issue as the highest priority and by 1992 the way was very much paved for the private sector to invest in the Pakistani Power Sector as the government did not have resources to set up new power plants in the country. The power sector reforms were introduced with the help of the World Bank. The Private Sector Energy Development Program (PSEDP) was initiated with the help of the government and the World Bank to establish the private power generation sector. PSEDP 1 and 2 were formed in the years 1988 and 1994 respectively (Ali & Beg, 2007).

Feasibility of Pakistan's first Private power plant, the HUBCO power plant completed in 1988. This power plant used furnace oil to generate power with a maximum capacity of 1292 MW. HUBCO became a Limited Liability Company in 1991 to execute the project and entered an agreement with WAPDA in 1992. The project was completed in 1997 and started power generation for Pakistani consumers. The project had to face severe setbacks due to frequent government changes in the 1990s decade. The project cost soared to US\$1.766 billion from US\$1.2billion. This meant that WAPDA had to negotiate the price of electricity at which it had to purchase power from HUBCO. WAPDA had no other option but to purchase at a high rate for every KWhr of the unit (Ali and Beg (2007).

In 1994, Benazir Bhutto's government introduced the Power Policy 1994. This policy was meant to facilitate investment in the Pakistani Power Sector. The government wanted to reach 54,000 MW of electricity generation capacity by 2018. Furthermore, it projected an annual minimum generation capacity of 900MW for 1994, 1300MW for the year 2000, and 5000 MW for the year 2018. The seeds for this policy were sown in 1986 when General Zia-ul Haq's regime encouraged private power producers to Build-Own-Operate (BOO) plants in Pakistan (NEPRA, 1994). However, investors viewed this concept with skepticism due to various factors, and failed to attract the attention of the investors. For example, the sale price of electricity was not competitive compared to the international market, ambiguity on concession for investors to invest in the



power sector, and payment of upfront charges such as taxes and customs duty and misinterpretation of the import charge regime.

The 1994 Power Policy also gave investors a free hand to select any site for a project and use energy resources (renewable or nonrenewable) for power generation. A bulk power tariff of US Cent 6.5/KWhr to be paid in Pakistani Rupee was set. In addition, the government had to pay a premium of US cents 0.25/KWh to IPPs. 14 private power-producing companies entered the power sector and generated 3,173 MW of electricity. Another benefit given by the government was all IPPs were exempted from corporate tax and all the previous terms that were deemed ambiguous by power investors during Zia's regime became unambiguous in 1994 and favored the investors. The government took the responsibility of purchasing and supplying oil for IPPs (Arafat et al., 2019).

The Government introduced another policy in 1995. The Power Policy of 1995 was meant to promote investment in hydel power projects and it shared most features of Power Policy 1994. The notable feature of the 1995 Power policy is that service charges (Operational and Maintenance) costs are to be paid in Dollars (NEPRA, 1995).

The 1998 Power Policy was meant to remove inequities between the 1994 and 1995 Power Policies and give equal opportunity to investors in the power sector without favoring any investor. According to the new policy, the power projects will be selected through international competition bidding with minimal levelized tariffs. Project selection will be through pre-qualification, Request for Proposal, Bidding, and Bid evaluation. Firms needed to carry out a detailed feasibility of the project for them to take part in the bidding (Arafat et al., 2019). Hydel projects would be executed under Build-Own-Operate-Transfer (BOOT) and thermal projects under Build-Own-Operate (BOO). The IPPs were also liable to pay taxes as per Pakistani Tax Laws (NEPRA, 1998).

The new Power Policies came in 2002 and 2015. The Latter policy provided one window facility for IPPs to undertake power projects in AJK and Giligat Baltistan. Furthermore, a tax exemption was given and a 5% duty was to be paid by IPPs on the import of engineering equipment, and all IPPs will remain clear of political influences and unexpected taxes. (NEPRA, 2015)

Presently 90 IPPs are working in Pakistan using both renewable and non-renewable energy sources.

## 2.6 Problems of IPPs

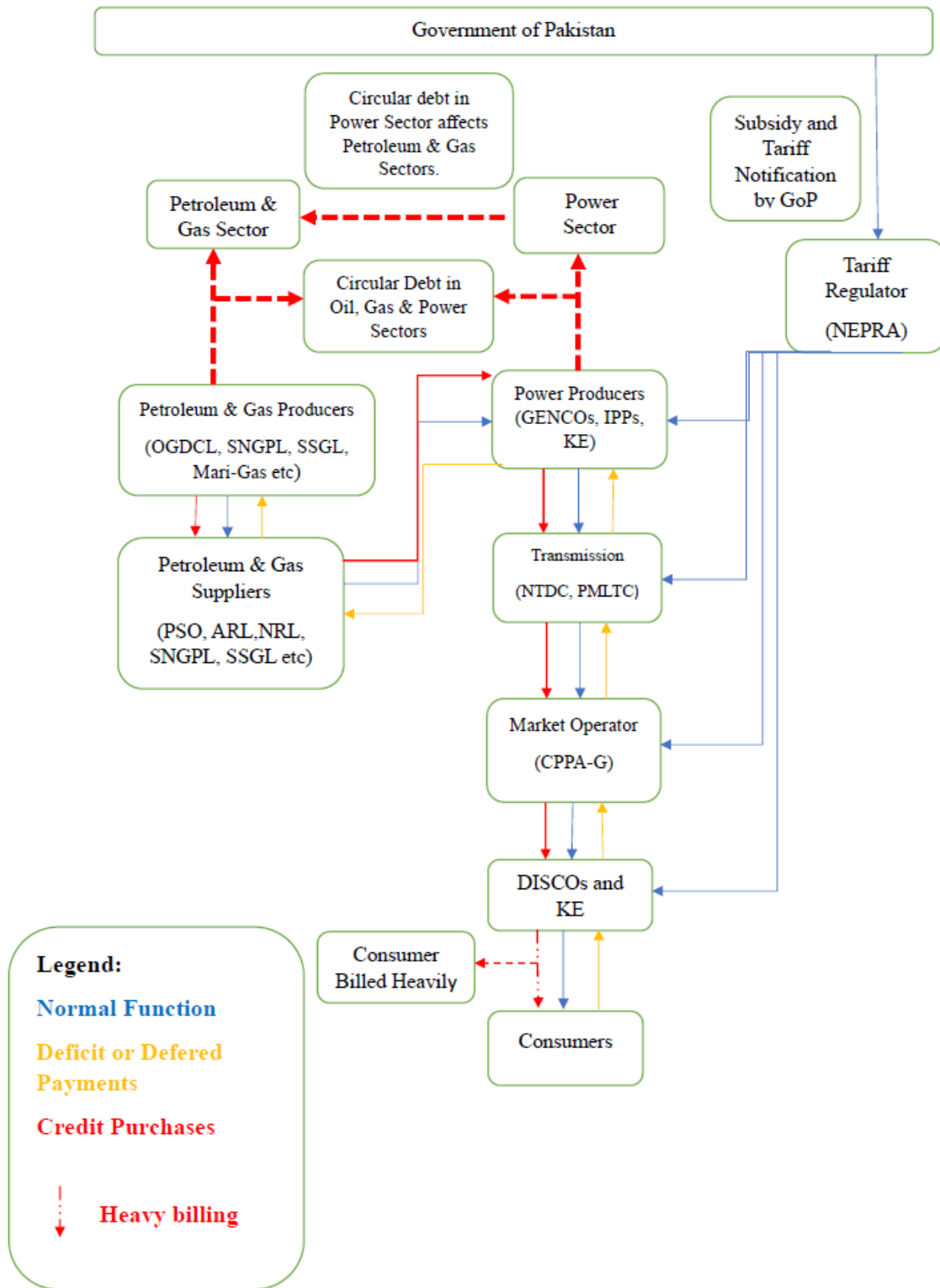
The entrance of IPPs into the Pakistani Power Sector has a profound effect and its effects can be felt today in the form of circular debt. Originally their purpose was to deal with further power requirements and enhance power capacity but it did not harm than good. The 1994 power policy was more favoritism by simply favoring an investor rather than preferring an investor through International Competitive Bidding (ICT). The frequent government changes in the '90s and subsequent Power Policies were more of providing monetary benefits to the government and investors. The prosperity of Pakistan and its people was ignored deliberately by the government and investors. People are now paying for the blunders committed by the government in contracts with IPPs.

The most common mistakes that are debated and IPPs held responsible are: (Arafat et al., 2019) (Ali and Beg (2007))

1. *Inefficient power plants*
2. *Obsolete technology*
3. *High power tariff*

As an example under the 2015 Power Policy, Regassified Liquefied Natural Gas (RLNG) powerplants were installed to meet power requirements. These power plants were using outdated technology or set far away from their proposed site increasing transportation costs. Similarly, NEPRA accepted 12 wind power projects of 50MW each on a “*Cost Plus*” basis rather than the bid-based lowest tariff.

The circular debt problem cannot be solely on the head of the IPPs. The Government had asked investors to invest in Pakistan's Power Sector to meet future power requirements but poor policies and unfair contracts by the government deeply affected the trust of investors. Some research also suggests that the power produced by IPPs was much cheaper than that of WAPDA (Siddiqui, 1998).



**Figure 10: The Power Sector Circular Debt causing Circular Debt in Petroleum and Gas Sectors (Source: Project Participants)**

## Chapter 3: Project Design and Implementation

### 3.1 Project Purpose and Study Questions

The project intends to contribute solutions to mitigate the increasing circular debt that has resulted in the economic downfall of the country. A detailed quantitative and qualitative analysis would support suggesting future action plans to counter circular debt, increase power production, improve the revenue recovery period, and transform traditional billing methods. These actions will also be useful in gaining the confidence of private producers to resume power generation and the availability of funds for fuel suppliers.

This project will identify the financially weak DISCOs whose revenue collection is weak resulting in delayed invoice and interest payments to CPPA-G resulting in the compounding effect. Furthermore, this will also point out the areas with high-line losses that contribute to deficit revenue collection.

The complexity of the power sector requires both qualitative and quantitative approaches. The approach details will be discussed in section 3.3. *Project Design* but these approaches will be useful in reducing the circular debt and improving management and operational issues. To begin with, our project questions will focus on the financial and managerial aspects. The financial aspect includes questioning *the per unit cost produced by power producers, the Discos' profitability, expenditure, bill recovery period, outstanding revenues, or deferred payments*. Additional research will be *done to determine institutions that have either failed or made partial bill payments to DISCOs*.

### 3.2 Project Objectives

1. To identify the reasons and factors behind the accumulating circular debt in the power sector.
2. To conduct the financial analysis of three sample DISCOs (MEPCO, IESCO, PESCO)
3. To compare the performance of DISCOs based on their financial analysis
4. To recommend solutions to bring efficiency in the power sector and control circular debt.

### 3.3 Project Design

#### 3.3.1 The Scope

The Scope of Our Project is to collect data on three sample DISCOs (MEPCO, IESCO and PESCO) through Annual Reports and perform *financial ratio analysis* on the financial

statements of power companies. The annual report of DISCOs will also provide external environment information that will guide us in *STEEPLE* analysis.

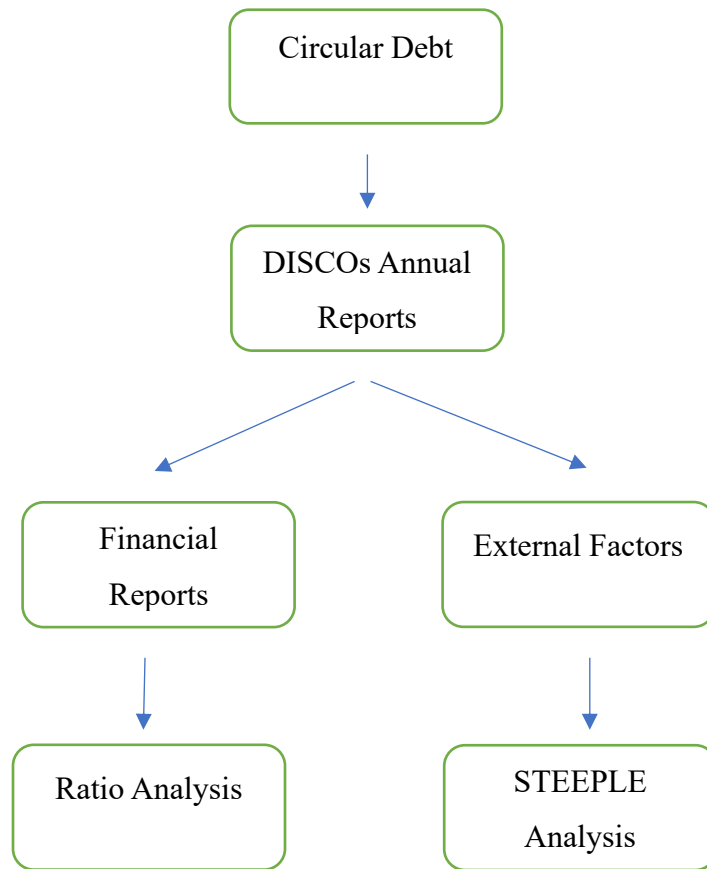
Following tasks are to be carried out in the financial analysis of DISCOs

- External factors that are affecting the financial health of aforementioned DISCOs.
- Recoveries of bills from customers.
- Comparison between the financial position of the company in the current and preceding year.
- The amount of outstanding dues (both creditors and debtors).
- Financial and performance comparison between DISCOs based on the analysis carried out.
- Examine annual losses suffered due to T&D losses.

### **3.3.2 The Design**

Our project research starts with the problem statement. The second step involves reviewing various open-source official documents of various power producers, power purchasers, and distribution companies to determine the root causes of the rising circular debt and also learn about events and decisions that put the foundation of the circular debt in the Pakistani power sector. In addition, we will also review the research publications to learn about mitigation strategies suggested by scholars to reduce the mounting circular debt.

In the third step, we will develop our project objectives, questions, and strategies to answer the questions. Due to time limitations, we have decided to limit the spectrum of our project to only three DISCOs. Being an autonomous body, the CPPA-G does not have an income generation model (no profit no loss basis) except purchase power on behalf of DISCOs. In exchange for power units, the CPPA-G receives payments from DISCOs. It is therefore necessary for us to examine the financial health of DISCOs by using their financial statements and applying *financial ratios analysis* to them Salah Uddin et al. (2022). These ratios will guide in making conclusions and recommendations. In addition, the annual reports of DISCOs will also assist in determining areas with high line losses. The line losses also contribute to lower revenue collection leading to a deficit or deferred payments to CPPA-G and ultimately to power generation companies. We will seek to have data on power generation and its cost of production using the NEPRA annual report.



**Figure 11: Project Design (Source: Project participants)**

The fourth step which is data collection involves the application of ratio analysis, data collection on power production and cost, identification of areas with high T&D losses, and root causes leading to organizational weaknesses. FY2023 ratios will be compared with FY2022 ratios to compare ratio performance. Similarly, the Annual Report of 2022-2023 will be compared with .2021-2022 to analyze the changes in weaknesses arising from internal or external factors.

The fifth step which is the conclusion will consist of our findings and root causes that lead up to rising circular debt. Recommendations and suggestions will assist in reducing circular debt and gradually reviving the economy of Pakistan.

### 3.3.3 Data Collection

The data that will be used in the analysis is *secondary data*. This data is available in the Annual Reports of NEPRA and DISCOs. The data of interest includes financial statements, environmental outlook, power production, unit cost, and transmission and distribution losses. These are key ingredients to understanding growing circular debt.

### 3.3.4 Data Analysis Techniques

The DISCOs that will be used for analyses are MEPCO, IESCO, and PESCO and the analysis techniques that will be used are financial ratios and STEEPLE analysis. The proposed financial ratios are *liquidity, receivables, and payable ratios*. *In addition, the Cash Conversation Cycle (CCC) ratio and inventory turnover ratios* will also be used. These are tentative ratios that we will be using because there is a probability that these ratios may not yield the desired results. The application of ratio analysis will be done on the financial statements of the aforementioned DISCOs such as Balance Sheets and Profit and Loss Statements. These statements are prerequisites for ratio analyses.

(Ali, 2019) *STEEPLE analysis* is the second method for qualitative data analysis. This analysis will help in understanding the external environment that is contributing to circular debt in the power sector and the challenges faced by different power producers, purchasers, and distribution companies. The rationale for using STEEPLE Analysis is that external factors affect organizational financial profitability. This will help us identify and relate to factors that are impacting financial ratios.

## Chapter 4: Testing and Deployment

In this chapter, we are implementing our Project Design which is *Ratio analysis and STEEPLE analysis*. Financial Ratio Analysis is used to investigate the financial health of any organization. This ratio uses financial statements to get insights into the liquidity, profitability, efficiency, leverage, growth, and equity of the firm. STEEPLE (Social, Technological, Economic, Environmental, Political, Legal, Ethical) Analysis is the qualitative analysis of external factors that could have potentially favorable or unfavorable outcomes on the performance of the organization as these factors do impact the financial ratios of the firm.

As mentioned in the Preceding Chapter, we will use the Financial Ratio and STEEPLE Analyses by using annual reports of three sample DISCOs. For Ratio Analysis, financial reports for the years 2023, 2022, and 2021 will be used. Some financial data for the year 2023 is currently unavailable so therefore we will be using data for the years 2022 and 2021. DISCOs revenue model is based on collections from consumers and other power sector players therefore the collections of DISCOs are influenced by external factors (STEEPLE).

### 4.1 Multan Electric Supply Company Company (MEPCO)

MEPCO is in charge of providing power to thirteen districts of Southern Punjab. These includes Sahiwal, Khanewal, Muzaffargarh, DG Khan, Multan, Vehari, Bahawalnahr, Bahawalpur, and Rahim Yar Khan.



Figure 12: MEPCO Areas of Responsibility (Source: MEPCO Annual Report 2022)



**A. The power cost of MEPCO for the years 2022 and 2021:** In the year 2022 MEPCO purchased 22,512 MkWh of power from CPPA-G at Rs 18.08/kWh which was Rs 5.98/kWh more compared to 2021 which it purchased 20,541 MkWh at Rs 12.10/kWh. Energy Charges increased to Rs 4.96 per unit, Capacity Charges to Rs 1.02 per unit, and UoSC to Rs 0.29 per unit.

Cost Components	FY 2021-22				FY 2020-21			
	Amount (Rs in Million)	Units (MkWh)	%age	Per unit Rate	Amount (Rs in Million)	Units (MkWh)	%age	Per unit Rate
UoSC	16,865	22,512	4.14	0.75	9,366	20,541	3.77	0.46
CTC	171,621	22,512	42.18	7.63	135,845	20,541	54.66	6.61
<b>Total Fixed Cost</b>	<b>188,486</b>	<b>22,512</b>	<b>46.32</b>	<b>8.38</b>	<b>127,541</b>	<b>20,541</b>	<b>58.43</b>	<b>7.07</b>
Variable Component	218,449	22,512	53.68	9.70	103,312	20,541	4	5.03
<b>Grand Total</b>	<b>406,935</b>	<b>22,512</b>	<b>100</b>	<b>18.08</b>	<b>248,523</b>	<b>20,541</b>	<b>100</b>	<b>12.10</b>

**Figure 13: MEPCO Unit Cost (Source: MEPCO Annual Report 2022)**

**B. Transmission and Distribution Losses Comparison of MEPCO**

MEPCO's T&D losses in the year 2022 have significantly reduced but it was as still 2.05% above the allowed losses by NEPRA. The target loss for the year 2022 was 12.79% but actual losses were 14.84%. The lost units are worth approximately Rs75 billion.

Description	FY 2021-22		FY 2020-21	
	Units in (Mk Wh)	%age Loss	Units in (Mk Wh)	%age Loss
Purchased	22,512		20,541	
Received at 132 KV Grid Station	22,165		20,221	
Transmission losses	347	1.53	330	1.61
Units sold	19,202		17,466	
Distribution Losses	2,962	13.37	2,745	13.58
<b>Total T&amp;D Losses</b>	<b>3,309</b>	<b>14.70</b>	<b>3,075</b>	<b>14.97</b>

**Figure 14: Year-wise T&D losses of MEPCO (Source: MEPCO Annual Report 2022)**

### C. Power Unit Consumption and Sales of MEPCO

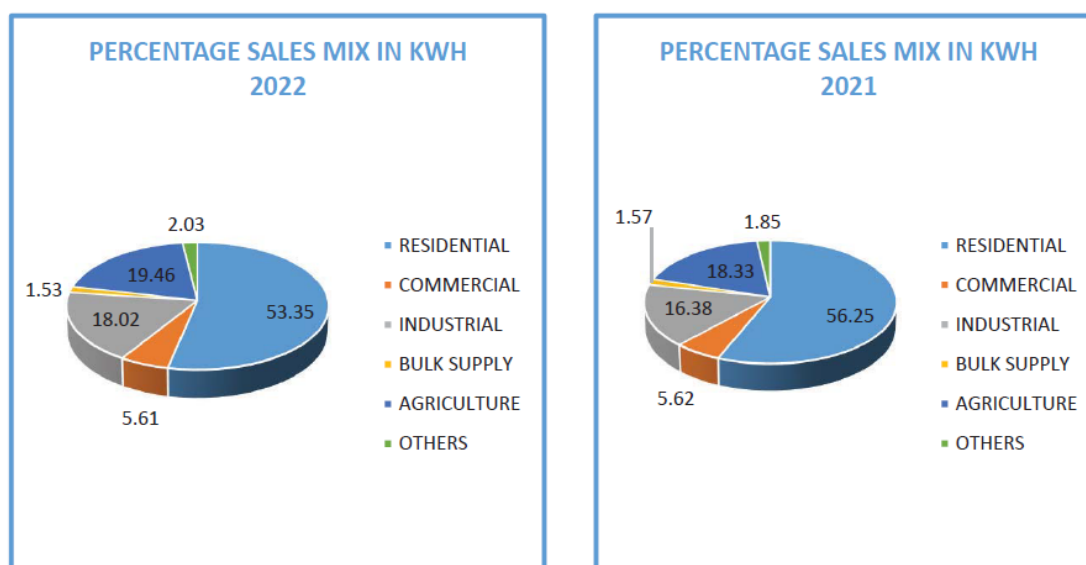
The power consumption of MEPCO has increased in the year 2022. There was an overall increase in power demand across all consumer categories which also increased the number of units sold by MEPCO. The residential category has been contributing the most to overall sales despite the decline in sales in this consumer group.

The following table compares the increase in consumer categories and power units sold in the years 2022 and 2021.

CATEGORY	FY 2021-22		FY 2020-21	
	CONSUMERS	MkWh UNIT SOLD	CONSUMERS	MkWh UNIT SOLD
RESIDENTIAL	6,788,616	10,244	6,415,415	9,825
COMMERCIAL	618,271	1,077	600,662	981
INDUSTRIAL	60,717	3,460	59,514	2,861
BULK SUPPLY	464	294	459	275
AGRICULTURE	102,709	3,737	99,127	3,201
OTHERS	44,178	390	42,503	323
<b>TOTAL</b>	<b>7,614,955</b>	<b>19,202</b>	<b>7,217,680</b>	<b>17,466</b>

**Figure 15: Consumer-wise Consumption ( Source: MEPCO Annual Report 2022)**

The decrease in sales in domestic classification can be attributed to the fact the unit cost of power increased in the year 2022 due to economic conditions that increased the Rupees Amount of bills and people find it difficult to pay bills. The Residents started transitioning to Solar Paneling which produced cheap power and resulted decline in sales revenue from household groups. The same trend could also be witnessed in the commercial category as well.



**Figure 16: Year-Wise Percentage Sales Contribution by Consumer Categories**

## The Ratio Analysis of MEPCO

### 4.1.1 Liquidity Ratios

This ratio examines the firm's ability to pay its current liabilities using current assets. The higher the current assets, the greater the capability of paying short-term liabilities, and the organization would be more liquid. A higher liquidity ratio is preferred Ehrhardt (2015).

Unit of Measure: Ratio		
Ratio Names	Year 2022 (Current Year)	Year 2021(Benchmark)
Current Ratio	1.05	1.02
Quick Ratio	1.01	0.99
<b>Ratio Analysis: The current Year's ratios improved significantly compared to the benchmark.</b>		

*Analysis:* In FY2022, there was an extraordinary increase in the balances of trade receivables and payables of the MEPCO. The liquidity ratios are not very attractive as the company is likely to face liquidity issues in both the short and long terms. Trade receivables of Rs 94,417 Million were reported for FY2022 which has multiplied twice compared with the trade receivables balance of the year 2021 which was Rs41,357 Million. This is attributed to the fact that the bill amount is outstanding amongst various consumer categories and that the FPA for November 2019 to June 2020 has still not been billed to customers. The outstanding FPA amount that remains unbilled is Rs 3,261.50 Million.

MEPCO observed an increase in the trade payable balance in the year 2022 from Rs 164,106 Million to Rs 192,312 Million. The notable categories that have contributed the most are power companies which include CPPA-G, HESCO, GEPCO, FESCO, NTDC, and PITC. CPPA-G has invoiced MEPCO with supplementary charges that represent late payment charges. These charges are markups on invoices that are charged by IPPs through CPPA-G. Contract liabilities have been added to the balance sheet of the MEPCO in the year 2022. This amounted to Rs 1,480 Million in 2022. In addition, accrued liabilities have also been increased in the book of MEPCO from Rs 1,048 Million in 2021 to Rs 1,217 Million in 2022.

### 4.1.2 Profitability Ratios

This ratio provides insight into the firm's revenue, costs, and expenses that could affect the overall income and shareholders' interests. This ratio also influenced the capital structure.

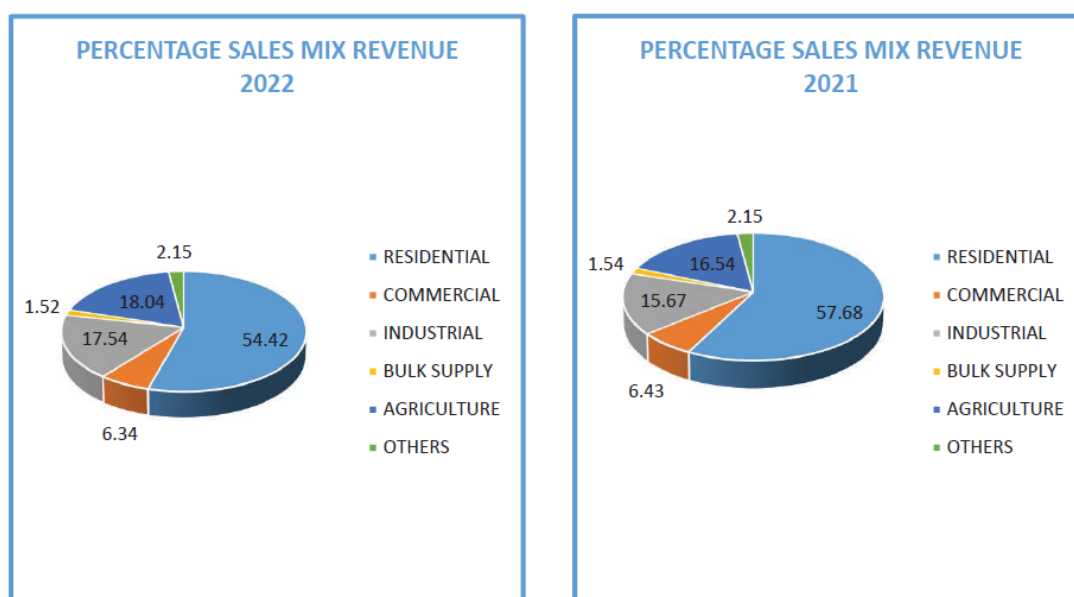
Future Investment, Stock prices, and debt payments are associated with the profitability of the organization. A higher profitability % is preferred. (Vipond, 2020)

Unit of Measure: %		
Ratio Names	Year 2022 (Current Year)	Year 2021(Benchmark)
Operating Ratio	(6.7%)	4.43%
Net Profit Ratio	(6.5%)	4.63%
<b>Ratio Analysis: The current Year's ratios point to net loss compared to the benchmark.</b>		

**Analysis:** FY2022 has not been profitable for MEPCO. The company once again operating at a loss compared to the previous (2021) year was profitable. Due to high power demands, MEPCO's Gross Sales increased in FY 2022 to Rs 401,051 Million from Rs 256,391 Million but because of the increase in unit cost, the Gross Profit decreased to Rs 9,193 Million.

The operational expenditures have also increased significantly in FY 2022. Besides the organization paid a hefty Rs 3,103 Million as supplementary charges which is the penalty charged by IPPs to DISCOS.

The increase in financial cost in the form of markup payments further increased operational expenses. To summarize the aforementioned details unit cost, operational expenses, and interest payments severely impacted the profitability of MEPCO in 2022. This loss is attributed to external and internal factors.



**Figure 17: Consumer-wise Sales Comparison (Source: MEPCO Annual Report 2022)**

### 4.1.3 Efficiency Ratios

This ratio is also known as the asset management ratio and measures how efficiently the firm is using its assets to pay liabilities, the days and frequency to convert assets into finished goods, the holding time of inventory, and its conversion into cash, receivables, and liabilities payment period. The efficiency ratios could either result in profitability or loss of the firm. Excessive investment in assets increases operational expense and insufficient assets result in a loss of revenue. The preferable limits are “fewer days and great frequency”. Ehrhardt (2015)

<b>Units of Measure: Days and Times</b>		
<b>Ratio Names</b>	<b>Year 2022 (Current Year)</b>	<b>Year 2021 (Benchmark)</b>
<b>Debtor Turnover Ratio</b>	<b>71.12 Days</b>	<b>77.08 Days</b>
<b>Inventory Turnover Ratio</b>	<b>6.51 Days</b>	<b>8.86 Days</b>
<b>Creditor Turnover Ratio</b>	<b>159.84 Days</b>	<b>249.39 Days</b>
<b>Cash Conversion Cycle</b>	<b>(82.21Days)</b>	<b>(163.45 Days)</b>
<b>Asset turnover Ratio</b>	<b>0.96 times</b>	<b>0.69 times</b>
<b>Ratio Analysis: The current Year’s ratios improved significantly compared to the benchmark but they are still on the higher side.</b>		

**Analysis:** There is an overall improvement in the operational efficiency of the MEPCO compared with the efficiency ratios of the year 2021. The company’s Debtor turnover ratio for the year has reduced to approximately 5.96 days in FY2022 compared to FY2021 which stood at 77.08 days. This means that MEPCO has to wait for approximately 71.12 days to collect receipts from its debtors. This decrease in days also means the company will not have to face liquidity problems in the short term and this will result in less deferred payments to CPPA-G. This improvement in receivables also means that MEPCO will be able to pay invoices to CPPA-G sooner with fewer supplementary charges. However, there are receivables of MEPCO that are owned by different GENCOs, DISCOs, WAPDA, and FPA charges waiver consumers whose power consumption is 300 or below units. These dues are outstanding to different power companies because of low recoveries. This low recovery on the part of DISCOs means that these will not make timely payments to CPPA-G also to other DISCOs. In addition, high losses are affecting the receivables turnover ratios of MEPCO as well as other DISCOs. For example, IESCO, PESCO, and SEPCO owe Rs 79 Million, Rs 429 Million, and Rs 6 Million respectively to MEPCO in the FY 2022.

According to the State of Industry Report 2022, PESCO and SEPCO are considered DISCOs with very low recoveries.

The creditor turnover ratio and CCC ratio have been improved in FY2022 compared with FY2021. The creditor turnover ratio and CCC for the year 2021 were to be around 249.39 days and (163.45 days) respectively. The improvement in the receivable ratio resulted in the improvement in the creditor's ratio and CCC. The collections in FY 2021 were reported to be around Rs 30,887 Million which increased to Rs 41860.2 million in the Year 2022 despite the decrease in recovery ratio. The recovery ratio of MEPCO in FY2022 and FY2021 was 92.08% and 102.15% respectively. The decrease in the recovery ratio of 10.07% is because the billed amount and amount collected were in deficit. This loss can be attributed to different factors such as power theft and the increase in fuel prices increased unit cost. This caused overbilling to consumers and failure to make payments of the billed amount. MEPCO lost 3346 GWh units in the year 2022. The loss of these units has cost MEPCO Rs 75.10 Billion.

The CCC ratio in FY2021 was (163.45 days) which was reduced to (82.21 days) in FY2022. CCC ratio means the number of days taken by a firm to convert its assets into cash that could be used for investment or debt payments. The improvement in collections by MEPCO played a key in reducing CCC. This also reduced the creditor-payment ratio to 159.84 days in the year 2022 from 249.39 days in the year 2021. MEPCO purchases power from CPPA-G and then distributes power to different categories of consumers. It then bills and collects revenue from consumers. Since it collects sale revenue first and then makes invoice payments of CPPA-G, this results in negative CCC. This implies that MEPCO receives payments from customers much quicker than it could pay CPPA-G for the purchase of power. The increase in collections by MEPCO in the year 2022 has enabled the organization to pay its creditors in fewer days. Another reason could be the Tariff Differential Subsidiary (TDS) given by the GOP. The payment of TDS is the financing of the MEPCO or any other DISCOs so that it could make payment to CPPA-G. This subsidy acts as a discount given to consumers. Since DISCOs will no longer charge consumers for relief given by the GOP, this results in less revenue. To compensate the GOP pays TDS to DISCOs from time to time. This could translate into negative CCC. MEPCO expected to receive TDS of Rs 35,041 Million in FY2022 which was less than compared to 2021 which amounted to Rs 82,063 Million. This lower TDS may be the fact that MEPCO collection increased in the year 2022.

#### 4.1.4 Working Capital

It is the difference between current assets and current liabilities. Companies seek to maximize working capital which prevents them from taking on additional debt for payment of liabilities. The higher the difference value, the more easily the company pays its current liabilities. (Fernando, 2023)

Unit of Measure: Rupees		
	Year 2022 (Current Year)	Year 2021 (Benchmark)
Net Working Capital	Rs 11,070,247,997	Rs 4,282,532,152
<b>Ratio Analysis: The current Year's working capital increased by over 50% which MEPCO could use for paying off short-term liabilities.</b>		

**Analysis:** The working capital of MEPCO for the year 2022 has increased over two-fold was approximately Rs 4,282 Million in the year 2021. This has put the organization in a position to pay short obligations without any major hindrance. Several factors could be associated with an increase in working capital such as improvement in receivables from consumers, TDS, and short-term investments. In addition, the bank balances of MEPCO have been doubled to Rs 10,719 Million in the year 2022. The company earned a profit on term deposits that amounted to Rs 2,326 Million. The company also earned additional income from non-financial assets such as service, reconnection, and miscellaneous charges.

#### 4.1.5 STEEPLE Analysis of MEPCO

**Social:** The jurisdiction of MEPCO covers some thirteen districts of southern Punjab serving approximately 7.6 million consumers. The consumer segment includes domestic, commercial, industrial, agricultural, and others. MEPCO also meets the power requirements of government organizations and provides power to all income and social groups without any discrimination.

**Technological:** The growing population of southern Punjab is a challenge for MEPCO. The population is positively correlated to power demand which is putting strain on the power systems. Due to an overload in systems, people are subject to long hours of power outages. The pace of system upgradation with population growth is slow.

The second issue faced by MEPCO is T&D loss. This is because people make illegal connections from transmission lines resulting in unmetered connections. Southern Punjab is considered to be amongst the highest T&D losses. In addition, there are incidents of transformer theft and demolition of electric poles have been reported. Due to the older power systems, most grid stations trip.

***Environment:*** Climatic conditions in Southern Punjab are scorching. The average temperature in summer can reach up to 50 degrees centigrade. The change in global climate has also altered the summer duration. The prolonged summer season increases the power demand on MEPCO's power system. The threat of floods in the summer season severely disrupts the power supply as most grid stations become flooded and powerlines are washed away.

***Economic:*** Fuel prices and devaluation of PKR against the US Dollar cause inflation. Powerplants that use RFO produce expensive power due to an appreciation in fuel and dollar prices. The DISCOs bill consumers heavily to recover fuel costs in the form of FPA.

The increase in fuel prices affects people negatively. People tend to focus more necessities of life and sometimes they are unable to pay the power bills. As a result, bill recoveries are slow and sometimes result in default. The same is true for institutions and commercial consumers who also face difficulty in bill payments. Inflation contributes to lower and slow recoveries by MEPCO that affect profitability and the ability to make invoice payments to CPPA-G.

***Political:*** Political influence is a great cause of concern for MEPCO and all DISCOs. The management finds it difficult to work and appointments are made based on political affiliations by passing merit. Secondly, The frequent intervention by the government in subsidies affects the revenue collection target. For example, the FPA for June 2022 aggregated to Rs 16,847.13 Million was supposed to be billed in August 2022. MEPCO was directed by MOE not to charge the amount to consumers whose power consumption is up to 300 units. The legal actions against those who are involved in power theft are affected by political might.

***Legal:*** NEPRA is the regulator in the power sector that determines tariffs. NEPRA most of the time unable to give TDS on time. Secondly, MEPCO is legally bound to give waivers of FPA as per government instruction. Subsidies given to DISCOs are not sufficient to cover the cost.



Despite financial issues, the MEPCO has to give free units of electricity, especially to senior management.

**Ethics:** Power theft is the biggest concern for MEPCO and all DISCOs. Power theft is the outcome of bribery and the involvement of lower staff. Similarly, unmetered connections, non-payments of bills

#### 4.1.6 MEPCO Summary

The following table illustrates the formulas and calculations for the Ratio Analysis of MEPCO for the year 2022;

Ratio Name	Formula	Calculations	Result
Current Ratio	Current Asset /Current Liabilities	229,051,085,763/217,980,837,766	1.05 ratio
Quick Ratio	(CurrentAssets-Inventory)/CurrentLiabilities	(229,051,085,763-8,778,303,293)/217,980,837,766	1.01 ratio
Operating Profit	Operating Profit/Sale	(23,360,639,041)/ 345,843,911,414	(6.7%)
Net Profit Margin	Net Income/Sales	(22,814,430,792)/345,843,911,414	(6.5%)
Debtor Turnover	(Avg.AR/Sales)*365	(67,387,595,361.5/345,843,911,414)*365	71.12 Days
Inventory Turnover	(Value of Avg.Inventory/COGS)*365	(7,258,537,412.5/406,935,603,535)*365	6.51 Days
Creditor Turnover	(Avg.Creditor/COGS)*365	(178,210,301,770.5/406,935,603,535)*365	159.84 Days
CCC	DSO+Inventory Turnover-DPO	71.12+6.51-159.84	(82.21Days)
Asset turnover ratio	Net Sales/ Total Assets	345,843,911,414/358,584,524,113	0.96 times
Net Working Capital	Current Assets-Current Liabilities	229,051,085,763-217,980,837,766	Rs 11,070,247,997

#### 4.1.7 Profit Loss Statement MEPCO

## PROFIT AND LOSS ACCOUNT

### MULTAN ELECTRIC POWER COMPANY LIMITED STATEMENT OF PROFIT OR LOSS FOR THE YEAR ENDED JUNE 30, 2022

	Note	2022 Rupees	2021 Rupees
Sale of electricity - net	27	<b>345,843,911,414</b>	216,780,894,077
Tariff differential subsidies	28	<b>70,283,937,519</b>	72,382,511,737
		<b>416,127,848,933</b>	289,163,405,814
Cost of electricity	29	<b>(406,934,603,535)</b>	(248,523,078,796)
Gross profit		<b>9,193,245,398</b>	40,640,327,018
Amortization of deferred credit	12	<b>3,366,498,166</b>	3,147,935,782
		<b>12,559,743,564</b>	43,788,262,800
Operating expenses excluding depreciation and amortization	30	<b>(29,797,600,579)</b>	(27,668,736,093)
Depreciation on operating fixed assets	16	<b>(5,702,236,440)</b>	(5,457,344,407)
Allowance for expected credit losses	21.1	<b>(420,545,586)</b>	(1,038,747,048)
		<b>(35,920,382,605)</b>	(34,164,827,548)
(Loss) / profit from operations		<b>(23,360,639,041)</b>	9,623,435,252
Other income	31	<b>6,872,303,585</b>	5,281,504,661
Finance cost	32	<b>(1,998,538,246)</b>	(1,600,608,741)
(Loss) / profit before taxation		<b>(18,486,873,702)</b>	13,304,331,172
Taxation	33	<b>(4,327,557,090)</b>	(3,255,921,806)
(Loss) / profit for the year		<b>(22,814,430,792)</b>	10,048,409,366

Figure 18: Profit and Loss Statement MEPCO (Source: MEPCO Annual Report 2022)

## 4.1.8 Balance Sheet of MEPCO

# BALANCE SHEET

	Note	2022 Rupees	Restated 2021 Rupees	Restated as at July 01, 2020 Rupees
<b>EQUITY AND LIABILITIES</b>				
<b>SHARE CAPITAL AND RESERVES</b>				
Share capital	5	10,823,636,048	10,823,636,048	10,823,636,048
Deposit for shares	6	49,639,659,930	24,684,349,025	31,337,632,169
Accumulated loss	7	(147,180,135,100)	(107,595,353,585)	(112,280,846,794)
<b>TOTAL EQUITY</b>		<b>(86,716,839,122)</b>	<b>(72,087,368,512)</b>	<b>(70,119,578,577)</b>
<b>LIABILITIES</b>				
<b>NON-CURRENT LIABILITIES</b>				
Long term financing	8	6,633,766,788	7,529,178,204	8,117,630,545
Staff retirement benefits	9	108,696,744,299	88,975,501,918	80,582,683,869
Long term security deposits	10	12,453,362,239	11,395,508,533	10,179,383,631
Contract liabilities - Receipt against deposit works	11	33,955,076,491	29,123,355,269	25,803,025,352
Deferred credit	12	65,581,575,650	62,619,719,376	59,724,026,331
		<b>227,320,525,468</b>	<b>199,643,263,300</b>	<b>184,406,749,728</b>
<b>CURRENT LIABILITIES</b>				
Trade and other payables	13	192,312,653,012	164,106,950,529	175,529,885,039
Accrued mark-up	14	9,225,118,719	8,018,529,347	10,788,639,164
Current portion of long term financing	8	7,583,631,043	6,720,997,526	6,031,857,596
Provision for taxation		8,859,434,993	4,531,877,903	1,275,956,097
		<b>217,980,837,766</b>	<b>183,378,355,305</b>	<b>193,626,337,896</b>
<b>TOTAL LIABILITIES</b>		<b>445,301,363,234</b>	<b>383,021,618,606</b>	<b>378,033,087,624</b>
<b>CONTINGENCIES AND COMMITMENTS</b>				
<b>TOTAL EQUITY AND LIABILITIES</b>	15	<b>358,584,524,113</b>	<b>310,934,250,094</b>	<b>307,913,509,047</b>
<b>NON-CURRENT ASSETS</b>				
Property, plant and equipment	16	129,412,958,632	123,160,370,471	117,672,020,684
Intangible assets	17	-	-	-
Long term loans to employees	18	120,430,533	112,942,981	81,394,604
Long term deposits	19	49,185	49,185	49,185
		<b>129,533,438,350</b>	<b>123,273,362,637</b>	<b>117,753,464,473</b>
<b>CURRENT ASSETS</b>				
Stores and spare parts	20	8,778,303,293	5,738,771,532	6,328,680,702
Trade debts	21	94,417,538,728	40,357,651,995	51,201,853,926
Loans and advances	22	290,561,168	313,575,913	320,793,215
Other receivables	23	76,767,309,645	112,958,521,516	110,161,860,641
Advance income tax		3,143,055,837	521,459,359	2,551,409,801
Sales tax receivable	24	7,327,081,624	3,955,553,489	2,069,701,801
Accrued interest		107,552,341	265,611,799	157,817,812
Short term investments - amortized cost	25	27,500,000,000	18,075,614,275	12,001,000,000
Bank balances	26	10,719,683,127	5,474,127,579	5,366,926,676
		<b>229,051,085,763</b>	<b>187,660,887,457</b>	<b>190,160,044,574</b>
<b>TOTAL ASSETS</b>		<b>358,584,524,113</b>	<b>310,934,250,094</b>	<b>307,913,509,047</b>

Figure 19: Balance Sheet MEPCO (Source: MEPCO Annual Report 2022)

## 4.2 Islamabad Electric Supply Company (IESCO)

Islamabad Electric Supply Company was formed in 1998 and provides power to approximately 25 million consumers located in 6 districts. IESCO provides power from Attock to Jehlum and from River Indus to River Neelum.

### A. *The Unit of Power Purchased and Sold*

The sales of IESCO according to the NEPRA State of Industry Report increased to 9.29% in the year 2022. This indicates growth in the Purchase and Sales of Power Units in all segments of consumption. Most power units were sold to domestic, industrial, and commercial segments by IESCO in 2022. This also implies the power demand in these three categories increased significantly compared to the year 2021.

Description	FY2021	FY2022
Units Purchased (GWh)	11,965	13,027
Units Sold (GWh)	10,943	11,962

**Figure 20: Year-wise Power Units Purchased and Sold (Source: IESCO Annual Report 2022)**

### B. *Transmission and Distribution Loss of IESCO*

The losses of IESCO in the year 2022 have declined significantly yet it still sustained a loss of 1066 GWh Units. The units lost were worth Rs 21 billion. The allowed loss for the year 2022 was set at 8.15% but actual losses were 8.18% which was 0.03% more than the allowed loss. The financial impact of this trivial percentage is very significant affecting the profitability of IESCO in the FY2022

Description	FY2021	FY2022
Losses %	8.5%	8.2%

**Figure 21: Year-Wise Power Loss (Source: IESCO Annual Report 2022)**

## The Ratio Analysis of IESCO

### 4.2.1 Liquidity Ratios

Unit of Measure: Ratio		
Ratio Names	Year 2022 (Current Year)	Year 2021 (Benchmark)
Current Ratio	0.82	0.74
Quick Ratio	0.81	0.73
<b>Ratio Analysis: The current Year's ratios slightly improved compared to the benchmark but not encouraging.</b>		

**Analysis:** The liquidity ratios of IESCO signify that the company is facing a liquidity crisis and is not able to pay its liabilities both in the short term and long term. The analysis of the company's balance sheet highlights two categories of debtors. First is the AJK Government which has a debt of Rs 76,371 million in 2022 compared to 2021 which was Rs 41,239 million. The second category of debtors is NTDCs, GENCOs, DISCOs, and GPOs. The table shows the outstanding balances of the debtors

Debtor	Balance 2022 (Rs in Million)	Balance 2021 (Rs in Million)
NTDC	1,715	-
GENCOs and DISCOs	1,564	1,361
GPO	5,409	214

**Figure 22: Debtors Balances (Source: IESCO Annual Report 2022)**

Given the company's cash crisis, IESCO also financed its employees further increasing the receivable balance of the company. In addition, the company's receivables balance from non-government and other consumers also increased to Rs 32,023 million from Rs 14,419 million in the year 2022.

In FY2022, the short-term liabilities have significantly increased from Rs 212,990 million to Rs 141,337 million. Mostly IESCO owes balances to CPPA-G and PMLTC. The balance payable to CPPA-G includes the price of power purchase, debit notes, Tariff Rationalization Surcharge( TRS), Finance cost, and Supplementary Charges. The IESCO payment liability

to CPPA-G was reported to be Rs 157,930 million in 2022 however there is a reconciliation difference of Rs 4,861.97 million that needs to be settled between IESCO and CPPA-G. The rise in receivable balance at twice the rate of 2021 amounting to Rs130,443 million in 2022 and the rise of current liabilities have made the liquidity ratio unfavorable. The general conclusion can be drawn that the debtors of IESCO are also having collection problems. This is coupled with revenue loss as a result of mismanagement and line losses. We can also conclude that the delay in debt payment by the AJK Government has severely crippled IESCO's ability to make timely payments to CPPA, NTDC, and PMLTC thus increasing the liability of the IESCO. Due to late or lack of ability to make payments to CPPA-G, IESCO is struck by late payment charges imposed on invoices by GENCO through CPPA-G further adding liabilities to the books of IESCO. The AJK not only has to make payments to IESCO but also to PESCO and GEPCO.

Name of DISCO	NEPRA's determined tariff for supply to AJ&K (Rs./kWh)
PESCO	31.00
IESCO	27.58
GEPCO	28.01

**Figure 23: Tariff Payment by AJ&K Government to DISCOs (Source: NEPRA State of Industry Report 2022)**

NEPRA notified the AJK Government of the per unit KWh tariff for all three DISCOs but the federal government intervened and a new uniform tariff of Rs24.19/KWh was set. The AJK government is paying Rs 2.59/KWh. Due to this extraordinary tariff difference, IESCO and other DISCOs are having significant liquidity issues also accumulating a mountain of receivables in the balance sheet of DISCOs.

#### 4.2.2 Profitability Ratios

Unit of Measure: %		
Ratio Names	Year 2022 (Current Year)	Year 2021 (Benchmark)
Operating Ratio	(6.65%)	(5.97%)
Net Profit Ratio	(7.62%)	(1.02%)
<b>Ratio Analysis: IESCO continues to operate in a net loss. The net loss of the company in the current year has increased compared to the benchmark.</b>		

**Analysis:** The profitability of IESCO in the year 2022 further worsened despite the increase in sales revenue and the company's optimism based on 2021 performance. The company had been operating in the loss for over five years however in 2021, the performance started improving despite the net loss reported in 2021. The management was of the view that the year 2022 could transform IESCO from loss-incurring to profit-generating DISCO. But it proved otherwise. The operating ratio and net profit margin for the year 2021 were (5.97%) and (1.01%) respectively.

The increase in net sales revenue reported in FY2022 was Rs 215,201 Million which is higher than the preceding year which stood at Rs 138,780 million. The increase in sales is due to an increase in the consumer base and changes in climatic patterns i.e. prolonged summer season. This means power demand also increases. But this increase in sales revenue was overpowered by the cost of electricity. The cost rose by about 58.32% in 2022. The primary factors that made the cost of power rise are fuel prices (RFO and RLNG) and the devaluation of the Pakistani Rupee against the Dollar. The cost increase is further coupled with other factors such as high unit cost of production, high power purchase tariff, the addition of PMLTC transmission charges, increased supplementary charges, and net metering cost. IESCO purchased power for Rs 214,898 Million in the year 2022 compared to Rs 133,169 million in the year 2021. These factors severely reduced the gross profit of the company. The gross revenue of 2021 was around Rs 17,994 million reduced to Rs 13,247 million in 2022.

The operating and financial expenses of the IESCO both increased substantially. During the year 2022, the company expenses increased in different categories such as salaries and wages, leases, and other employee benefits (serving and retired). During the year, the company had also written the balances of its debtor and subsidiary receivable which also contributed to the financial loss. It has written off a receivable balance of Rs 4,655 million in the year 2022. In addition, it also paid markup on various loans and employee participation funds.

It is also believed that the timing of adjustments in the form of subsidy by NEPRA has not been appropriate led to a net for the company. Moreover, the increase in the cost of electricity during FY2022 significantly squeezed the profit margin of the company. The aforementioned reasons make it evident that IESCO is neither able to recover the cost nor able to pay the bills of the invoices of CPPA-G and other debtors. This will IESCO

with no other option except to delay the payments to its creditors. This is how the profitability of the company affects other business partners and circular debt arises.

#### 4.2.3 Efficiency Ratios

<b>Units of Measure: Days and Times</b>		
<b>Ratio Names</b>	<b>Year 2022 (Current Year)</b>	<b>Year 2021 (Benchmark)</b>
<b>Debtor Turnover Ratio</b>	<b>168.65 Days</b>	<b>258.51 Days</b>
<b>Inventory Turnover Ratio</b>	<b>2.49 Days</b>	<b>3.39 Days</b>
<b>Creditor Turnover Ratio</b>	<b>285.24 Days</b>	<b>423.56 Days</b>
<b>Cash Conversion Cycle</b>	<b>(114.1 Days)</b>	<b>(163.66 Days)</b>
<b>Asset turnover Ratio</b>	<b>0.62 times</b>	<b>0.51 times</b>
<b>Ratio Analysis: The current Year's ratios show improvements compared to the benchmark. Some ratios may be on the elevated side.</b>		

**Analysis:** The efficiency ratios of IESCO for the year 2022 show improvements compared to ratios for the year 2021. Despite the net loss to the company, IESCO's sales revenue increased and the company received TDS of Rs 24,750 million although the adjustments were not properly timed by NEPRA. In addition, the company also earned profits on investments in different financial institutions and reconnection fees. Due to unfavorable macro-economic factors, the expected net profitability converted to loss for the company.

One of the most important factors that resulted in efficiency improvement is collections by IESCO. The collection of IESCO increased from Rs 42,731 Million in 2021 to Rs 29290.06 million in 2022. However, the recovery ratio for the year 2022 was reduced from 116.87% (2021) to 95.62%. The company was able to recover Rs 227,284 Million out of Rs 289,977 Million in FY2022. The decline in the recovery ratio in the year 2022 is because of T&D loss despite, delayed payment of power dues by the consumers and power theft. The company's T&D loss for the year has improved from 8.54% to 8.18% in 2022 and resulted in a loss of Rs 21.90 Billion. Had this amount lost due to T&D losses recovered from consumers, it would have not only resulted in profitability but also further improved the efficiency ratios. The revenue lost due to T&D loss is a dilemma for all DISCOs that has affected their profitability as well as their ability to make timely payments to NTDC, CPPA-G other players in the power sector. Furthermore, this



T&D loss is one of the fundamental problems that gave rise to circular debt in the Pakistani Power Sector besides corporate governance and political interferences.

The CCC ratio of IESCO for the year 2022 was (114.1 days) from (163.66) in 2021. This decrease in the ratio is due to an increase in collections which resulted in payments of dues to the market operator. All DISCOs have prioritized early payments to CPPA-G as delay in payments results in a late payment surcharge in addition to a power purchase invoice. If the DISCO is unable to make payment the supplementary charges accumulate which is an obligation that shall be paid at the time of invoice payment. This negative CCC ratio for IESCO means that consumers it is selling and receiving payment from consumers much quicker than it makes payment to CPPA-G. Soon after receipts from customers" payments are made along with supplementary charges to CPPA-G to reduce the number of obligations from the books of the IESCO. The increase in collections not only altered the CCC but also the creditor turnover ratio in the year 2022 to 285.24 days from 423.56 days. This ratio can further be improved by speeding up a collection from debtors, particularly the AJK government who are unable to pay the outstanding balance of IESCO.

This year (2022) IESCO purchased purchase over 13,000 Gwh of units and sold approximately 12,000 Gwh of units to consumers. This increase implies an increase in power demand but also an increase in collections from consumers also enables IESCO to purchase more units to reduce power outage durations. Although poor decisions by NEPRA, fuel prices, and currency devaluation made power costs increase and overwhelm sales revenue however collections played an important role in improving efficiency ratios. The Tariff Differential Subsidy (TDS) of Rs 24,750 million in 2022 means that GoP is financing IESCO in addition to collection from consumers. The financing and recoveries make the CCC of IESCO negative.

#### 4.2.4 Working Capital

<b>Unit of Measure: Rupees</b>		
	<b>Year 2022 (Current Year)</b>	<b>Year 2021 (Benchmark)</b>
<b>Net Working Capital</b>	<b>(Rs 41,308,122,966)</b>	<b>(Rs 39,256,284,415)</b>
<b>Ratio Analysis: IESCO lacks working capital to pay off its current liabilities. This is cause of concern for the company and policymakers.</b>		

**Analysis:** The working capital of IESCO has decreased in the year 2022 from (Rs 39,256,284,415). The low recoveries from debtors particularly the AJK government have created severe liquidity problems for IESCO. In addition, the amount of debt particularly short-term or trade payables of IESCO has significantly increased. Add to this burden is late payment charges. Moreover, there are outstanding dues by different organizations as well for example GPO, DISCOs, and WAPDA.

The second factor that resulted in a deficit of working capital is fuel cost and other macro factors that led expensive production of power units. Due to high power costs, most consumers found it difficult to pay bills resulting in lower recoveries than planned recoveries. In addition, the company also lost over a billion in revenue due to line losses and power theft. The sluggish recoveries made the working capital of IESCO further deteriorate.

The third factor that can be associated is improper timings of TDS/adjustments by NEPRA which means that the company did not have funds available at the right time to support its operations. There are also receivables of Rs 4,655 million that were written off during the year contributing to loss as well as slippages in working capital.

#### **4.2.5 STEEPLE Analysis of IESCO**

**Social:** IESCO provides power to consumers of Islamabad and four districts of Punjab province namely Attock, Rawalpindi, Chakwal, and Jehleum. In addition, IESCO's responsibility extends to AJ&K as well. Power is provided to different consumer categories without any cultural discrimination.

**Technological:** The growing power demand is putting strain on the existing power system. IESCO reported a loss of Rs 22 billion in 2022 due to T&D losses. Due to financial issues, there are delays in the commissioning of new efficient power systems and some existing systems are not serviceable. As a result of this people living in adjoining areas of Islamabad and four districts face power outages.

**Environment:** In recent years there has been a change in weather patterns. The summer season is more prolonged than usual which increases the power demand. The extraordinary rainfall in

the monsoon season is also a challenge for IESCO as powerhouses become flooded. Secondly, the grid stations that are located in AJ&K trip in the winter season due to snowfall disrupting power supply to the consumers.

**Economic:** The extraordinary fuel price increase coupled with an appreciation of exchange rates has severely impacted every business sector of Pakistan. The unit cost of power has significantly increased which caused inflation in the country. Consumers are billed heavily and people find it increasingly difficult to pay the bills. The trend of solar paneling is increasing among domestic and commercial consumers to reduce their expenses arising from power.

Pakistan Post which is under financial stress is unable to make payments to IESCO creating financial difficulties for the company. The inflations have greatly affected the recoveries of DISCO, resulting in deferred payments to CPPA-G and other DISCOs.

**Political:** The AJ&K government is liable to make payment for the power usage of IESCO. Balance payment is rising. The federal government stepped in the matter and the unit cost against which payments were to be made, was reduced. The AJ&K government would make payments for the discounted unit cost that has significant financial drawbacks both in the short term and long term. In addition, the organization is always under political pressure that is affecting the decisions of the company and the inconsistency of policies.

**Legal:** The delay in TDS by NEPRA, delay in FPA, and tariff waiver is the challenge that results in poor revenue collections. Due to poor law practices, people who are held on charges of power theft most of the time are backed by political support, and charges are dismissed. The service and post-retirement benefits for employees are causing sustainability issues for the organization and are officially bound to provide such benefits.

**Ethics:** Just like all DISCOs, IESCO confronts power theft, unmetered connections as well as illegal connections.

#### 4.2.6 IESCO Summary

The following table illustrates the formulas and calculations for the Ratio Analysis of IESCO for the year 2022;

Ratio Name	Formula	Calculations	Result
Current Ratio	CA/CL	184,268,584,480/225,576,707,446	0.82 ratio
Quick Ratio	(CA-Inventory)/CL	(184,268,584,480-1,846,524,415)/225,576,707,446	0.81 ratio
Operating Profit	Operating Profit/Sale	(14,300,485,979)/ 215,201,085,570	(6.65%)
Net Profit Margin	Net Income/Sales	(16,392,903,725)/215,201,085,570	(7.62%)
Debtor turnover	(Avg.AR/Sales)*365	(99,434,714,734.5/215,201,085,570)*365	168.65 Days
Inventory Turnover	(Value of Avg.Inventory/COGS)*365	(1,550,125,774.5/226,703,925,952)*365	2.49 Days
Creditor Turnover	(Avg.Creditor/COGS)*365	(177,163,993,199.5/226,703,925,952)*365	285.24 Days
CCC	DSO+Inventory Turnover-DPO	168.65+2.49-285.24	(114.1 Days)
Asset turnover ratio	Net Sales/ Total Assets	215,201,085,570/346,205,095,818	0.62 times
Net Working Capital	CA-CL	184,268,584,480-225,576,707,446	(Rs 41,308,122,966)

## 4.2.7 Profit Loss Statement IESCO

**ISLAMABAD ELECTRIC SUPPLY COMPANY LIMITED**  
**STATEMENT OF PROFIT OR LOSS**  
**FOR THE YEAR ENDED 30 JUNE 2022**

	NOTE	2022 Rupees	2021 Restated Rupees
SALE OF ELECTRICITY - NET	26	215,201,085,570	138,780,783,389
TARIFF DIFFERENTIAL SUBSIDY	10	24,750,630,749	22,410,587,232
		<u>239,951,716,319</u>	<u>161,191,370,621</u>
COST OF ELECTRICITY	27	(226,703,925,952)	(143,196,575,725)
GROSS PROFIT		<u>13,247,790,367</u>	<u>17,994,794,896</u>
AMORTIZATION OF DEFERRED CREDIT	22	1,813,499,956	1,640,058,947
		<u>15,061,290,323</u>	<u>19,634,853,843</u>
OPERATING EXPENSES:			
ADMINISTRATIVE EXPENSES	28	(7,802,798,314)	(8,942,610,109)
DISTRIBUTION COSTS	29	(20,303,478,222)	(17,887,934,519)
CUSTOMER SERVICES COSTS	30	(1,255,499,766)	(1,101,483,110)
		<u>(29,361,776,302)</u>	<u>(27,932,027,738)</u>
LOSS FROM OPERATIONS		<u>(14,300,485,979)</u>	<u>(8,297,173,895)</u>
OTHER INCOME	31	3,074,858,457	2,379,468,061
FINANCE COST	32	(2,573,214,332)	(1,873,007,466)
LOSS BEFORE TAXATION		<u>(13,798,841,854)</u>	<u>(7,790,713,300)</u>
TAXATION	33	(2,594,061,871)	6,382,000,015
LOSS AFTER TAXATION		<u>(16,392,903,725)</u>	<u>(1,408,713,285)</u>

**Figure 24: Profit and Loss Statement IESCO**

## 4.2.8 Balance Sheet of IESCO

<b>ISLAMABAD ELECTRIC SUPPLY COMPANY LIMITED</b>			
<b>STATEMENT OF FINANCIAL POSITION</b>			
<b>AS AT 30 JUNE 2022</b>			
	<b>2022</b>	<b>2021</b>	<b>2020</b>
<b>NOTE</b>	<b>Rupees</b>	<b>Restated Rupees</b>	<b>Restated Rupees</b>
<b>ASSETS</b>			
<b>NON-CURRENT ASSETS</b>			
Property, plant and equipment	3 161,423,881,204	154,229,595,588	103,285,666,165
Intangible asset under development	4 114,032,619	114,032,619	114,032,619
Long term loans	5 332,707,015	189,843,098	191,505,142
Deferred income tax asset	6 -	-	-
	<u>161,870,620,838</u>	<u>154,533,471,305</u>	<u>103,591,203,926</u>
<b>CURRENT ASSETS</b>			
Stores, spares and loose tools	7 1,846,542,415	1,253,709,134	1,409,307,717
Trade debts	8 130,443,933,380	68,425,496,089	128,158,439,953
Loans and advances	9 517,403,237	275,214,823	436,662,038
Receivable from Government of Pakistan	10 2,505,783,771	6,670,626,766	7,458,533,039
Security deposits	11 73,736,230	73,736,230	73,736,230
Other receivables	12 11,584,202,580	4,151,416,716	3,781,451,987
Sales tax receivable	13 23,407,056,774	21,672,240,530	21,672,240,530
Advance income tax	14 1,312,858,799	1,320,081,028	1,508,226,947
Cash and bank balances	15 12,577,067,294	8,576,643,121	5,204,373,983
	<u>184,268,584,480</u>	<u>112,419,164,437</u>	<u>169,702,972,424</u>
Non-current assets held for sale	12.3 65,890,500	65,890,500	65,890,500
	<u>184,334,474,980</u>	<u>112,485,054,937</u>	<u>169,768,862,924</u>
<b>TOTAL ASSETS</b>	<u>346,205,095,818</u>	<u>267,018,526,242</u>	<u>273,360,066,850</u>
<b>EQUITY AND LIABILITIES</b>			
<b>SHARE CAPITAL AND RESERVES</b>			
<b>Authorized share capital</b>			
5,000,000,000 (2021: 5,000,000,000) Ordinary shares of Rupees 10 each	50,000,000,000	50,000,000,000	50,000,000,000
<b>Issued, subscribed and paid up share capital</b>	16 5,798,253,340	5,798,253,340	5,798,253,340
Accumulated loss	(83,718,990,977)	(69,644,453,434)	(68,285,370,186)
<b>Capital reserves</b>			
Deposit for shares	17 33,787,229,112	15,977,870,269	20,250,770,096
Surplus on revaluation of operating fixed assets - net of deferred income tax	18 73,174,670,251	75,042,111,464	32,507,220,605
	<u>106,981,899,363</u>	<u>91,019,981,733</u>	<u>52,757,990,701</u>
<b>Total reserves</b>	<u>23,242,908,396</u>	<u>21,375,528,299</u>	<u>(15,527,379,485)</u>
<b>Total equity</b>	<u>29,041,161,726</u>	<u>27,173,781,639</u>	<u>(9,729,126,145)</u>
<b>LIABILITIES</b>			
<b>NON-CURRENT LIABILITIES</b>			
Long term loans	19 4,787,257,072	5,449,707,205	6,265,591,770
Long term security deposits	20 8,336,047,237	7,304,779,929	6,533,606,741
Staff retirement benefits	21 45,573,104,473	45,846,048,211	42,832,870,862
Deferred credit	22 32,910,817,864	29,768,760,406	28,300,117,642
	<u>91,587,226,646</u>	<u>88,169,295,751</u>	<u>83,932,187,045</u>
<b>CURRENT LIABILITIES</b>			
Trade and other payables	23 212,990,079,093	141,337,907,306	191,001,573,752
Accrued mark-up	24 8,623,270,244	7,182,137,352	5,799,135,271
Current portion of long term loans	19 3,963,350,109	3,155,404,194	2,356,298,927
	<u>225,576,707,446</u>	<u>151,675,448,852</u>	<u>199,157,006,950</u>
<b>TOTAL LIABILITIES</b>	<u>317,163,934,092</u>	<u>239,844,744,603</u>	<u>283,089,192,995</u>
<b>CONTINGENCIES AND COMMITMENTS</b>			
	25 -	-	-
<b>TOTAL EQUITY AND LIABILITIES</b>	<u>346,205,095,818</u>	<u>267,018,526,242</u>	<u>273,360,066,850</u>

Figure 25: Balance Sheet IESCO

### 4.3 PESCO Ratio Analysis

Peshawar Electric Supply Company Limited (PESCO), located in Peshawar provides service of power distribution to over 3.8 million consumers of all civil districts of Khyber Pakhtunkhwa, Pakistan. They own and maintain KP's electricity distribution system via 132 and 66 KV sub-transmission lines, substations, and 11 KV and 440V low-tension lines with distribution transformers that deliver electricity to domestic, commercial, and industrial consumers.

#### *Jurisdiction*

PESCO is divided into eight (08) Circles covering about 1,204,621 Hectares of land in total. PESCO coverage area has been distributed into the following circles;

- DI Khan Circle
- Bannu Circle
- Hazara Circle
- Khyber Circle
- Mardan Circle
- Peshawar Circle
- Swabi Circle
- Swat Circle

#### **A. The unit cost of power:**

In the year 2022-23, the per unit purchase price of PESCO was Rs. 20.83 per KWh against Rs. 17.42 per KWh in FY 2021-22. During the year ended on 30th June 2023, the Company sold 9,549 Million units (2022:10,355 million units) showing a decrease of 8%. The comparison of category-wise units sold during the year under review with that of last year is appended below:

Consumer Category	FY 2022-23	FY 2021-22
Domestic	5,128	5,689
Commercial	875	874
Industrial	2,236	2,528
Bulk & Other	1,242	1,175
Agriculture	56	77
Public lighting	12	12
<b>Total</b>	<b>9,549</b>	<b>10,355</b>

**Figure 26: Consumer-wise distribution (Source: PESCO Annual Report)**

## B. Transmission and Distribution Loss of PESCO

As compared to sales, the purchase of power during the year under review was 15,255 million units (2022: 16,562 Million units). T&D losses during 2022-23 were 37.4% as compared to the last year 2021-22: 37.5%.

Total billing increased by 34% as compared to the previous year mainly because of an increase in tariff. The table below shows the category-wise pattern of billing during the year ended on 30th June 2023 as compared to the previous year.

(Consumers in “thousand’s and Billing in “Million Rs.)

Category	FY 2022-23		FY 2021-22	
	Consumers	Billing	Consumers	Billing
Domestic	3,693	132,420	3,546	97,402
Commercial	407	44,263	394	30,683
Industrial	29	86,762	28	69,379
Bulk & Other	47	47,845	46	34,244
Agriculture	23	1,658	23	1,470
Public lighting	1	539	1	415
<b>Total</b>	<b>4,199</b>	<b>313,486</b>	<b>4,038</b>	<b>233,592</b>

Figure 27: Consumer-wise billing (Source: PESCO Annual Report)

## The Ratio Analysis

### 4.3.1 Liquidity Ratios (Ratio)

Unit of Measure: Ratio		
Ratio Names	Year 2023 (Current Year)	Year 2022 (Benchmark)
Current Ratio	0.47	0.51
Quick Ratio	0.45	0.49
<b>Ratio Analysis: The current Year’s ratios declined compared to the last year.</b>		



**Analysis:** Overall the line losses of PESCO are very high which results in huge losses for the DISCO. The same can be observed in the ratio analysis for FY2022-23. When compared with the FY2021-22, the situation has worsened as the current liabilities have increased from 470 billion to 522 billion while the assets increased from 238 billion to 245 billion. The huge increase in liabilities is mainly because of the increase in payables. Although PESCO has increased the billing the line losses nor the payables have decreased. The significant change in Trade Payables is due to the increase in Payables to CPPA amounting to Rs. 37 billion.

#### 4.3.2 Profitability Ratios(%)

Unit of Measure: %		
Ratio Names	Year 2023 (Current Year)	Year 2022 (Benchmark)
Operating Ratio	(30.97%)	(47.37%)
Net Profit Ratio	(28.84%)	(45.76%)
<b>Ratio Analysis: Net loss is in both years. The net loss of the company in the current year has decreased compared to the benchmark.</b>		

**Analysis:** PESCO has suffered a net loss of Rs. 80,595 million for the year under consideration as against the loss of Rs. 102,128 million in the previous year. The main reason for the loss in 2022-23 was the unprecedented increase in Power Purchase Cost due to increasing in prices of Furnace Oil together with exchange rate parity, Revised Tariff notified by GoP in July 2022, and revised PESCO T&D Losses Target to 20.16% from 21.33% that too was reduced from 31.95% in one go by reducing target by 10.62%. The per unit purchase price for the year 2022-23 was Rs. 20.83 per KWh against Rs. 17.42 per KWh in FY 2021-22.

The tariff differential subsidy worth Rs. 39,272 million (2022: Rs. 51,390 million) is the difference between the tariff determined by NEPRA and the tariff notified by Govt. of Pakistan. Overall, the subsidies of PESCO have been decreased by 24% with respect to the last year, which is due to the revision of rates as determined by NEPRA for FY 2022-23 and notified by GoP.

The number of consumers has increased by 4% (2023: 4,199, 2022: 4,038) and units sold during the year were 9,549 KWh at an average rate of Rs. 25.16 per kWh (2022: 16.59

per Kwh). During the year under consideration, Transmission and Distribution Losses have been decreased by 0.1 %.

The same loss can be observed in the profitability ratio as both are negative 29% and 31%. The loss has decreased as compared to the last year mainly because of the more sales and reduced loss. The reduced loss is mainly because of the other incomes gathered from increased profit on bank deposits and about a 90% increase in the collection of late payment surcharges.

The summarized six year Profit and Loss position is as under;

Description	Rs. in Million					
	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23
Sales Revenue	87,312	107,567	127,504	133,645	171,782	240,224
Subsidy from GoP on sale of electricity	34,745	58,484	73,409	61,816	51,390	39,272
<b>Total Revenue</b>	<b>122,057</b>	<b>166,051</b>	<b>200,914</b>	<b>195,461</b>	<b>223,172</b>	<b>279,496</b>
Cost of electricity	(142,942)	(169,014)	(199,594)	(188,258)	(292,803)	(322,564)
<b>Gross profit/(Loss)</b>	<b>(20,885)</b>	<b>(2,963)</b>	<b>1,320</b>	<b>7,203</b>	<b>(69,630)</b>	<b>(43,068)</b>
Rental and service income	44	46	46	59	49	52
Amortization of deferred credit	1,490	1,603	1,708	1,852	2,071	2,309
<b>Profit before operating cost</b>	<b>(19,351)</b>	<b>(1,314)</b>	<b>3,074</b>	<b>9,114</b>	<b>(67,511)</b>	<b>(40,707)</b>
Other operating cost excluding depreciation	(21,360)	(26,448)	(25,651)	(33,434)	(34,466)	(41,580)
Depreciation on property, plant and equipment	(2,644)	(2,871)	(3,026)	(3,296)	(3,709)	(4,210)
	<b>(24,005)</b>	<b>(29,319)</b>	<b>(28,677)</b>	<b>(36,730)</b>	<b>(38,175)</b>	<b>(45,790)</b>
<b>Operating Profit/(Loss)</b>	<b>(43,356)</b>	<b>(30,633)</b>	<b>(25,603)</b>	<b>(27,616)</b>	<b>(105,686)</b>	<b>(86,497)</b>
Other income	4,952	5,757	13,674	7,744	7,735	10,122
Financial expense	(335)	(2,870)	(842)	(708)	(1,914)	(1,066)
<b>Net Loss before taxation</b>	<b>(38,738)</b>	<b>(27,746)</b>	<b>(12,772)</b>	<b>(20,580)</b>	<b>(99,866)</b>	<b>(77,441)</b>
Taxation	(1,183)	(1,517)	(1,851)	(2,166)	(2,263)	(3,153)
<b>Net loss after taxation</b>	<b>(39,921)</b>	<b>(29,263)</b>	<b>(14,622)</b>	<b>(22,746)</b>	<b>(102,128)</b>	<b>(80,595)</b>

Figure 28: Summary of profit and loss position (Source: PESCO Annual Report)

### 4.3.3 Efficiency Ratios (Days and Times)

Units of Measure: Days and Times		
Ratio Names	Year 2023 (Current Year)	Year 2022 (Benchmark)
Debtor Turnover Ratio	115.31 Days	129.17 Days
Inventory Turnover Ratio	11.78 Days	11.95 Days
Creditor Turnover Ratio	551.53 Days	576.78 Days
Cash Conversion Cycle	(424.44 Days)	(435.66 Days)
Asset turnover Ratio	0.79 times	0.65 times
<p><b>Ratio Analysis: The current Year's ratios show improvements compared to the benchmark.</b></p>		

*Analysis:* The efficiency ratio shows a very bleak picture of the company in terms of time and days. The asset turnover ratio is 0.79 times which shows that the company has sufficient assets and this situation is not very bad but other ratios including the Cash Conversion Cycle is 424 days. Meaning that it will take more than a year. The debtor turnover ratio is 115 days which is around four months while the creditors turnover ratio is 551 days meaning it will take more than 18 months.

The company's Debtor turnover ratio for the year is 115 days. This means that PESCO has to wait for approximately 115 days to collect receipts from its debtors. This 115 days means the company may face liquidity problems in the short term and this will result in more deferred payments to CPPA-G. just like MEPCO, high losses are affecting the receivables turnover ratios.

The creditor turnover ratio and CCC for the year 2022-23 are 551 days and 424 days respectively. CCC ratio means the number of days taken by a firm to convert its assets into cash that could be used for investment or debt payments. The time of around 14 months is very large showing a very weak financial position of the company. PESCO is one of the worst-performing DISCOs in the country which means that it will have a very weak financial position.

When compared with the last year the situation has improved but still it shows a very weak financial position for the company.

#### 4.3.4 Working Capital (Rupees)

Unit of Measure: Rupees		
	Year 2023 (Current Year)	Year 2022 (Benchmark)
Net Working Capital	(Rs 276,772,753,495)	(Rs 231,327,388,157)
<b>Ratio Analysis: The company lacks working capital to pay off its current liabilities.</b>		

*Analysis:* Just like the other ratios, net working capital shows the very weak financial position of the company. The current assets are 245 billion while the current liabilities are 522 billion. This shows that the company is in no position to pay off its current liabilities and will require assistance from the government to pay off its liabilities or will contribute towards the increase in circular debt. The major reason behind this is the line loss of 37 percent. It can be observed that the situation has worsened in the current year when compared with the benchmark year.

#### 4.3.5 STEEPLE Analysis of IESCO

*Social:* PESCO provides electricity to consumers of Khyber Pakhtunkhwa. It covers the whole province except the areas of former FATA. The people have a Tribal mindset in the area and the education level is low in villages and far-flung areas. Most of the consumers are residential and there are not many industries in the province.

*Technological:* Technological issues are prominent in Pakistan being a third-world country and away from technology. The transmission and distribution network are weak and old which results in increased line loss. There is also an issue of old and faulty meters which are not replaced due to lack of technology and available funds.

*Environment:* The environment somehow affects the performance of the PESCO because of its location and territory. Floods, earthquakes, and land sliding pose a threat to the existing infrastructure which may require repairs at huge costs. The area is mostly mountainous and it is difficult and costly to provide and repair infrastructure in the province.

**Economic:** The economic condition in the country has worsened over the years which has decreased the buying power of the consumers resulting in low electricity consumption, low bill payments, and more thefts. Unprecedented inflation of more than 40% along with, the increase in fuel prices and devaluation of rupees has caused an increase in electricity prices causing more problems.

**Political:** The political factor is important for the PESCO as the cost of electricity to be charged to consumers is greatly affected by the sitting government. They decide on the subsidies and cost of electricity, ignoring the performance and recoveries of the company. The weak law enforcement and the political pressure to ignore the areas with high line losses also cause damage to the working of the company.

**Legal:** The legal factor also influences the performance of the DISCO. In Pakistan, electricity prices are challenged in court and because of a stay order, the increased price is not collected. The court also provides relief to the people causing problems for the PESCO.

**Ethics:** Ethical issues are also prominent in PESCO as many people do not pay for electricity and use it illegally causing an increase in line losses and more expensive electricity to the consumers paying the bill. In KP, people think that electricity is cheaper from dams which are in KP, therefore they are not liable to pay the high cost of electricity and use this to not pay bills.

### 4.3.6 PESCO Summary

The following table illustrates the formulas and calculations for the Ratio Analysis of PESCO for the year 2023;

<b>Ratio Name</b>	<b>Formula</b>	<b>Units</b>	<b>Calculations</b>	<b>Result</b>
Current Ratio	Current Asset /Current Liabilities	Ratio	245,853,638,505 / 522,626,392,000	0.4704
Quick Ratio	(Current Assets-Inventory)/Current Liabilities	Ratio	(245,853,638,505-11,247,241,103) /522,626,392,000	0.4489
Operating Profit	Operating Profit/Sale	%	(86,549,915,767) / 279,495,397,707	(30.97%)
Net Profit Margin	Net Income/Sales	%	(80,594,808,586) / 279,495,397,707	(28.84%)
Debtor Turnover	(Avg.AR/Sales)*365	Days	(88,298,909,697.5 / 279,495,397,707) *365	115.31 Days
Inventory Turnover	(Value of Avg. Inventory/COGS)*365	Days	(10,413,677,444 / 322,563,824,475) *365	11.78 Days
Creditor Turnover	(Avg.Creditor/COGS)*365	Days	(487,411,387,474.5 / 322,563,824,475) *365	551.53 Days
CCC	DSO+Inventory Turnover-DPO	Days	115.31 + 11.78 – 551.53	(82.21Days)
Asset turnover ratio	Net Sales/ Total Assets	times	279,495,397,707 / 351,364,112,662	0.79 times
Net Working Capital	Current Assets-Current Liabilities	Rupees	245,853,638,505 – 522,626,392,000	Rs 276,772,753,495

## 4.3.7 Balance Sheet

**PESHAWAR ELECTRIC SUPPLY COMPANY LIMITED**  
**STATEMENT OF FINANCIAL POSITION**  
**AS AT JUNE 30, 2023**

	Note	2023 Rupees	2022 Rupees
<b>EQUITY AND LIABILITIES</b>			
<b>Share capital and reserves</b>			
Authorized share capital: 5,000,000,000 (2022: 5,000,000,000) ordinary shares of Rupees 10 each		50,000,000,000	50,000,000,000
Issued, subscribed and paid up share capital	5	10,000	10,000
Deposits for issue of share capital	6	130,867,728,553	92,855,405,071
Accumulated loss		(548,912,627,559)	(452,222,342,099)
<b>TOTAL EQUITY</b>		<b>(418,044,889,006)</b>	<b>(359,368,927,028)</b>
<b>Non-current liabilities</b>			
Liabilities against government investment	7	50,187,189,539	50,187,189,539
Long term loans - secured	8	8,061,124,905	7,867,513,425
Staff retirement benefits	9	148,528,485,046	126,421,111,601
Deferred credit	10	43,715,376,868	39,221,960,766
Consumers' security deposits	11	6,793,519,936	6,260,816,713
		257,285,696,294	229,958,612,044
<b>Current liabilities</b>			
Trade and other payables	12	512,133,192,562	462,689,582,387
Accrued markup	13	3,791,062,735	3,178,873,917
Current maturity of long term loans	8	3,556,618,533	2,143,075,981
Provision for taxation	29	3,145,518,170	2,257,808,735
		522,626,392,000	470,269,341,020
<b>TOTAL LIABILITIES</b>		<b>779,912,088,293</b>	<b>700,227,953,064</b>
Contingencies and commitments	14	-	-
		361,867,199,287	340,861,026,036
<b>ASSETS</b>			
<b>Non-current assets</b>			
Property, plant and equipment	15	116,012,851,449	101,917,287,124
Long term loans - considered good	16	709,333	1,786,049
		116,013,560,782	101,919,073,173
<b>Current assets</b>			
Stores, spare parts and loose tools	17	11,247,241,103	9,580,113,785
Trade debts	18	97,620,337,566	78,977,481,839
Loans and advances - considered good	19	3,732,288,648	2,496,250,975
Other receivables	20	96,905,868,230	95,734,895,215
Receivable from government of Pakistan (Ministry of Finance)	21	26,091,064,330	42,901,199,260
Bank balances	22	10,256,838,629	9,252,011,789
		245,853,638,505	238,941,952,863
<b>TOTAL ASSETS</b>		<b>361,867,199,287</b>	<b>340,861,026,036</b>

**Figure 29: Balance Sheet PESCO (Source: PESCO Annual Report)**

### 4.3.8 Profit & Loss Account

**PESHAWAR ELECTRIC SUPPLY COMPANY LIMITED**  
**STATEMENT OF PROFIT OR LOSS**  
**FOR THE YEAR ENDED JUNE 30, 2023**

	Note	2023 Rupees	2022 Rupees
Sale of electricity	23	240,223,816,812	171,781,726,839
Subsidy from Government of Pakistan on sale of electricity		39,271,580,895	51,390,432,017
		279,495,397,707	223,172,158,856
Cost of electricity	24	(322,563,824,475)	(292,802,591,808)
Gross loss		(43,068,426,768)	(69,630,432,952)
Amortization of deferred credit	10	2,308,964,609	2,070,881,984
		(40,759,462,159)	(67,559,550,968)
<b>Operating cost</b>			
Other operating cost excluding depreciation	25	(41,579,990,507)	(34,465,916,689)
Depreciation on property, plant and equipment	15.1	(4,210,463,102)	(3,709,338,186)
		(45,790,453,609)	(38,175,254,855)
Operating loss		(86,549,915,767)	(105,734,805,823)
<b>Other income</b>			
Rental and service income	26	52,485,906	48,903,377
Other income	27	10,121,705,368	7,734,853,604
		10,174,191,274	7,783,756,981
Financial cost	28	(1,065,899,814)	(1,914,485,107)
Loss before taxation		(77,441,624,308)	(99,865,533,949)
Taxation	29	(3,153,184,278)	(2,262,666,777)
Loss for the year		(80,594,808,586)	(102,128,200,726)

**Figure 30: Profit and Loss Account PESCO (Source: PESCO Annual Report)**

### 4.4 Comparison between the three DISCOs (MEPCO, IESCO and PESCO)

From the analysis of the financial reports of the above-mentioned DISCOs, we can conclude that MEPCO's performance during the year 2022 was better than IESCO's and PESCO was the worst-performing DISCO. MEPCO has a good net working capital which means it has a handsome amount of cash to support its operations. Whereas IESCO is facing significant cash issues and is likely to face difficulties in payments to its debtors and CPPA-G, the worst situation is with PESCO which appears to be defaulted if not supported by the government. Despite having higher collections and low T&D losses, the IESCO has high debt receivables compared to MEPCO in



the year 2022. All three DISCOs have reported net losses with the only difference being that MEPCO has been profitable in the previous years while IESCO and PESCO have been in loss over six years. All three DISCOs were affected by the high unit cost of production.

The overall short-term debt liability of MEPCO (Rs 192,312 Million) is less than IESCO (Rs 212,990 Million) however payments to CPPA-G by MEPCO are more than IESCO. MEPCO owes Rs 163,248 million to the market operator compared to IESCO amounting to Rs 157,930 million but PESCO owes the highest amount which is about 449,380 billion. This is because the debtors of IESCO have not been able to pay the dues timely while the PESCO has huge line losses of about 37% which cannot be covered through bills.

The profitability ratios of all three DISCOs are unfavorable but PESCO is the worst-performing while MEPCO appears to be the best-performing. MEPCO sustained a net loss of Rs 22,814 million compared with IESCO which reported a net loss of Rs 16,392 million in FY2022 while PESCO sustained a net loss of 80,594 million. All three DISCOs reported sales growth of (IESCO) 9.29%, (MEPCO) 9.94% and (PESCO) 25.11% in the current year but MEPCO had to lose Rs 75.10 billion worth of power units due to T&D losses compared to IESCO which lost just Rs 29.10 billion of units although both DISCOs witnessed a decline in T&D losses.

## **Chapter 5: Future Architecture of Pakistan Power Sector and Conclusion**

The power sector in Pakistan has been in crisis for years. Supply shortages, weak governance, reliance on imported fuel and machines for generation, and too many players in decision-making are the main reasons for cumulating losses and rising circular debt. Most of the time government borrows money from international financial institutes and banks to give subsidies which causes a shortage of cash flow to meet other expenses and heavily affects the country's GDP growth, and current account deficit. The key tasks facing the GOP are to eliminate the existing cyclic debt burden on the power industry and to stop it from happening again. The existing amount of debt prohibits government-owned firms from attracting the investment required to promote sector expansion and enhanced services, as well as funds to support improvements in management and system operations. This chapter concludes the project and discusses our proposed future recommendations in light of the preceding chapters discussed so far. Our recommendations include action plans from the Government, Regulator, and Corporate sector.

### **5.1 Future Action Plan**

Subsequently, out of other options, the privatization of the distribution sector of Pakistan has been recommended in the subject project. It is desired that the concept be highlighted and further necessary work may be done to forecast the outcomes of the applicability of this proposal. This can not only lead to a reduction in circular debt by privatizing the DISCOs but can also produce worthy cash flow by privatizing the distribution companies from bottom to top in the list of most financially distressed portfolios so that the requisite cash may be utilized for other purposes rather than to expose the existing portfolios to further risks. Based on the above, it is strongly recommended that government-owned entities including DISCOs and GENCOs should be privatized forthwith, the employees can be accommodated in other government-owned entities like WAPDA hydel and NTDC, etc. Further, the CTBCM model may be implemented in its true nature as this will reduce the burden on government in case of sovereign guarantees but will also make DISCOs more independent.

Following are the recommended roles for Government, Regulator and DISCOs.

#### **5.1.1. Role of government**

To stop the accumulation of circular debt, significant sector reforms and governance enhancements are required. The GOP must accomplish two things to fix these issues:

1. Remove circular debt from the energy sector entities' books and accept responsibility for the power sector reform process's poor management. Move the circular debt amount to the government debt adjust the tariff for consumers or impose a levy on consumers to facilitate gradual repayment.
2. Implement targeted policies and programs to enhance the management and performance of entities in the energy sector to reduce costs boost cash flows and guarantee the operational and financial integrity of the industry.

The high Tariff differential subsidy (TDS) forces the GOP to reduce funding for many other competing needs while allocating a substantial quantity of budgetary cash from limited resources. Prudence requires that several options be investigated to lower TDS and make it as controllable as feasible. At the ministry, regulatory, DISCO/corporate, and functional levels, this necessitates both immediate and long-term reforms.

***Specific Reforms:*** The GOP must guarantee the electricity sector's efficient management and functioning as well as its long-term financial stability. To do this, it must transition from serving largely as owner and operator to establishing policies and supervising the industry. The government must give way to Governance in terms of policy. Although achieving this role shift will take time, the creation and implementation of the reform initiatives mentioned above must start right away. To achieve true reform of the sector for the benefit of all, a pledge with the people of Pakistan and with key players in the energy industry is also necessary. It is crucial to remember that the power sector reform effort is a comprehensive strategy with both short and long-term effects on all power sector components. Because improvement in one aspect of the industry necessitates advancement in other areas, such as increased revenue collection by DISCOs, an all-encompassing GOP strategy is necessary for the program to be effective (e.g., legislation to make power theft a crime).

At the government of Pakistan level, specific reform components include:

1. NEPRA needs to be made truly independent; its ability to switch from a single-buyer model to a more competitive market structure needs to be strengthened; its ability to enforce laws needs to be expanded; the makeup of its technical staff needs to be reviewed and updated; and a significant capacity-building and training effort needs to be launched.
2. The provincial governments, CPPA-G, and DISCOs must address tariff and subsidy disputes through discussions.

3. Legislation outlawing the theft of electricity and making it a criminal subject to fines and jail time. To address and resolve cases of energy theft quickly, special tribunals should be established.
4. It is necessary to enhance the selection criteria and methodology used to appoint DISCO's BODs. Individuals on the Board of Directors (BODs) of DISCOs must exhibit excellent professional and technical qualifications, be free from political influence, and have full decision-making authority at the DISCO.
5. Do away with the uniform tariff and transition progressively to differential tariffs based on actual costs.
6. In the near term, make improvements to the fuel allocation policy to prioritize the highest-value applications (such as giving the power sector top priority when allocating natural gas), and in the long run, do away with fuel allocation altogether to let market forces determine how fuel is used. Cheap gasoline should be distributed based on its greater economic impact rather than political considerations.
7. Create strategies and policies to encourage hydropower and other domestic energy sources that will help to balance the portfolio of the nation's electricity supply.
8. Since the country has a large amount of thermal-based production capacity and gas resources are already running out while hydropower requires a long lead time, there needs to be a rush to complete indigenous coal conversions at the existing thermal power plants.
9. Prioritizing renewable energy should be done to reduce reliance on imported fuels. Because renewable energy sources are practically distributed throughout the entire nation, modest to medium-sized power plants may be constructed near load centers with the added benefit of being environmentally beneficial
10. Provincial and federal government receivables must be paid following other customers, and there is a system for billing disputes that must be resolved within three months with no right to launch a lawsuit for the next five years.
11. Put in place a robust demand-side management and energy conservation program.
12. The government may focus on the reduction of tariffs on Public and Private sector power plants with mutual consent.
13. The process of privatizing the Guddu and Nandipur Power Plants as well as the closure of low-efficiency thermal power plants (GENCOs) with a capacity of about 4221 MW may also be initiated.

14. The Pakistani government has introduced a subsidy program for industrial users to maximize the use of its efficient generation portfolio and the related socio-economic benefits of rising industrial demand.
15. Budgeting for the necessary subsidies for the power sector.
16. Converting old markup stock and PHL loans to public debt to shift interest costs from the power sector to that debt.

### **5.2.2. Role of Regulator (NEPRA)**

It is necessary to alter the mechanism of determining annual tariffs for all businesses (DISCOs, NTDCs, and GENCOs). Time lags in the submission and determination of tariffs, a delay in the recovery of cost increases, and an inconsistency in the timing of tariff determinations for different sectors of the industry all exist. To resolve these problems and provide NEPRA time to concentrate on other regulatory duties, NEPRA should implement a system of multi-year tariffs.

1. The determination and application of the fuel adjustment charge take a long time. To determine tariffs more accurately and promptly, NEPRA should implement a system of anticipated fuel pricing.
2. For the power sector, NEPRA needs the power to progressively switch from a single buyer model to a multiple buyers/sellers and open access model. Improved FPA mechanisms for DISCOs are needed to reduce the time it takes to determine and bill customers for FPA.
3. Vigorously supervise electricity company operations to ensure adherence to their license/tariff conditions/decisions.
4. It is necessary to restructure tariffs and their terms and conditions.
5. Novel approaches to commercial governance. The utility industries have access to several commercial governance approaches that have transformed loss-making enterprises into profitable ones.

### **5.2.3. Role of DISCOs**

1. Because the DISCOs are government-owned, they do not operate on a commercial basis and are excessively vulnerable to political interference. The DISCOs should be corporatized and then privatized to resolve this issue. Although privatization is a long-term objective, the policies and procedures to achieve it must start immediately. The privatization process must be open and transparent, and a competent international

consulting firm should oversee it.

2. A properly chosen senior management should oversee each DISCO on a corporate level. The JDs and KPIs assigned to this team must be very specific. The management of DISCO requires a crystal-clear corporate strategy and proven business plans.
3. The operational management must be given attainable goals and deadlines by top management. Such goals should be transformed into KPIs and shall be included in the operating officers' annual performance assessments (APRs). The APRs ought to be on a sliding scale and should recognize and commend superior workers while criticizing subpar or subpar ones.
4. Realistic goals for losses, recovery, quality, quantity, safety, and customer services should be set for DISCOs.
5. Incorporate a thorough program to reduce energy loss into every DISCO, especially PESCO, HESCO, QESCO, and SEPCO where distribution losses are comparatively significant.
6. Create and put into effect programs that emphasize demand-side control and energy efficiency through usage-based tariff billing.
7. Enforce electricity supply agreements by immediately disconnecting consumers who are in default.
8. In each DISCO, put in place a thorough revenue collection and theft prevention program, notably in HESCO, SEPCO, PESCO, and QESCO where revenue collection is less than FESCO, GEPCO, LESCO, MEPCO, and IESCO. The application should have the following features, without being limited to them:
  - a. Business process reengineering to enhance management control and customer service.
  - b. Modern metering technology and digital AMR systems replacing outdated electromechanical meters.
  - c. Improved database management, AMRs, and real-time data on critical business elements like billing and recovery can be achieved by improved information technology solutions, such as email. DISCOs must have increased visibility programs. The market is filled with technology. All that must be done is bring it in.
9. Across all DISCOs, load shedding needs to be acknowledged and given commercial priority. The 11KV feeder losses and recovery percentage ought to serve as the standard.

10. Reconciliation and settlement of K.E arrear subsidy claims by MoF resolve the K-Electric non-payment issue.
11. Addressing the Quetta Agri-Tube-Well non-payment issue by metering these customers and demanding that the Southern Command/CM Baluchistan disconnect non-paying customers.
12. Establishing a NEPRA-licensed DISCO in AJ&K will enable recovery from AJ&K at the GoP-notified price. For the revenue gap, the government can directly fund AJ&K's budget.
13. Increased DISCO recoveries and decreased T&D losses.

## **5.2 Conclusion**

Considering the power sector as the backbone of economic activities of the country, a timely and balanced response to every ascending matter is necessary which could otherwise lead to unwanted or destructive outcomes. Electricity is one of the widely used forms of energy which, if constructively utilized, can play a vital role in the economic and social well-being of a country. However, for the past few decades, several technical and financial deficiencies in the power sector of Pakistan have been reported in the form of electricity shortfall circular debt, etc. Resultantly, not only the power sector of Pakistan but also the government of Pakistan has been badly exposed owing to mishandling, absence of timely and adequate decisions, and selection of alternatives to find a way by thinking out of the scope.

There remains always the possibility of both merits and demerits behind the applicability of any proposal. One needs to identify their priority and accordingly needs to evaluate the direction that can produce the most valuable outcomes. Once the bullet is fired, it cannot be rewind back. Similarly, some decisions are so critical that once they are taken and implemented, their effects may be either constructive or destructive which can lead to a situation where there is no possibility of return.

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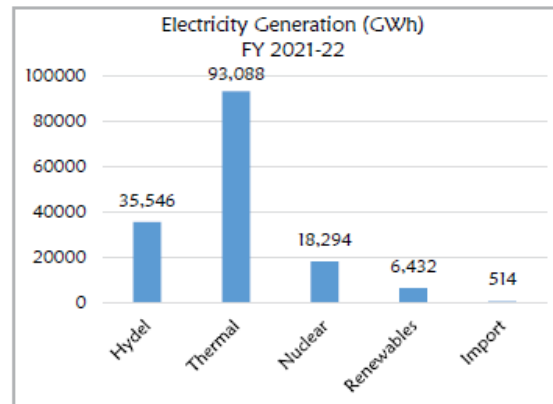
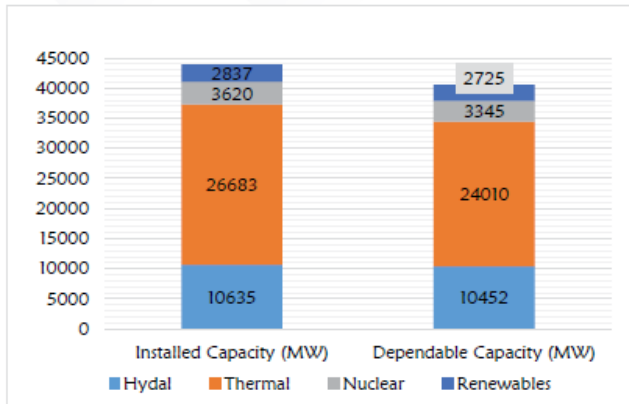
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# Appendices

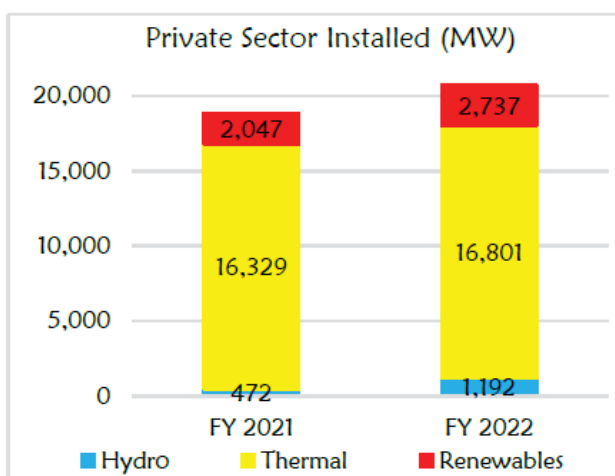
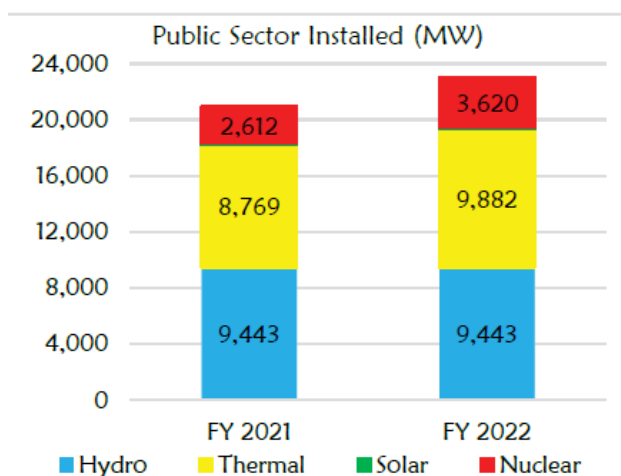
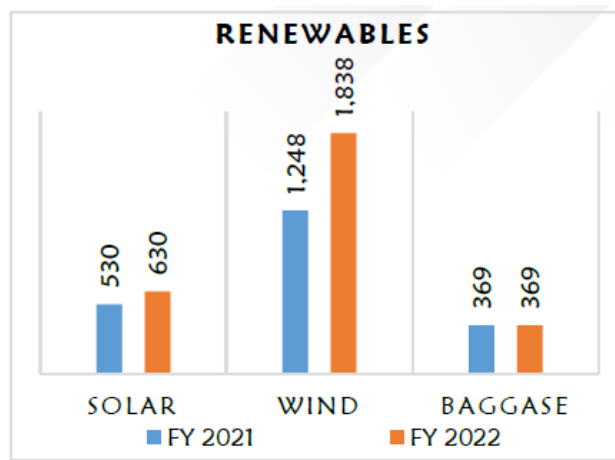
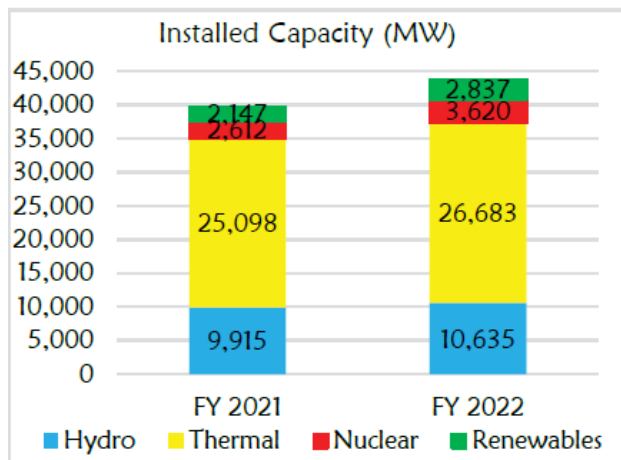
## 1. Power Generation and Capacity



## 2. Installed Capacity

	As on 30-06-2021	As on 30-06-2022	Variation		Comments	
			Capacity (MW)	(%)		
<b>A. CPPA-G SYSTEM</b>						
WAPDA Hydel	9,443	9,443	0	0	<b>Additions</b> (a) Karot HPP (b) Lucky Electric (c) KANUPP-III (d) 12 Wind IPPs (e) Zhenfa Energy (f) Punjab Thermal (under testing) (g) BQPS-III Unit I (h) (under testing)  <b>License Expired</b> (a) GENCO-IV (b) Reshma Power (c) Gulf Power (d) Southern Electric (e) Japan Power (f) Altern Energy  <b>Decommissioned</b> (a) BQPS-I Unit-III (b) KANUPP	
IPPs Hydel	472	1,192	720	152.54		
<b>Total: Hydel</b>	<b>9,915</b>	<b>10,635</b>	<b>720</b>	<b>7.26</b>		
GENCOs	4,881	4,731	-150	-3.07		
IPPs	17,276	18,750	1,474	8.53		
SPPs/CPPs	340	340	0	0.00		
Nuclear	2,475	3,620	1,145	46.26		
<b>Total: Thermal including Nuclear</b>	<b>24,972</b>	<b>27,441</b>	<b>2,469</b>	<b>52.47</b>		
Wind	1,248	1,838	590	47.28		
Solar	430	530	100	23.26		
Bagasse/Biomass	369	369	0	0.00		
<b>Total: CPPA-G System</b>	<b>36,934</b>	<b>40,813</b>	<b>3,879</b>	<b>10.50</b>		
<b>B. KE SYSTEM</b>						
KE Own	2,084	2,345	261	12.52		
IPPs	366	366	0	0.00		
SPPs/CPPs	151	151	0	0.00		
KANUPP	137	0	-137	-100.00		
Solar	100	100	0	0.00		
<b>Total: KE System</b>	<b>2,838</b>	<b>2,962</b>	<b>124</b>	<b>4.37</b>		
<b>Grand Total:</b>	<b>39,772</b>	<b>43,775</b>	<b>4,003</b>	<b>10.06</b>		

Source: GENCOs/WAPDA/IPPs/DISCOs/KE

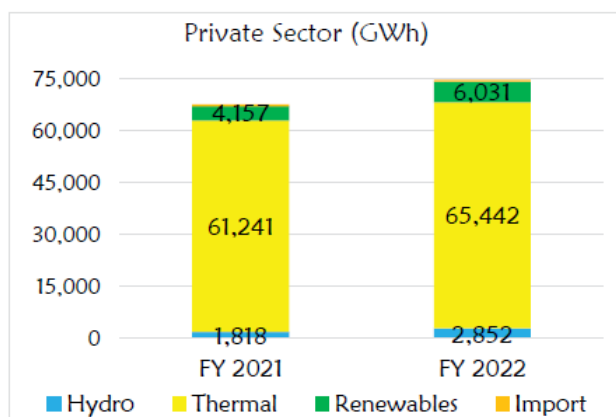
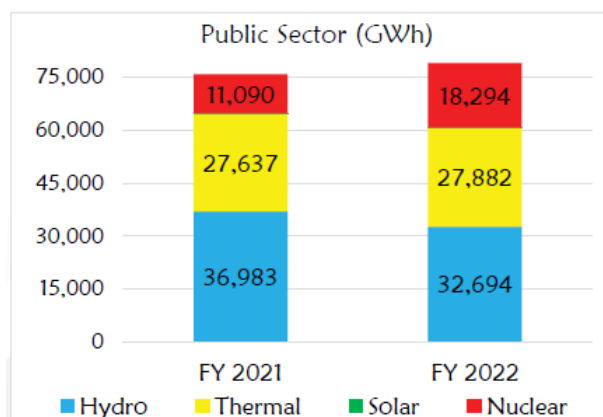
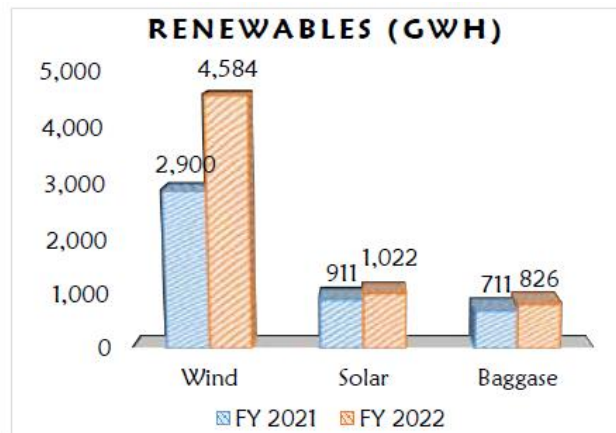
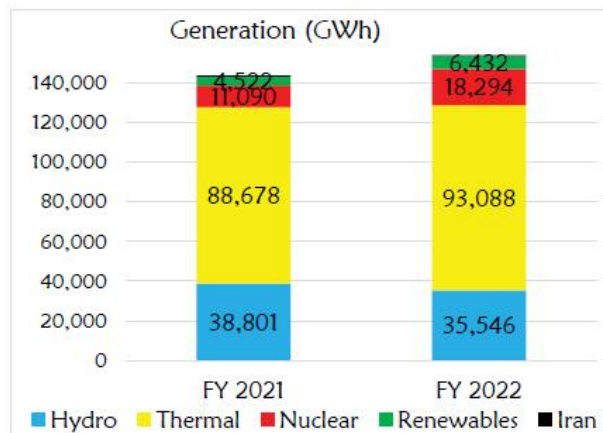


### 3. Electrical Generation

As on 30 <sup>th</sup> June	FY 2021	FY 2022	Variation	
			(GWh)	(%)
<b>A. CPPA-G SYSTEM</b>				
WAPDA Hydel	36,982.54	32,694.31	-4,288.23	-11.60
IPPs Hydel	1,818.01	2,851.97	1,033.96	56.87
<b>Total: Hydel</b>	<b>38,800.55</b>	<b>35,546.28</b>	<b>-3,254.27</b>	<b>-8.39</b>
GENCOs	6,802.93	6,349.56	-453.37	-6.66
IPPs	68,708.63	76,118.75	7,410.12	10.78
SPPs/CPPs	216.8	136.31	-80.49	-37.13
Nuclear	10,871.01	18,247.77	7,376.76	67.86
Import From Iran	498.37	514.36	15.99	3.21
<b>Total: Thermal including Nuclear</b>	<b>87,097.74</b>	<b>101,366.75</b>	<b>14,269.01</b>	<b>16.38</b>

As on 30 <sup>th</sup> June	FY 2021	FY 2022	Variation	
			(GWh)	(%)
Wind	2,899.94	4,584.19	1,684.25	58.08
Solar	711.63	785.42	73.79	10.37
Bagasse/Biomass	710.56	826.05	115.49	16.25
<b>Total RE</b>	<b>4,322.13</b>	<b>6,195.66</b>	<b>1,873.53</b>	<b>43.35</b>
<b>Total: CPPA-C System</b>	<b>130,220.42</b>	<b>143,108.69</b>	<b>12,888.27</b>	<b>9.90</b>
<b>B. KE SYSTEM</b>				
KE Own	10,186.00	7,890.50	-2,295.50	-22.54
IPPs	2,184.57	2,110.16	-74.41	-3.41
SPPs/CPPs	579.02	482.5	-96.52	-16.67
KANUPP	219.04	45.77	-173.27	-79.10
Solar	199.56	236.58	37.02	18.55
<b>Total: KE System</b>	<b>13,368.19</b>	<b>10,765.51</b>	<b>-2,602.68</b>	<b>-19.47</b>
<b>Grand Total:</b>	<b>143,588.61</b>	<b>153,874.20</b>	<b>10,285.59</b>	<b>7.16</b>

Source: GENCOs/WAPDA/IPPs/DISCOs/KE



#### 4. Sector-wise Sales by DISCOs and KE

DISCO	Domestic		Commercial		Industrial		Agricultural	
	2020-21	2021-22	2020-21	2021-22	2020-21	2021-22	2020-21	2021-22
PESCO	5372	5688	801	874	2274	2527	78	77
TESCO	1401	1468	5	5	553	547	30	26
IESCO	5325	5757	1166	1305	1521	1685	26	35
GEPSCO	6372	6816	671	757	2775	2797	543	535
LESCO	9663	10353	1662	1867	8351	9775	1187	1332
FESCO	7061	7390	769	847	4937	5821	1267	1367
MEPCO	9825	10243	980	1077	2860	3460	3201	3736

DISCO	Domestic		Commercial		Industrial		Agricultural	
	2020-21	2021-22	2020-21	2021-22	2020-21	2021-22	2020-21	2021-22
HESCO	2408	2298	265	263	823	914	200	208
SEPCO	1795	1794	227	235	375	412	84	87
QESCO	587	591	138	151	191	172	3485	3516
Total DISCOs	49809	52398	6684	7381	24660	28110	10101	10919
Sales Growth in DISCOs (%)	-	5.20	-	10.43	-	13.99	-	8.10
Total CPPA-G (GWh)	49814	52404	6687	7386	24664	28115	10115	10921
Sales Growth in CPPA-G (%)	-	5.20	-	10.45	-	13.99	-	7.97
KE (GWh)	8041	8004	1708	1846	5220	5848	121	110
Sales Growth in KE (%)	-	-0.46	-	8.08	-	12.03	-	-9.09
Overall Country (GWh)	57855	60408	8395	9232	29884	33963	10236	11031
Overall Sales Growth (%)	-	4.41	-	9.97	-	13.65	-	7.77

DISCO	Public Lighting		Bulk Supply		Others		Total		Sales Growth (%)
	2020-21	2021-22	2020-21	2021-22	2020-21	2021-22	2020-21	2021-22	
PESCO	46	12	641	698	392	476	9607	10355	7.79
TESCO	0	0	12	12	8	10	2012	2071	2.93
IESCO	81	83	918	1034	1898	2060	10944	11961	9.29
GEPSCO	7	9	156	160	390	434	10922	11528	5.55
LESCO	139	138	654	720	693	882	22352	25070	12.16
FESCO	13	17	237	213	213	259	14501	15918	9.77
MEPCO	20	23	275	294	302	367	17466	19202	9.94
HESCO	4	8	105	113	205	228	4014	4034	0.50
SEPCO	165	40	22	206	105	113	2777	2890	4.07
QESCO	10	10	130	140	229	247	4775	4831	1.17
Total DISCOs	485	340	3150	3590	4435	5076	99370	107860	8.54
Sales Growth in DISCOs (%)	-	-29.90	-	13.97	-	14.45	-	8.54	-
Supplied to KE	-	-	-	-	-	-	6118	9036	47.70
Total CPPA-G (GWh)	491	344	3158	3611	4439	5081	99372	107865	10.81
Sales Growth in CPPA-G (%)	-	-29.94	-	14.34	-	14.46	-	10.81	-
KE (GWh)	98	63	454	467	423	426	16068	16763	4.33
Sales Growth in KE (%)	-	-35.71	-	2.86	-	0.71	-	4.33	-
Overall Country (GWh)	589	407	3612	4078	4862	5507	121556	133659	9.96
Overall Sales Growth (%)	-	-30.90	-	12.90	-	13.27	-	9.96	-

Source: DISCOs

## 5. T&D Losses of DISCOs

DISCO	FY 2021-22 (Units in GWh)			Target Losses (%)	Actual Losses (%)		Amount of Actual Units Lost (Rs. in billion)
	Purchase	Sold	Lost	2021-22	2020-21	2021-22	2021-22
PESCO	16560	10355	6205	20.73	38.18	37.47	153.80
TESCO	2284	2071	213	9.31	9.58	9.33	3.70
IESCO	13027	11961	1066	8.15	8.54	8.18	21.90
GEPCO	12678	11528	1150	9.2	9.23	9.07	24.70
LESCO	28334	25070	3264	9.08	11.96	11.52	72.70
FESCO	17512	15918	1594	9.34	9.28	9.10	33.40
MEPCO	22548	19202	3346	12.79	14.93	14.84	75.10
HESCO	6010	4034	1976	19.07	38.55	32.88	45.00
SEPCO	4489	2890	1599	17.41	35.27	35.62	43.70
QESCO	6716	4831	1885	14.49	27.92	28.07	46.30
<b>Overall Average</b>	<b>130158</b>	<b>107860</b>	<b>22298</b>	<b>13.41</b>	<b>17.95</b>	<b>17.13</b>	<b>520.30</b>

Source: DISCOs

## 6. Recovery Ratio of DISCOs

Description	PESCO	TESCO	IESCO	GEPCO	LESCO	FESCO	MEPCO	HESCO	SEPCO	QESCO	Overall DISCOs
Amount Billed (Mln. Rs.)	233591	43386	289977	252986	587306	366707	400711	88892	63209	96523	2423292
Amount Realized (Mln. Rs.)	214419	28728	277284	248407	567887	347777	368972	65530	40314	34053	2193375
Recovery 2021-22 (%)	91.79	66.22	95.62	98.19	96.69	94.84	92.08	73.72	63.78	35.28	<b>90.51</b>
Recovery 2020-21 (%)	101.87	83.27	116.87	105.1	98.72	97.2	102.15	75.63	64.48	39.8	<b>97.30</b>
<b>Inc./Dec.</b>	<b>-10.08</b>	<b>-17.05</b>	<b>-21.25</b>	<b>-6.91</b>	<b>-2.03</b>	<b>-2.36</b>	<b>-10.07</b>	<b>-1.91</b>	<b>-0.7</b>	<b>-4.52</b>	<b>-6.79</b>

Source: DISCOs

## 7. Receivables of DISCOs

DISCO	Category	June 2021 (Rs. in million)				June 2022 (Rs. in million)			
		Opening Balance of Receivables at begin of Month	Billing during Month	Collection during Month	Closing Balance of Receivables at end of Month	Opening Balance of Receivables at begin of Month	Billing during Month	Collection during Month	Closing Balance of Receivables at end of Month
PESCO	Federal Govt.	21372.2	1160.55	6511.55	16021.2	16614.65	1712.84	943.64	17374.25
	Provincial Govt.	1743.24	868.26	1392.61	1218.88	1843.73	1291.13	1228.05	1916.7
	Private	127942	14804.7	13374.3	129372	143602.31	19883.32	16994.79	146490.58
	<b>Total</b>	<b>151057</b>	<b>16834</b>	<b>21279</b>	<b>146612</b>	<b>162060.7</b>	<b>22887.29</b>	<b>19166.49</b>	<b>165781.53</b>



DISCO	Category	June 2021 (Rs. in million)				June 2022 (Rs. in million)			
		Opening Balance of Receivables at begin of Month	Billing during Month	Collection during Month	Closing Balance of Receivables at end of Month	Opening Balance of Receivables at begin of Month	Billing during Month	Collection during Month	Closing Balance of Receivables at end of Month
TESCO	Federal Govt.	1297.4	74.7	112.55	1259.55	1000.28	55.04	105.71	949.61
	Provincial Govt.	1031.25	19	44.27	1005.98	1565.98	65.64	84.35	1547.27
	Private	72039.07	2495.93	15480.02	59054.98	72657.93	4042.9	3218.74	73482.09
	<b>Total</b>	<b>74367.72</b>	<b>2509.63</b>	<b>15636.84</b>	<b>63224.75</b>	<b>75224.19</b>	<b>4163.58</b>	<b>3408.8</b>	<b>75978.97</b>
IESCO	Federal Govt.	87098	5802	24438	68485	79797.77	6827.85	4882.22	81743.71
	Provincial Govt.	733	330	386	679	836.71	153.9	1357.4	-366.3
	Private	11557	19282	17907	12934	18383.41	24038.48	23050.44	19371.42
	<b>Total</b>	<b>99388</b>	<b>25415</b>	<b>42731</b>	<b>82098</b>	<b>99017.89</b>	<b>31020.24</b>	<b>29290.06</b>	<b>100748.83</b>
GEPCO	Federal Govt.	14179.8	907	3937	11149.8	9652.4	1090.21	716.51	10026.1
	Provincial Govt.	1641.3	339	494	1486.3	2362.34	325.7	728.42	1959.62
	Private	18651.9	20404	18786	20269.9	30663.16	27454.94	24710.88	33407.22
	<b>Total</b>	<b>34473</b>	<b>21650</b>	<b>23217</b>	<b>32906</b>	<b>42677.9</b>	<b>28870.85</b>	<b>26155.81</b>	<b>45392.94</b>
LESCO	Federal Govt.	3344	9345	9833	2856	2855.81	10970.36	10511.17	3315
	Provincial Govt.	8712	20551	21659	7603	7603.19	24065.59	24294.78	7374
	Private	114834	401707	397438	119102	119101.77	585816.12	552476.89	152441
	<b>Total</b>	<b>126890</b>	<b>431602</b>	<b>429931</b>	<b>129561</b>	<b>129560.77</b>	<b>620852.07</b>	<b>587282.84</b>	<b>163130</b>
FESCO	Federal Govt.	421.87	519.35	485.31	455.92	810.55	610.86	477.97	943.66
	Provincial Govt.	2359.56	680.17	1273.29	1767.96	2393.04	835.57	1380.22	1849.28
	Private	53107.9	26763.2	27874.1	51998.6	69507.62	37353.15	36495.31	70364.63
	<b>Total</b>	<b>55889</b>	<b>27963</b>	<b>29633</b>	<b>54223</b>	<b>72711.21</b>	<b>38799.58</b>	<b>38353.5</b>	<b>73157.57</b>
MEPCO	Federal Govt.	611.8	612.52	796.05	428.62	774.57	706.47	752.42	728.95
	Provincial Govt.	2882.54	1060.46	1440.69	2503.26	4686.83	1221.64	2508.34	3400.77
	Private	66140.2	28919.3	28650	66411.6	95531.41	40046.42	38599.44	96623.73
	<b>Total</b>	<b>69634.5</b>	<b>30592</b>	<b>30887</b>	<b>69343</b>	<b>100992.81</b>	<b>41974.53</b>	<b>41860.2</b>	<b>100753.44</b>
HESCO	Federal Govt.	4534.47	348.04	444.33	4438.17	4968.35	285.92	445.07	4809.2
	Provincial Govt.	9979.89	693.92	537.43	10082.4	12798.36	594.57	13.85	13379.08
	Private	99802.9	7108.73	4864.85	102047	119414.67	8408.59	6078.73	121744.53
	<b>Total</b>	<b>114317</b>	<b>8096.7</b>	<b>5846.6</b>	<b>116568</b>	<b>137181.38</b>	<b>9289.08</b>	<b>6537.65</b>	<b>139932.81</b>
SEPCO	Federal Govt.	1911.84	220.76	587.97	1534	2707.67	595.03	533.39	2787.31
	Provincial Govt.	13035.5	318.96	234.57	13609	15417.24	718.93	279.34	15991.78
	Private	128718	5104.33	2749.38	132916	150867.89	5696.23	3429.53	153456.58
	<b>Total</b>	<b>143666</b>	<b>5644.1</b>	<b>3571.9</b>	<b>148058</b>	<b>168992.8</b>	<b>7010.19</b>	<b>4242.26</b>	<b>172235.67</b>
QESCO	Federal Govt.	1893.05	261.98	842.64	1312.39	1752.15	451.8	524.88	1679.07
	Provincial Govt.	21664.5	586.75	622.97	21628.3	27743.2	780.83	751.45	27772.58
	Private	321784	7203.49	5023.08	323965	430781.46	8084.1	7361.5	431504.06
	<b>Total</b>	<b>345342</b>	<b>8052.2</b>	<b>6488.7</b>	<b>346905</b>	<b>460276.81</b>	<b>9316.73</b>	<b>8637.83</b>	<b>460955.71</b>
Total CPPA-G	Federal Govt.	136664.43	19251.9	47988.4	107940.65	120934.2	23306.38	19892.98	124356.86
	Provincial Govt.	63782.78	25447.52	28084.83	61584.08	77250.62	30053.5	32626.2	74824.78
	Private	1014576.97	533792.68	532146.73	1018071.08	1250511.63	760824.25	712416.25	1298885.84
	<b>Total</b>	<b>1215024.2</b>	<b>578438.6</b>	<b>608222.04</b>	<b>1189498.75</b>	<b>1448696.46</b>	<b>814184.14</b>	<b>764935.44</b>	<b>1498067.47</b>

Source: DISCOs

## 8. Completed and upcoming projects

### Projects Completed during FY 2021-22

S. No.	Project Name	Location	Fuel	Capacity (MW)	Completion Date
<b>Transmission Line Project</b>					
1	Matiari-Lahore HVDC	Matiari (Sindh) - Lahore (Punjab)	Transmission Line	4,000 MW	01-09-2021
<b>Power Generation Projects</b>					
2	Karot Hydropower	River Jehlum, AJ&K/ Punjab	Hydel	720	29-06-2022
3	Lucky Electric	Port Qasim near Karachi	Thar Coal	660	21-03-2022
			<b>Total (MW)</b>	<b>1,380</b>	

Summarized form of PPIB's portfolio of upcoming IPPs till 30<sup>th</sup> June, 2022 is given as follows:

Year	Hydro		Thar Coal		RLNG/Imp. Coal		Total (MW)	No. of Projects
	MW	No.	MW	No.	MW	No.		
2022	720	01	2,640	03	1263*	01	<b>5,522</b>	<b>05</b>
2023	7.08	01	-	-	-	-	<b>7.08</b>	<b>01</b>
2024	892	02	-	-	-	-	<b>892</b>	<b>02</b>
2025	-	-	-	-	300**	01	<b>300</b>	<b>01</b>
2028	700.7	01	-	-	-	-	<b>700.7</b>	<b>01</b>
2029	1,124	01	-	-	-	-	<b>1124</b>	<b>01</b>
Miscellaneous	2732	08	1650	02	-	-	<b>4382</b>	<b>10</b>
<b>Grand Total</b>	<b>5455</b>	<b>14</b>	<b>4,290</b>	<b>05</b>	<b>1563</b>	<b>02</b>	<b>11,308</b>	<b>21</b>

Mega Matiari-Lahore 660 kV HVDC Transmission Line Project which was processed by PPIB achieved COD with effect from 01-09-2021.

## 9. Installed Capacity source-wise

### Installed Capacity by Type (MW)

As on 30th June	2018	2019	2020	2021	2022
<b>HYDEL</b>					
WAPDA Hydel	8,341	9,389	9,389	9,443	9,443
IPPs Hydel	372	372	472	472	1,192
<b>Sub-Total</b>	<b>8,713</b>	<b>9,761</b>	<b>9,861</b>	<b>9,915</b>	<b>10,635</b>
% Share (Hydel Installed Capacity)	24.22	25.03	25.47	24.93	24.29
<b>THERMAL</b>					
GENCOS: CPPA-G System	5,637	5,637	4,881	4,881	4,731
KE Own	2,294	2,294	2,294	2,084	2,345
IPPs: CPPA-G System	15,297	16,946	17,276	17,276	18,750
IPPs: KE System	366	366	366	366	366
SPPs/CPPs/N-CPPs: CPPA-G System	340	340	340	340	340
SPPs/CPPs/N-CPPs connected with KE	87	87	87	151.1	151.1
<b>Sub-Total</b>	<b>24,020</b>	<b>25,670</b>	<b>25,244</b>	<b>25,098</b>	<b>26,683</b>
% Share (Thermal Installed Capacity)	66.76	65.83	65.20	63.10	60.95
<b>NUCLEAR</b>					
CHASNUPP (I, II, III and IV)	1,330	1,330	1,330	1,330	1,330
KANUPP (I, II & III)	137	137	137	1282	2,290
<b>Sub-Total</b>	<b>1,467</b>	<b>1,467</b>	<b>1,467</b>	<b>2,612</b>	<b>3,620</b>
% Share (Nuclear Installed Capacity)	4.08	3.76	3.79	6.57	8.27
<b>RENEWABLE ENERGY (WIND, SOLAR AND BAGASSE)</b>					
Wind Power Plants	1,048	1,248	1,248	1248	1838
Solar Power Plants	430	430	430	430	530
Bagasse based Power Plants	301	369	369	369	369
<b>RE Power Plants: CPPA-G System</b>	<b>1,779</b>	<b>2,047</b>	<b>2,047</b>	<b>2,047</b>	<b>2,737</b>
Solar Power Plants: KE System	0	50	100	100	100
<b>RE Power Plants: KE System</b>	<b>0</b>	<b>50</b>	<b>100</b>	<b>100</b>	<b>100</b>
<b>Sub-Total</b>	<b>1,779</b>	<b>2,097</b>	<b>2,147</b>	<b>2,147</b>	<b>2,837</b>
% Share (RE Installed Capacity)	4.94	5.38	5.55	5.40	6.48
<b>Total Installed Capacity of the Country</b>	<b>35,979</b>	<b>38,995</b>	<b>38,719</b>	<b>39,772</b>	<b>43,775</b>

Source: WAPDA/GENCOS/IPPs/CPPA-G/KE

### Electricity Generation by Type (GWh)

As on 30th June	2018	2019	2020	2021	2022
<b>HYDEL</b>					
WAPDA Hydel	26,951.19	31,167.85	37,136.04	36,982.54	32,694.31
IPPs Hydel	1,118.24	1,928.04	1,562.55	1,818.01	2,851.97
<b>Sub-Total</b>	<b>28,069.43</b>	<b>33,095.89</b>	<b>38,698.59</b>	<b>38,800.55</b>	<b>35,546.28</b>
% Share (Hydel Electricity Generation)	21.01	24.16	28.83	27.02	23.10
<b>THERMAL</b>					
GENCOs: CPPA-G System	16,199.10	13,016.99	7,907.85	6,802.93	6,349.56
KE Own	10,337.75	10,727.68	9,629.00	10,186.00	7,890.50
IPPs: CPPA-G System	62,433.73	62,597.73	60,720.31	68,708.63	76,118.75
IPPs Connected with KE	1,819.04	2,118.31	1,863.60	2,184.57	2,110.16
SPPs/CPPs/N-CPPs: CPPA-G System	665.53	405.13	170.99	216.80	136.31
SPPs/CPPs/N-CPPs connected with KE	550.49	523.74	534.30	579.02	482.50
<b>Sub-Total</b>	<b>92,005.63</b>	<b>89,389.58</b>	<b>80,826.05</b>	<b>88,677.95</b>	<b>93,087.79</b>
% Share (Thermal Electricity Generation)	68.87	65.25	60.21	61.76	60.50
<b>NUCLEAR</b>					
CHASNUPP (I, II, III and IV)	8,719.87	9,005.68	9,704.89	9,172.09	9,450.29
KANUPP (I, II & III)	330.86	129.99	193.13	1,917.96	8,843.25
<b>Sub-Total</b>	<b>9,050.73</b>	<b>9,135.67</b>	<b>9,898.02</b>	<b>11,090.05</b>	<b>18,293.54</b>
% Share (Nuclear Electricity Generation)	6.78	6.67	7.37	7.72	11.89
<b>IMPORT</b>					
Import from Iran	554.74	486.80	513.74	498.37	514.36
<b>Sub-Total</b>	<b>554.74</b>	<b>486.80</b>	<b>513.74</b>	<b>498.37</b>	<b>514.36</b>
% Share (Imported Electricity Generation)	0.42	0.36	0.38	0.35	0.33
<b>RENEWABLE ENERGY (WIND, SOLAR AND BAGASSE)</b>					
RE Power Plants: CPPA-G System	3,907.12	4,840.59	4,151.91	4,322.13	6,195.66
RE Power Plants connected with KE	0.00	56.92	153.28	199.56	236.58
<b>Sub-Total</b>	<b>3,907.12</b>	<b>4,897.51</b>	<b>4,305.19</b>	<b>4,521.69</b>	<b>6,432.24</b>
% Share (RE Electricity Generation)	2.92	3.57	3.21	3.15	4.18
<b>Total Electricity Generation of the Country</b>	<b>133,587.65</b>	<b>137,005.45</b>	<b>134,241.59</b>	<b>143,588.61</b>	<b>153,874.20</b>

Source: WAPDA/GENCOs/IPPs/KE/CPPA-G

## 10. Category-wise consumers

Category-wise Number of Consumers

DISCO	As on 30 <sup>th</sup> June	Domestic	Commercial	Industrial	Agricultural	Public Lighting	Bulk Supply	Others/ General	Total
PESCO	2018	2908414	337386	29872	23083	1096	925	30131	3330907
	2019	3029784	349985	26582	22896	1083	887	41228	3472445
	2020	3193810	362183	26919	22968	1119	886	42245	3650130
	2021	3374867	377986	27591	23049	1163	890	43405	3848951
	2022	3546157	393995	28205	23121	1203	897	44735	4038313
TESCO	2018	402209	28625	4268	6118	5	57	1119	442401
	2019	402027	28688	4243	6187	5	65	1367	442582
	2020	402004	28790	4271	6194	5	67	1434	442765
	2021	402072	29061	4276	6234	5	68	1464	443180
	2022	402084	29763	4362	6252	5	72	1608	444146
IESCO	2018	2405253	394381	16053	7182	1761	886	11722	2837238
	2019	2528865	411219	16272	7087	1829	960	13758	2979990
	2020	2649394	426132	16359	7068	1914	845	18477	3120189
	2021	2783354	437335	17016	7242	2039	848	28330	3276164
	2022	2972324	464632	17664	7391	2240	854	20512	3485617
GEPSCO	2018	2860915	349789	70063	44749	578	164	16	3326274
	2019	3021760	366047	73133	46887	580	152	20393	3528952
	2020	3192199	379270	74244	50460	590	150	20930	3717843
	2021	3387411	394245	76337	52960	620	148	21365	3933086
	2022	3591198	410372	80524	54982	673	148	21815	4159712
LESKO	2018	3848417	602268	84183	60621	2547	499	249	4598784
	2019	4108067	623529	84703	61547	2554	494	8968	4889862
	2020	4374998	643245	86138	63671	2564	488	16090	5187194
	2021	4688342	664548	87918	66101	2613	469	17863	5527854
	2022	5018720	687951	89934	68250	2726	459	19208	5887248
FESCO	2018	3457159	383451	49314	40772	1719	232	20485	3953132
	2019	3651710	399688	50027	42763	1782	223	25216	4171409
	2020	3861027	413352	50911	45978	1860	226	28110	4401464
	2021	4081137	427149	52253	49738	1882	229	29414	4641802
	2022	4291224	440006	53475	51922	1913	231	30371	4869142
MEPCO	2018	5398111	536876	54772	80944	1494	460	126	6072783
	2019	5748493	559213	56121	85977	1501	454	33673	6485432
	2020	6090985	579011	57541	93884	1592	457	37840	6861310
	2021	6415415	600662	59514	99127	1666	458	40835	7217677
	2022	6788616	618271	60717	102709	1742	464	42434	7614953
HESCO	2018	877263	159627	14924	13730	540	337	14293	1080714
	2019	907377	163791	15250	14434	540	342	13926	1115660
	2020	933377	166213	14852	15522	572	344	13800	1144680
	2021	958338	169007	15193	15660	572	345	13875	1172990
	2022	978572	171843	15490	15729	573	346	13941	1196494
SEPCO	2018	589884	119384	12674	9221	421	519	13205	745308
	2019	603885	121776	12930	9270	425	527	13319	762132
	2020	628208	123808	13133	9346	442	532	13347	788816
	2021	643103	125388	13382	9370	535	445	13494	805717
	2022	650565	126818	13533	9377	540	449	13496	814778
QESCO	2018	453232	116267	3730	29580	265	261	5669	609004
	2019	463332	120311	3688	29608	268	266	7128	624601
	2020	477757	123504	3719	29599	274	271	7852	642976
	2021	491006	127814	3802	29639	279	282	9346	662168
	2022	503579	131817	3832	29623	283	299	9958	679391
Total in CPPA-G System	2018	23200857	3028054	339853	316000	10426	4340	97015	26996545
	2019	24465300	3144247	342949	326656	10567	4370	178976	28473065
	2020	25803759	3245508	348087	344690	10932	4266	200125	29957367
	2021	27225045	3353195	357282	359120	11374	4182	219391	31529589
	2022	28743039	3475468	367736	369356	11898	4219	218078	33189794
KE	2018	2096451	463670	20647	2398	74	194	1	2583435
	2019	2298616	474626	20842	2329	93	188	11375	2808069
	2020	2447129	470777	22553	2271	90	175	16104	2959099
	2021	2651527	490652	23244	2164	88	170	17487	3185332
	2022	2851946	509334	23706	2093	180	176	17897	3405332

Source: Distribution Companies / KE

## 11. Units purchased, Sold, and Lost by DISCOs

Details of Units Purchased, Sold and Losses in all DISCOs

DISCO	Year	Unit Purchased (GWh)			Unit Sold (GWh)	Losses		
		Through NTDC	Through CPPs, SPPs etc.	Total Unit Purchased		GWh	%age	
PESCO	2017-18	14220.30	0.00	14220.30	8795.53	5424.77	38.15	
	2018-19	14301.80	0.00	14301.80	9073.56	5228.24	36.56	
	2019-20	14750.30	0.00	14750.30	9043.05	5707.25	38.69	
	2020-21	15540.90	0.00	15540.90	9607.54	5933.36	38.18	
	2021-22	16560.19	0.00	16560.19	10355.16	6205.03	37.47	
TESCO	2017-18	1692.82	0.00	1692.82	1481.85	210.97	12.46	
	2018-19	1821.00	0.00	1821.00	1603.06	217.94	11.97	
	2019-20	2151.00	0.00	2151.00	1802.76	348.24	16.19	
	2020-21	2226.00	0.00	2226.00	2012.65	213.35	9.58	
	2021-22	2284.44	0.00	2284.44	2071.59	212.85	9.32	
IESCO	2017-18	11672.97	0.00	11672.97	10605.94	1067.03	9.14	
	2018-19	11837.79	0.00	11837.79	10789.05	1048.74	8.86	
	2019-20	11435.52	0.00	11435.52	10442.03	993.49	8.69	
	2020-21	11966.00	0.00	11966.00	10944.00	1022.00	8.54	
	2021-22	13027.00	0.00	13027.00	11961.92	1065.08	8.18	
GEPSCO	2017-18	10986.45	0.00	10986.45	9886.84	1099.61	10.01	
	2018-19	11099.96	0.00	11099.96	10004.34	1095.62	9.87	
	2019-20	10991.19	0.00	10991.19	9945.63	1045.56	9.51	
	2020-21	12032.48	0.00	12032.48	10922.10	1110.38	9.23	
	2021-22	12678.20	0.00	12678.20	11528.75	1149.45	9.07	
LESKO	2017-18	23731.24	0.00	23731.24	20448.50	3282.74	13.83	
	2018-19	24338.45	0.00	24338.45	21132.00	3206.45	13.17	
	2019-20	23528.33	0.00	23528.33	20610.00	2918.33	12.40	
	2020-21	25387.87	0.00	25387.87	22352.15	3035.72	11.96	
	2021-22	28334.00	0.00	28334.00	25070.75	3263.25	11.52	
FESCO	2017-18	12548.87	1897.54	14446.41	12924.57	1521.84	10.53	
	2018-19	13889.66	1079.09	14968.75	13499.68	1469.07	9.81	
	2019-20	13870.33	640.00	14510.33	13123.24	1387.09	9.56	
	2020-21	14874.48	1110.00	15984.48	14501.20	1483.28	9.28	
	2021-22	16112.53	1400.00	17512.53	15918.79	1593.74	9.10	
MEPSCO	2017-18	14928.56	4077.41	19005.97	15853.22	3152.75	16.59	
	2018-19	13494.60	5872.05	19366.65	16309.61	3057.04	15.79	
	2019-20	14972.84	4351.84	19324.68	16381.93	2942.75	15.23	
	2020-21	16065.16	4467.05	20532.21	17466.10	3066.11	14.93	
	2021-22	18518.35	4030.36	22548.71	19202.42	3346.28	14.84	
HESCO	2017-18	3815.59	1927.43	5743.02	4026.96	1716.06	29.88	
	2018-19	3567.80	1987.35	5555.15	3916.68	1638.47	29.49	
	2019-20	3853.27	2958.37	6811.64	3890.00	2921.64	42.89	
	2020-21	4419.93	2112.65	6532.58	4014.18	2518.40	38.55	
	2021-22	4836.97	1173.95	6010.92	4034.54	1976.38	32.88	
SEPCO	2017-18	4653.40	25.33	4678.73	2962.81	1715.92	36.67	
	2018-19	4386.30	25.33	4411.63	2780.61	1631.02	36.97	
	2019-20	4252.20	0.28	4252.48	2710.10	1542.38	36.27	
	2020-21	4290.96	0.00	4290.96	2777.63	1513.33	35.27	
	2021-22	4489.77	0	4489.77	2890.17	1599.6	35.63	
QESCO	2017-18	6338.40	0.00	6338.40	4915.97	1422.43	22.44	
	2018-19	6251.40	0.00	6251.40	4778.76	1472.64	23.56	
	2019-20	6604.01	0.00	6604.01	4842.01	1762.00	26.68	
	2020-21	6624.56	0.00	6624.56	4775.00	1849.56	27.92	
	2021-22	6716.3	0	6716.3	4831.60	1884.70	28.06	
Total in CPPA-G System	2017-18	104588.60	7927.71	112516.31	91902.19	20614.12	18.32	
	2018-19	104988.76	8963.82	113952.58	93887.35	20065.23	17.61	
	2019-20	106408.99	7950.49	114359.48	92790.75	21568.72	18.86	
	2020-21	113428.34	7689.70	121118.04	99372.55	21745.49	17.95	
	2021-22	123557.75	6604.31	130162.05	107865.70	22296.36	17.13	
KE	As on 30 <sup>th</sup> June							
		KE Own*	Through NTDC	Through CPPs + Others	Total Unit Purchased	Unit Sold (GWh)	Losses	
							GWh	%age
	2017-18	10337.75	5128.20	2700.12	18166.07	13860.32	4305.75	23.70
	2018-19	10727.67	4956.71	2829.04	18513.42	14318.11	4195.31	22.66
	2019-20	10358.00	5426.14	2743.36	18527.50	14276.96	4250.54	22.94
2020-21	10938.00	6118.04	3182.03	20238.07	16068.85	4169.22	20.60	
2021-22	8496.69	9036.54	2875.09	20408.32	16763.22	3645.09	17.86	

## 12. Units Billed by DISCOs category-wise

**Units Billed, Amount of Units Billed and Amount Realized in DISCOs (2021-22)**

DISCO	Unit	DISCO							Public Lighting	Bulk Supply	Others	Total
		Domestic	Commercial	Industrial	Agricultural	Public Lighting	Bulk Supply	Others				
PESCO	Units Billed	5688.78	874.45	2527.90	77.18	12.37	698.14	476.35	10355.16			
	Amount of Units Billed	Rs. Mln. 97401.51	Rs. Mln. 30682.52	Rs. Mln. 69379.01	Rs. Mln. 1469.51	Rs. Mln. 45.15	Rs. Mln. 19539.02	Rs. Mln. 14704.58	Rs. Mln. 233591.29			
	Amount Realized and %age Recovery to Billed Amount	Rs. Mln. 82227.99	Rs. Mln. 30307.29	Rs. Mln. 67833.12	Rs. Mln. 1365.23	Rs. Mln. 362.62	Rs. Mln. 18235.95	Rs. Mln. 14087.48	Rs. Mln. 214419.68			
TESCO	Units Billed	84.42	98.78	97.77	92.90	87.35	93.33	95.80	91.79			
	Amount of Units Billed	Rs. Mln. 1468.63	Rs. Mln. 262.27	Rs. Mln. 547.31	Rs. Mln. 26.27	Rs. Mln. 0.00	Rs. Mln. 12.98	Rs. Mln. 10.95	Rs. Mln. 2071.59			
	Amount Realized and %age Recovery to Billed Amount	Rs. Mln. 25608.59	Rs. Mln. 167.12	Rs. Mln. 16276.66	Rs. Mln. 606.50	Rs. Mln. 0.02	Rs. Mln. 421.08	Rs. Mln. 311.10	Rs. Mln. 43386.07			
IESCO	Units Billed	70.62	69.44	58.90	62.14	100.00	74.76	81.49	66.22			
	Amount of Units Billed	Rs. Mln. 18080.39	Rs. Mln. 116.05	Rs. Mln. 9586.99	Rs. Mln. 376.90	Rs. Mln. 0.02	Rs. Mln. 314.79	Rs. Mln. 253.52	Rs. Mln. 28728.66			
	Amount Realized and %age Recovery to Billed Amount	Rs. Mln. 105594.39	Rs. Mln. 48091.05	Rs. Mln. 46433.80	Rs. Mln. 722.72	Rs. Mln. 2856.42	Rs. Mln. 30988.84	Rs. Mln. 55270.21	Rs. Mln. 289977.42			
GPECO	Units Billed	99.93	99.59	99.64	98.89	108.64	97.11	79.02	95.62			
	Amount of Units Billed	Rs. Mln. 6816.68	Rs. Mln. 757.73	Rs. Mln. 2797.44	Rs. Mln. 535.09	Rs. Mln. 9.92	Rs. Mln. 177.32	Rs. Mln. 434.57	Rs. Mln. 11528.75			
	Amount Realized and %age Recovery to Billed Amount	Rs. Mln. 11818.82	Rs. Mln. 2774.59	Rs. Mln. 79580.94	Rs. Mln. 9544.16	Rs. Mln. 295.60	Rs. Mln. 5496.03	Rs. Mln. 12176.67	Rs. Mln. 252986.81			
LESKO	Units Billed	98.55	99.04	97.43	96.16	90.60	97.98	99.59	98.19			
	Amount of Units Billed	Rs. Mln. 10353.55	Rs. Mln. 1867.70	Rs. Mln. 9775.38	Rs. Mln. 1332.18	Rs. Mln. 138.82	Rs. Mln. 720.49	Rs. Mln. 882.63	Rs. Mln. 25070.75			
	Amount Realized and %age Recovery to Billed Amount	Rs. Mln. 198325.79	Rs. Mln. 69354.44	Rs. Mln. 251708.57	Rs. Mln. 17570.49	Rs. Mln. 3509.72	Rs. Mln. 21955.81	Rs. Mln. 24881.12	Rs. Mln. 587305.94			
FESCO	Units Billed	97.60	97.66	95.85	89.15	99.10	97.12	99.95	96.69			
	Amount of Units Billed	Rs. Mln. 7390.64	Rs. Mln. 847.89	Rs. Mln. 5821.99	Rs. Mln. 1367.22	Rs. Mln. 17.72	Rs. Mln. 213.72	Rs. Mln. 259.61	Rs. Mln. 15918.79			
	Amount Realized and %age Recovery to Billed Amount	Rs. Mln. 134258.69	Rs. Mln. 31258.46	Rs. Mln. 163410.88	Rs. Mln. 22495.55	Rs. Mln. 632.22	Rs. Mln. 6583.83	Rs. Mln. 8067.61	Rs. Mln. 366707.24			
MEPCO	Units Billed	92.72	96.91	97.48	84.28	85.49	92.06	100.95	94.84			
	Amount of Units Billed	Rs. Mln. 10243.68	Rs. Mln. 1077.49	Rs. Mln. 3460.11	Rs. Mln. 3736.51	Rs. Mln. 23.35	Rs. Mln. 294.09	Rs. Mln. 367.19	Rs. Mln. 19202.42			
	Amount Realized and %age Recovery to Billed Amount	Rs. Mln. 180426.00	Rs. Mln. 39658.94	Rs. Mln. 99408.89	Rs. Mln. 60255.85	Rs. Mln. 793.88	Rs. Mln. 8945.76	Rs. Mln. 11222.16	Rs. Mln. 400711.47			
HESCO	Units Billed	2298.57	263.63	914.65	208.11	8.09	113.39	228.10	4034.54			
	Amount of Units Billed	Rs. Mln. 38294.96	Rs. Mln. 9801.64	Rs. Mln. 26284.78	Rs. Mln. 4125.96	Rs. Mln. 248.14	Rs. Mln. 3467.36	Rs. Mln. 6669.70	Rs. Mln. 8892.54			
	Amount Realized and %age Recovery to Billed Amount	Rs. Mln. 165592.39	Rs. Mln. 38672.91	Rs. Mln. 95187.48	Rs. Mln. 49332.18	Rs. Mln. 80.91	Rs. Mln. 8587.24	Rs. Mln. 10789.09	Rs. Mln. 368972.19			
SEPCO	Units Billed	50.33	95.86	98.93	71.84	18.26	91.54	70.09	73.72			
	Amount of Units Billed	Rs. Mln. 1794.92	Rs. Mln. 235.94	Rs. Mln. 412.22	Rs. Mln. 87.03	Rs. Mln. 40.06	Rs. Mln. 206.06	Rs. Mln. 113.94	Rs. Mln. 2890.17			
	Amount Realized and %age Recovery to Billed Amount	Rs. Mln. 29371.75	Rs. Mln. 8490.67	Rs. Mln. 12502.21	Rs. Mln. 1737.31	Rs. Mln. 1182.32	Rs. Mln. 6381.35	Rs. Mln. 3544.09	Rs. Mln. 63209.71			
QESCO	Units Billed	35.44	98.08	97.46	66.59	83.22	79.43	61.64	63.78			
	Amount of Units Billed	Rs. Mln. 591.97	Rs. Mln. 151.15	Rs. Mln. 172.46	Rs. Mln. 3516.63	Rs. Mln. 10.97	Rs. Mln. 140.79	Rs. Mln. 247.63	Rs. Mln. 4831.60			
	Amount Realized and %age Recovery to Billed Amount	Rs. Mln. 10498.16	Rs. Mln. 5591.20	Rs. Mln. 5278.31	Rs. Mln. 62347.40	Rs. Mln. 378.38	Rs. Mln. 4506.54	Rs. Mln. 7923.49	Rs. Mln. 96523.68			
Total in System	Units Billed	64.08	93.89	100.26	15.09	-0.88	94.41	39.44	35.28			
	Amount of Units Billed	Rs. Mln. 52404.73	Rs. Mln. 7386.99	Rs. Mln. 28115.20	Rs. Mln. 10921.90	Rs. Mln. 344.76	Rs. Mln. 3611.05	Rs. Mln. 5081.06	Rs. Mln. 107865.70			
	Amount Realized and %age Recovery to Billed Amount	Rs. Mln. 937893.65	Rs. Mln. 270870.62	Rs. Mln. 770284.05	Rs. Mln. 180875.65	Rs. Mln. 10311.86	Rs. Mln. 108285.62	Rs. Mln. 144770.73	Rs. Mln. 242392.17			
KE	Units Billed	89.81	98.01	96.13	60.33	92.99	94.66	85.60	90.51			
	Amount of Units Billed	Rs. Mln. 8004.68	Rs. Mln. 1846.46	Rs. Mln. 5842.80	Rs. Mln. 110.72	Rs. Mln. 63.82	Rs. Mln. 467.84	Rs. Mln. 426.91	Rs. Mln. 16763.22			
	Amount Realized and %age Recovery to Billed Amount	Rs. Mln. 147442.31	Rs. Mln. 63112.62	Rs. Mln. 149916.74	Rs. Mln. 1387.48	Rs. Mln. 2132.98	Rs. Mln. 1332.26	Rs. Mln. 12910.63	Rs. Mln. 390235.04			
Total in System	Units Billed	90.21	98.11	101.09	20.37	187.96	99.33	103.16	96.69			
	Amount of Units Billed	Rs. Mln. 133011.50	Rs. Mln. 61922.26	Rs. Mln. 151546.96	Rs. Mln. 282.57	Rs. Mln. 4009.15	Rs. Mln. 13243.31	Rs. Mln. 13318.83	Rs. Mln. 377334.58			
	Amount Realized and %age Recovery to Billed Amount	Rs. Mln. 133011.50	Rs. Mln. 61922.26	Rs. Mln. 151546.96	Rs. Mln. 282.57	Rs. Mln. 4009.15	Rs. Mln. 13243.31	Rs. Mln. 13318.83	Rs. Mln. 377334.58			

Source: Distribution Companies / KE

### 13. Receivables of DISCOs by Government and Private Institutions

DISCO	Category	June 2021 (Rs. in Million)				June 2022 (Rs. in Million)			
		Opening Balance of Receivables at begin of Month	Billing during Month	Collection during Month	Closing Balance of Receivables at end of Month	Opening Balance of Receivables at begin of Month	Billing during Month	Collection during Month	Closing Balance of Receivables at end of Month
PESCO	Federal Govt.	21372.2	1160.55	6511.55	16021.2	16614.65	1712.84	943.64	17374.25
	Provincial Govt.	1743.24	868.26	1392.61	1218.88	1843.73	1291.13	1228.05	1916.70
	Private	12794.2	14804.7	13374.3	12937.2	143602.31	19883.32	16994.79	146490.58
	<b>Total</b>	<b>151057</b>	<b>16834</b>	<b>21279</b>	<b>146612</b>	<b>162060.70</b>	<b>22887.29</b>	<b>19166.49</b>	<b>165781.53</b>
TESCO	Federal Govt.	1297.40	74.70	112.55	1259.55	1000.28	55.04	105.71	949.61
	Provincial Govt.	1031.25	19.00	44.27	1005.98	1565.98	65.64	84.35	1547.27
	Private	72039.07	2495.93	15480.02	59054.98	72657.93	4042.9	3218.74	73482.09
	<b>Total</b>	<b>74367.72</b>	<b>2589.63</b>	<b>15636.84</b>	<b>63224.75</b>	<b>75224.19</b>	<b>4163.58</b>	<b>3408.8</b>	<b>75978.97</b>
IESCO	Federal Govt.	87098	5802	24438	68485	79797.77	6827.85	4882.22	81743.71
	Provincial Govt.	733	330	386	679	836.71	153.90	1357.40	-366.30
	Private	11557	19282	17907	12934	18883.41	24038.48	23050.44	19371.42
	<b>Total</b>	<b>99388</b>	<b>25415</b>	<b>42731</b>	<b>82098</b>	<b>99017.89</b>	<b>31020.24</b>	<b>29290.06</b>	<b>100748.83</b>
GEPCO	Federal Govt.	14179.8	907	3937	11149.8	9652.40	1090.21	716.51	10026.10
	Provincial Govt.	1641.3	339	494	1486.3	2362.34	325.70	728.42	1959.62
	Private	18651.9	20404	18786	20269.9	30663.16	27454.94	24710.88	33407.22
	<b>Total</b>	<b>34473</b>	<b>21650</b>	<b>23217</b>	<b>32906</b>	<b>42677.90</b>	<b>28870.85</b>	<b>26155.81</b>	<b>45392.94</b>
LESCO	Federal Govt.	3344	9345	9833	2856	2855.81	10970.36	10511.17	3315.00
	Provincial Govt.	8712	20551	21659	7603	7603.19	24065.59	24294.78	7374.00
	Private	114834	401707	397438	119102	119101.77	585816.12	552476.89	152441.00
	<b>Total</b>	<b>126890</b>	<b>431602</b>	<b>428931</b>	<b>129561</b>	<b>129560.77</b>	<b>620852.07</b>	<b>587282.84</b>	<b>163130.00</b>
FESCO	Federal Govt.	421.87	519.35	485.31	455.92	810.55	610.86	477.97	943.66
	Provincial Govt.	2359.56	680.17	1273.29	1767.96	2393.04	835.57	1380.22	1849.28
	Private	53107.9	26763.2	27874.1	51998.6	69507.62	37353.15	36495.31	70364.63
	<b>Total</b>	<b>55889</b>	<b>27963</b>	<b>29633</b>	<b>54223</b>	<b>72711.21</b>	<b>38799.58</b>	<b>38353.50</b>	<b>73157.57</b>
MEPCO	Federal Govt.	611.8	612.52	796.05	428.62	774.57	706.47	752.42	728.95
	Provincial Govt.	2882.54	1060.46	1440.69	2503.26	4686.83	1221.64	2508.34	3400.77
	Private	66140.2	28919.3	28650	66411.6	95531.41	40046.42	38599.44	96623.73
	<b>Total</b>	<b>69634.5</b>	<b>30592</b>	<b>30887</b>	<b>69343</b>	<b>100992.81</b>	<b>41974.53</b>	<b>41860.20</b>	<b>100753.44</b>
HESCO	Federal Govt.	4534.47	348.04	444.33	4438.17	4968.35	285.92	445.07	4809.20
	Provincial Govt.	9979.89	693.92	537.43	10082.4	12798.36	594.57	13.85	13379.08
	Private	99802.9	7108.73	4864.85	102047	119414.67	8408.59	6078.73	121744.53
	<b>Total</b>	<b>114317</b>	<b>8096.7</b>	<b>5846.6</b>	<b>116568</b>	<b>137181.38</b>	<b>9289.08</b>	<b>6537.65</b>	<b>139932.81</b>
SEPCO	Federal Govt.	1911.84	220.76	587.97	1534	2707.67	595.03	533.39	2787.31
	Provincial Govt.	13035.5	318.96	234.57	13609	15417.24	718.93	279.34	15991.78
	Private	128718	5104.33	2749.38	132916	150867.89	5696.23	3429.53	153456.58
	<b>Total</b>	<b>143666</b>	<b>5644.1</b>	<b>3571.9</b>	<b>148058</b>	<b>168992.80</b>	<b>7010.19</b>	<b>4242.26</b>	<b>172235.67</b>
QESCO	Federal Govt.	1893.05	261.98	842.64	1312.39	1752.15	451.80	524.88	1679.07
	Provincial Govt.	21664.5	586.75	622.97	21628.3	27743.20	780.83	751.45	27772.58
	Private	321784	7203.49	5023.08	323965	430781.46	8084.10	7361.50	431504.06
	<b>Total</b>	<b>345342</b>	<b>8052.2</b>	<b>6488.7</b>	<b>346905</b>	<b>460276.81</b>	<b>9316.73</b>	<b>8637.83</b>	<b>460955.71</b>
KE	Federal Govt.	4401.42	14456.53	-14646.02	4637.673359	4637.67	16481.06	-17637.05	3727.430318
	Provincial Govt.	44780.51	13697.22	-12970.83	46340.18137	46340.18	16507.94	-18770.86	44581.53008
	Private	150915.09	287719.09	-272055.53	147667.8048	147667.80	357246.72	-340926.67	146804.1981
	<b>Total</b>	<b>200097.01</b>	<b>315872.84</b>	<b>-299672.38</b>	<b>198645.66</b>	<b>198645.66</b>	<b>390235.72</b>	<b>-377334.58</b>	<b>195113.16</b>

Source: Distribution Companies

## 14. DISCOs Technical and Commercial Losses

DISCOs' Technical and Commercial Losses

DISCO	FY 2020-21							FY 2021-22						
	T&D Losses			Commercial Losses			Combined Technical & Commercial Losses (%)	T&D Losses			Commercial Losses			Combined Technical & Commercial Losses (%)
	Units Purchased (MWh)	Units Billed (MWh)	Losses (%)	Billing (Computed) (Rs. in Million)	Collection (Rs. in Million)	losses (%)		Units Purchased (MWh)	Units Billed (MWh)	Losses (%)	Billing (Computed) (Rs. in Million)	Collection (Rs. in Million)	losses (%)	
PESCO	15540.95	9607.69	38.18	176816.03	181273.88	-2.52	36.62	16560.19	10394.15	37.23	233591.13	214419.68	8.21	42.39
TESCO	2226.2	2012.67	9.59	27499.78	25501.88	7.27	23.6	2227.42	2012.67	9.64	30625.54	25501.88	16.73	23.61
IESCO	11966	10943	8.55	218353	257742	-18.04	-7.95	13026.93	11961.96	8.18	290202.77	277284.66	4.45	12.26
GEPCO	12032.48	10922.11	9.23	190363.93	202195.12	-6.22	3.01	12678.20	11528.75	9.07	249148.59	248407.36	0.30	9.34
LESKO	25387.87	22352.13	11.96	426667.07	426072.23	0.14	12.12	28334.33	25070.73	11.5	571563.62	567879.84	0.64	12.07
FESCO	15984.48	14501.28	9.28	258995.51	251754.57	2.8	11.82	17512.51	15918.79	9.10	328930.18	327371.47	0.47	9.53
MEPCO	20605.46	17466.09	14.93	272576.03	282404.12	-3.61	11.87	22733.91	19202.42	14.72	364078.83	363095.23	0.27	14.95
HESCO	5574.4	4014.1	27.99	70839.9	54302.4	23.34	44.79	5559.80	4034.50	27.43	86037.60	64650.00	24.86	45.47
SEPCO	4290.96	2775.76	35.31	50097.61	32434.25	35.26	58.1	4489.77	2890.18	35.63	62321.68	40314.44	35.31	58.36
QESCO	6615.8	4775.37	27.82	68240.57	25019.88	63.34	74	6716.30	4831.57	28.06	74985.14	25987.44	65.34	75.07
Total in CPPA-G System	120224.6	99370.2	17.35	1760449.43	1738700.33	1.24	18.37	129839.3652	107845.7226	16.94	2291485.078	2154912.004	5.96	21.89
KE	19487.42	16068.83	17.54	315873	299672	5.13	21.8	19802207.00	16763223.00	15.35	390235.72	377334.58	3.31	18.15

Note: Based on net generation of KE own power plants

Source: Distribution Companies / KE

## 15. CPP-G Charges

CPPA-G Market Operator Fee

Description	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
Revenue Requirement (Rs. in Million)	451.87	391.92	236.90	468.07	863.67
Average Monthly MDI (MW)	22,695.00	23,507.00	23,640	23,693.00	26,535
Market Operation Fee (Rs./kW/Month)	1.66	1.39	0.84	1.71	2.71

Source: NEPRA



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