



ORIGINAL CONTRIBUTION

## Evaluation of Regulatory Governance of the National Electric Power Sector of Pakistan

Aleena khan<sup>1\*</sup>, Wajid Islam<sup>2</sup>, Rija Ahmad Abbasi<sup>3</sup>

<sup>1</sup> Lecturer, Department of Management Studies, Bahria University Islamabad, Islamabad, Pakistan

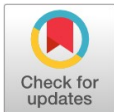
<sup>2</sup> Lecturer, Khyber Pukhtunkhwa Technical and Vocational Training Authority (KP- TEVTA), Peshawar, Pakistan

<sup>3</sup> Lecturer, University of Science and Technology Bannu, Bannu, Pakistan

**Abstract**— This study will try to evaluate the regulatory governance of National Electric Power Regulatory Authority (NEPRA). The authority was formed in 1997 to overcome the inefficiencies of Water and Power Development Authority (WAPDA) and Karachi Electric Supply Corporation (KESC) (now K-electric) and to improve the power sector through good regulations. Moreover, it was supposed to protect the interests of consumers, investors, and operators equally through its autonomy, professionalism, transparency, and credibility. Furthermore, it must grant licenses, determine tariffs and rates, ensure quality service, provide a feasible environment for privatization, and redress the complaints of electricity consumers. This study incorporates both qualitative and quantitative techniques. That is why, even after 23 years, the authority has not yet overcome the issues in the power industry. The study found that the lack of specialists, the lack of autonomy, and the lack of openness and accountability handicapped the government. This study has tried to highlight those problems which hinder the progress of NEPRA and suggested some policy recommendations for its improvement by granting autonomy, enhancing professionalism, a good complaint readdress mechanism, and inclusive in decision-making. This study has highlighted the most ignored prospects of energy regulations, which the authority has been missing for a long time, for enhancing the regulatory governance of energy.

**Index Terms**— National Electric Power Regulatory Authority (NEPRA), Water and Power Development Authority (WAPDA), Karachi Electric Supply Corporation (K-Electric), Regulations, Professionalism, Accountability, Autonomy, Efficiency.

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### Introduction

#### Background of the study

Energy plays a significant role in a nation's socioeconomic development and prosperity. Electricity is the most widely used source of energy. According to the World Bank (2020) report, 75% of Pakistan's population has access to electricity. It means that approximately 3/4th of the population is directly related to electricity. Regulation of electric power is crucial for ensuring efficiency, minimizing market failures, enhancing accountability, and fostering competition. Moreover, power or electricity is also a natural monopoly, which is why regulation is compulsory.

\*Email: [akhan.buic@bahria.edu.pk](mailto:akhan.buic@bahria.edu.pk)

In the post-1958 period, the electricity sector of Pakistan was completely dominated by two players known as the WAPDA and the KESC. During that time, the government served as both the operator and the regulator. In early 1980, the performance of both entities was satisfactory, but after that, things started to become worse (Razvi, 2019). Various capital-access constraints resulted in insufficient generation capacity and mission infrastructure. The burden of the power shortfall fell mostly on the economy and consumers.

The situation has deteriorated because of the inefficiencies and failures of the authorities. Severe losses and massive failures in the governance of WAPDA and KESC made restructuring the power sector necessary. The previous administration believed that involving the private sector would aid in enhancing the generation and transmission capacity. The government created a strategic plan in 1992 for the privatization of the electricity industry and the establishment of NEPRA, a free-standing regulatory body. The main objective was to implement sensible and transparent economic regulations in the electricity sector (Malik, 2007). The Government of Pakistan passed NEPRA Act No. XL of 1997, which formed the NEPRA. It was established for the regulation, generation, distribution, and transmission of electric power.

### Objectives behind NEPRA formation

The main objectives behind NEPRA's formation were to ensure the presence of an autonomous regulatory body, which could enhance the availability and efficiency of electric power services. Moreover, it may protect the interests of customers, investors, and operators on equal terms. Likewise, it can foster competition and deregulate the electricity industry as needed.

### Functions of NEPRA

NEPRA was formed to fulfill some regulatory functions of electric power in the country. The primary functions are as follows.

- To determine Tariff rates.
- To grant licenses and approve power acquisitions programs
- To ensure and enforce the standards of quality, operation codes, and investment.
- To provide a competitive and feasible environment, including privatization.
- To ensure customers' responsibilities and rights, along with resolving their complaints.
- In short, for overall regulations of the power sector.

### NEPRA regulatory framework

NEPRA was initially constituted as an autonomous organization with no administrative control from the government. However, to facilitate contact with the federal and provincial governments, it was initially affiliated with the Ministry of Water and Power. Later, the Ministry of Law and Justice was affiliated with it. Moreover, NEPRA has been directly affiliated with the Cabinet Division since June 2000. Currently, NEPRA operates in a highly centralized manner. All tariff and standard-setting decisions must be authorized by the government. There are five members of the NEPRA. One serves as chairman, while the other four are members. Each member represents a different province. On a rotatory basis, one member is nominated as vice-chairman for one year

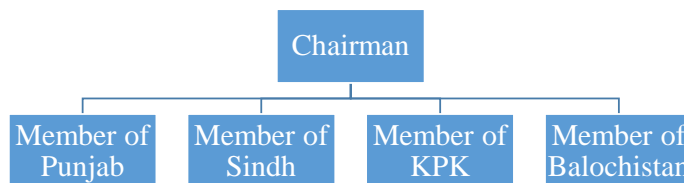


Fig. 1. Governing structure at NEPRA

### Purpose of evaluation

The purpose of this evolution is to:

- To assess NEPRA's performance in terms of how well it is carrying out its regulatory tasks.
- To evaluate the impediments to the effective and efficient functioning of NEPRA.

### Significance of the evaluation

According to the World Bank report, 71.1 percent population of Pakistan has access to electricity, i.e., up to 156 million people, and NEPRA is the sole regulatory body for electricity. Therefore, evaluating the performance of NEPRA is essential.

The paper is organized as follows. The introduction is followed by a literature review. The two aspects of regulation will be discussed in this section, the rationale for power regulation and an analysis of the empirical literature. The second portion will analyze Pakistan's regulatory structure and reform of the electricity industry in detail. The third section will address the performance and characteristics that make for an effective regulatory authority. In this section, the operation of NEPRA will be examined critically. Finally, in the fifth section, conclusions and policy recommendations will be discussed.

### Literature Review

Battle and Ocana (2013) suggested that regulations may be economic or social. The former deals with imperfect competition, licensing, investment, and pricing, while the latter deals with safety standards, environmental impact, and quality assurance. Harbison (2001), in his study, examined regulatory effectiveness and efficiency. He meant "doing the right job" by "regulatory effectiveness" and "doing the right work in the right way" by "regulatory efficiency." This article examines the efficacy of regulatory organizations, first based on their objectives and then to enhance their efficiency and improvement.

Jacobs (2004) studied various governance features for effective regulation, which include accountability, transparency, regulatory autonomy, predictability, clarity of functions, and participation.

Kemal (2015) studied different regulatory authorities in Pakistan. The findings suggested that regulators are made to protect consumers' and investors' rights. But with time, regulators degenerate into protecting the interests of the organizations they are supposed to regulate. This might be one of the reasons why regulator accountability should be prioritized to minimize corruption in regulatory systems. (Ali, Yan, Irfan, Ameer, Atchike, & Acevedo-Duque, 2022). Furthermore, professionals in regulatory bodies must be competent and well-versed in new regulatory measures.

Qudisia (2016) highlighted the poor performance of NEPRA and argued two factors are contributing to the poor performance of NEPRA. The first is the internal environment, while the other is the external environment. The former means that the regulatory body does not possess an efficient and expert staff that can make good decisions for effective regulation and competition. The latter one is the pressure groups and government interventions. Moreover, tariffs and pricing are the main causes of power crises.

Naveed and Azhar (2021) suggested that a lack of autonomy, political consensus, bureaucratic hesitation, and disinterest from the private sector have pushed the NEPRA into a crisis. Furthermore, the debacle of K-electric privatization has exposed the inefficiencies of NEPRA.

Zeb, Haider, and Shaheen (2015) found inconsistencies in regulations between the energy regulators (i.e., OGRA and NEPRA). This inconsistency conveys a confusing message to investors, leading to disharmony in pricing strategies. Furthermore, it indicates the lack of independence and clarity of roles in OGRA and NEPRA.

Roberts and Sattar (2015) analyzed in their study that the cost of production and price is a critical issue in the electricity sector in Pakistan. High tariffs and non-recovery costs have made it difficult for Independent Power Producers (IPPs) to work properly and efficiently. Subsidies and high tariff rates, along with huge distribution and transmission losses and low recovery, have further exacerbated the environment for the electric power sector, which also contributes to the rising circular debt in the country daily.

According to Siddiqui, Jalil, Nasir, Malik, and Khalid (2011), power outages cost Pakistan 12 to 37 percent of its industrial output. Qudisia (2016b) reveals that Pakistan and India started privatization and liberalization of the power sector at the same time in the 1990s. Initially, Indian policies were not successful, but after the 1998 regulatory framework and 2003 electricity act, India has raised the generation capacity and lessened the distribution and transmission losses. On the other hand, no satisfactory progress has been witnessed in Pakistan in this regard.

Alao and Awodele (2018) also revealed in their study that Pakistan shares similarities with Nigeria's power regulator's independence. Like in Nigeria, the government in Pakistan has excessive control over the regulator.

Malik (2007) concluded that a regulatory system consists of two basic dimensions. The first one is regulatory governance, and the second one is regulatory substance. Regulatory governance comprises the legal and institutional design of the system through which decision-making is made. On the other hand, regulatory substances include the contents of regulations, which consist of price setting, entry-exit rules, service quality, etc. That is why regulatory effectiveness mainly depends on the quality of governance.

### Literature gap

The existing literature lacks up-to-date insight into NEPRA regulatory governance as a regulator. Moreover, no study has highlighted the existing lacunas in the authorities' work, which is why it has not succeeded in filling those gaps in the last 23 years. Apart from this, the

available literature on NEPRA is outdated and needs to be revised.

### **Hypothesis**

$H_0$ : NEPRA is performing its regulatory functions efficiently.

$H_1$ : NEPRA is not performing its regulatory functions efficiently.

### **Regulatory framework of NEPRA**

The main objective behind NEPRA's formation through an act of parliament named NEPRA Act No. XL 1997 was to have an independent regulatory body that could improve the availability and efficiency of electric power services. Furthermore, it may equally protect the interests of customers, investors, and operators. Apart from this, it must promote competition among the players and must deregulate those areas in power sectors where competition already exists (Naveed, Farooqi, & Jadoon, 2022). In 2018, some amendments were also made to envisage a competitive power market by creating wholesale and retail markets and further splitting the supply and distribution of power businesses, respectively (Asad, Mahmood, Baffo, Mauro, & Petrillo, 2022).

Like any regulatory system in the world, the functions of NEPRA are also classified into various categories. Firstly, it must determine tariff rates and specify terms and conditions. Secondly, it must grant licenses. Third, it must set and ensure the enforcement of quality service standards and approve investment standards and operating codes. Fourth, it must provide a feasible environment for industry structure and privatization and clear the way for a competitive market. Moreover, it will ensure that tariffs can cover the cost and enhance investment in the short term. Furthermore, it must encourage generation, distribution, and transmission on a non-discriminatory basis, which can fulfill the needs of consumers and provide efficient and reliable quality services and voltage disturbances.

### **Framework of an Efficient Regulator**

The following discussion will analyze the characteristics of an efficient regulator.

#### **Independence and autonomy**

A regulator must be completely independent to ensure the interests of investors, producers, and consumers without any influence from the pressures of "regulatory captures" of interest groups. Unfortunately, NEPRA lacks such autonomy. Governments at different stages intervened in the affairs of NEPRA and created hurdles in its independent functioning. Moreover, the government wants to freeze the tariff rates, which is against the autonomy of NEPRA (Kurita, 2022). Similarly, in the past, governments have also interfered in the affairs of NEPRA (Malik, 2007; Rizvi, & Mirza, 2019). Initially, the government granted 100.5 million to run its affairs, and now NEPRA relies on the revenue generated from granting licenses, which sometimes compromises its autonomy (Malik, 2007). According to Kumar (2022), Chile and Argentina have successfully restructured electricity grids due to their independent regulators.

#### **Professionalism**

The main purpose of regulatory bodies is to make autonomous decisions and resist pressure from pressure groups and the government. Making autonomous and critical judgments of this sort requires professionalism. Regrettably, NEPRA is short of professional human capital. The majority of NEPRA members are selected from the government bureaucracy, which has little expertise in regulation (Ali et al., 2022). In the past, NEPRA leadership struggled with regulatory expertise since personnel from the bureaucracy or military lacked prior experience in the electricity sector (Ali et al., 2022; Hulo et al., 2022).

Moreover, the important seat of the chairman often remains empty. It happened in 2002-03, 2005, 2012-13, 2013-14, and 2018-19. This has an impact on the smooth functioning of the regulatory body. Similarly, the members are often taken from the senior management of WAPDA, which has failed and given rise to the birth of NEPRA. Hiring those members' governments is putting the old wine in a new bottle. Furthermore, studies show that NEPRA lacks economics experts (Bari, 2006) who can calculate optimal tariffs, which is a complicated area. Humayun and Anjum (2000) argued that NEPRA failed to operate independently due to government pressures and obliged WAPDA without proper justification.

#### **Accountability**

The key pillars of a good regulator are accountability and transparency. Unfortunately, different reports indicate misconduct by NEPRA authorities. Moreover, nepotism and illegal appointments have become the norm in NEPRA. Senior officials freely misuse their positions

(Shah, Ali, & Solangi, 2019; Sibtain, Li, Bashir, & Azam, 2021; Uddin et al., 2019). They have provided a free hand to IPPs to exploit consumers, as 15 IPPs have invested only Rs 60 billion in 12 years and earned 22 times more, i.e., over Rs 400 billion (Malik, 2007).

Similarly, in the past, reports have emerged that IPPs have also used corrupt practices in obtaining projects from WAPDA. An inquiry report on the power sector also reveals that the national exchequer lost approximately Rs4 trillion due to favors granted to IPPs. Likewise, speculations about bribes and misconduct were also aroused when some deals were kept secret from the public. In addition, the report also indicates that certain private companies fabricate figures to obtain better rates, which raises the price of electricity.

The table below compares the price of electricity in Pakistan with that in India and Bangladesh in Pakistani rupees. The prices of residential, commercial, and industrial electricity in Pakistan are two to three times higher as compared to that in India and Bangladesh.

Table I  
Cost of Electricity - Regional Comparison

|   | Country    | Residential   | Commercial | Industrial  |
|---|------------|---------------|------------|-------------|
| 1 | Pakistan   | 7.36 - 13.897 | 24. 82     | 18.63-16.22 |
| 2 | Bangladesh | 4.1 -12.6     | 10.8       | 6.8         |
| 3 | India      | 4.2 - 11.2    | 8.4 - 11.9 | 10.9        |

Source: Report on the power sector,2020.

**Credibility**

Credibility is the most important thing for a regulator. If consumers and producers feel that the regulatory authorities are credible, then they will feel free to invest and make better decisions. However, if the regulatory body is influenced by ministries in licensing and favoring some players, then the rest of the people do not feel secure. They do not take a risk by investing in an insecure business. That is how interfering in NEPRA decisions by the government and ministries has harmed its credibility.



Fig. 2. Pyramid for efficient regulatory body

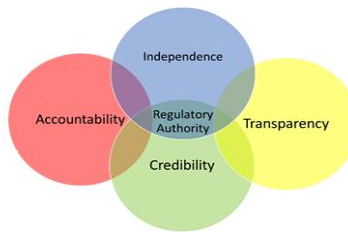


Fig. 3. Properties of regulatory authority

**Discussion**

**Assessing the performance of the NEPRA as a regulator**

**Licensing**

NEPRA is responsible for issuing permits to various firms that seek to operate in the transmission, generation, and distribution sectors in Pakistan. No one can carry out such an operation in Pakistan without NEPRA's authorization. NEPRA grants licenses, but the process is

extremely slow, and there are a lot of bureaucratic and systematic hurdles (Malik, 2007).

NEPRA also assesses the professional ability of operators to determine whether they can execute the project. Moreover, it also assesses the financial viability of projects. Those licensees who do not fulfill NEPRA requirements may also have their licenses revoked by the authorities.

Table II  
Licenses Granted by NEPRA in the Last Two Years

| Licenses/Source | Number in 2017-18 | Number in 2018-19 |
|-----------------|-------------------|-------------------|
| Coal            | 2                 | 2                 |
| Hydel           | 6                 | 1                 |
| Wind            | 8                 | 1                 |
| Solar           | 6                 | 3                 |
| Bagasse         | 8                 | 4                 |
| Solid Waste     | -                 | 1                 |
| RLNG            | 1                 | -                 |
| Total           | 31                | 12                |

Source: NEPRA Annual Report 2017-18

However, there is no provision on the export and import of electricity regulation in the NEPRA act, although Pakistan is involved in electricity export and import. The question of who will regulate cross-border infrastructure investments is still unanswered (Ul-Haq et al., 2019).

**Tariffs**

Tariffs are an important component of electricity regulations. NEPRA determines the tariffs to recover costs and reward investors. But neither the companies nor the consumers are satisfied with the tariff policies of NEPRA. According to the NEPRA state of industry report 2018, almost all the projects on which NEPRA had made determinations in the past have been questioned by the National Accountability Bureau (NAB). Apart from this, the determined tariffs do not recover the full cost, and the government has to allocate billions of rupees for subsidies yearly. Moreover, in the budget document for the fiscal year 2020–21, 124 billion rupees are allocated for electricity subsidies. Moreover, the burden on consumers is increasing daily, and they have to bear the brunt of NEPRA's inefficiencies. Moreover, NEPRA's tariff was revised 17 times in 2019, which is badly affecting its credibility (Bacon, 2019; Shah et al., 2019).

Furthermore, the profits gained by IPPs by showing higher costs than actual and gaining billions of profits at the expense of consumers also shows the faulty tariff policy of NEPRA. Moreover, distribution companies are also complaining that they are not recovering the costs due to the tariff policies of NEPRA (Rizvi, 2019; Tareen et al., 2019).

**Service quality**

It is prescribed in the NEPRA Act 1997 that NEPRA will provide the performance standards for electricity generation, transmission, and distribution. Furthermore, it will also encourage reliable and safe service. However, the ground situation is completely different and shows a bleak picture of NEPRA's performance in providing a reliable and safe service.

The table's informational content speaks for itself. Transmission and distribution losses are burgeoning, which is also skyrocketing circular debt. Electricity theft is a common phenomenon, and those customers who already deposit their electricity bills are the ones that suffer the most. Fatalities among the masses are soaring due to faulty systems. Blackouts and brownouts are common phenomena.

According to Chien, Hsu, Zhang, Vu, and Nawaz (2022), 29 percent of Pakistan's population is deprived of electricity. Moreover, NEPRA is granting licenses to coal power plants, which are extremely hazardous and against the safety of consumers.

Table III  
Transmission and Distributions Losses in Percentages for the Last Five Years

| Name of DISCO | 2013-14 | 2014-15 | 2015-16 | 2016-17 | 2017-18 | 2018-19 | 2019-20 |
|---------------|---------|---------|---------|---------|---------|---------|---------|
| IESCO         | 9.46    | 9.41    | 9.10    | 9.02    | 9.13    | 8.9     | 8.69    |
| GEPCO         | 10.97   | 10.72   | 10.58   | 10.01   | 10.01   | 9.9     | 9.51    |
| PESCO         | 33.5    | 34.8    | 33.8    | 32.6    | 38.1    | 36.6    | 38.69   |
| FESCO         | 11.3    | 11      | 10.2    | 10.6    | 10.5    | 9.8     | 9.62    |
| LESCO         | 13.4    | 14.1    | 13.9    | 13.8    | 13.8    | 13.2    | 12.4    |
| MEPCO         | 17.5    | 16.7    | 16.4    | 16.9    | 16.6    | 15.8    | 15.23   |
| QESCO         | 28.3    | 24.4    | 23.8    | 23.1    | 22.4    | 23.6    | 26.68   |
| SEPCO         | 38.56   | 38.29   | 37.72   | 37.8    | 36.7    | 37.0    | 36.27   |
| HESCO         | 26.46   | 27.1    | 26.5    | 30.8    | 29.8    | 29.5    | 28.82   |
| K-Electric    | 25.30   | 23.69   | 22.24   | 21.71   | 20.4    | 19.1    | 19.8    |

Source: NEPRA performance evaluation report, 2017-18

The transmission and distribution losses of every DISCO for the last five years are displayed in table II. The fact that the losses are not decreasing is blatantly obvious, which demonstrates the authorities' ineptitude. A similar problem is shown in Graph 4.1 as well.

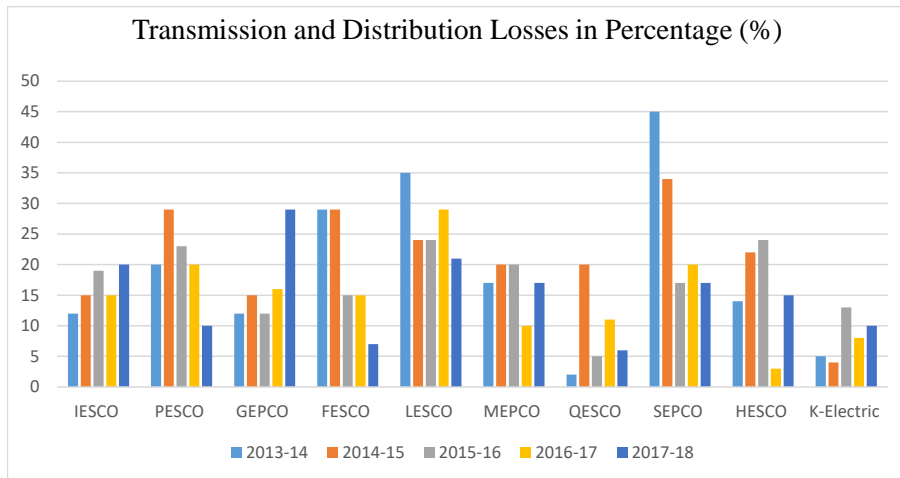


Fig. 4. Graph 4.1 shows transmission and distribution losses in percentage (%), 2013 -2018. (Source: NEPRA performance evaluation report, 2017-18 )

Table III below shows the percentage recovery of discos. The statistics illustrate that the percentage recoveries of some discos are extremely disappointing, like QESCO, SEPCO, and HESCO. Such low recoveries lead to higher circular debt.

Table IV  
Percentage of Recovery

| Name of DISCO | 2010 | 2012 | 2014 | 2016 | 2018 | 2019 | 2020 |
|---------------|------|------|------|------|------|------|------|
| IESCO         | 96   | 96   | 90   | 91   | 90   | 88   | 90   |
| GEPCO         | 96   | 99   | 96   | 99   | 97   | 96   | 94   |
| PESCO         | 85   | 83   | 86   | 89   | 89   | 89   | 88   |
| FESCO         | 97   | 100  | 100  | 100  | 99.6 | 99.2 | 94   |
| LESCO         | 96   | 96   | 98   | 99   | 98   | 98   | 95   |
| MEPCO         | 94   | 97   | 96   | 100  | 97   | 99   | 93   |
| QESCO         | 76   | 36   | 42   | 72   | 26   | 27   | 49   |
| SEPCO         | --   | 51   | 60   | 55   | 60   | 63   | 57   |
| HESCO         | 60   | 69   | 79   | 72   | 77   | 75   | 73   |
| K-Electric    | 100  | 91   | 87   | 88   | 91   | 92.6 | 92.1 |

Table V  
Fatalities due to Electricity

| Name of DISCO | 2013- 14 | 2014- 15 | 2015- 16 | 2016- 17 | 2017- 18 |
|---------------|----------|----------|----------|----------|----------|
| IESCO         | 12       | 15       | 19       | 15       | 20       |
| GEPCO         | 12       | 15       | 12       | 16       | 29       |
| PESCO         | 20       | 29       | 23       | 20       | 10       |
| FESCO         | 29       | 29       | 15       | 15       | 07       |
| LESCO         | 35       | 24       | 24       | 29       | 21       |
| MEPCO         | 17       | 20       | 20       | 10       | 17       |
| QESCO         | 02       | 20       | 5        | 11       | 06       |
| SEPCO         | 45       | 34       | 17       | 20       | 17       |
| HESCO         | 14       | 22       | 24       | 3        | 15       |
| K- Electric   | 05       | 04       | 13       | 8        | 10       |
| Total         | 191      | 212      | 172      | 147      | 152      |

Source: NEPRA performance evaluation report, 2017-18

Table IV and graph 4.2 depict the sheer negligence of discos, due to which many citizens lose their precious lives every year. However, no safety measures are taken to ensure the safety of people.

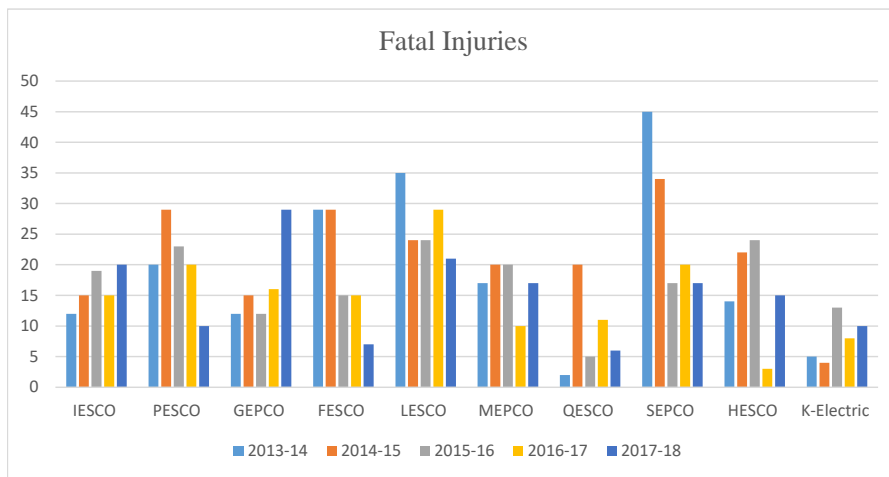


Fig. 5. Graph 4.2 shows electric fatalities of workers by year of Injuries, 2013 -2018. (Source: Author formation from the data of NAPRA performance report 2017-2018 )

Apart from this, many electrocution incidents go unreported. Only reported cases are shown in the table above. In the current year, 19 individuals lost their lives in Karachi due to the faulty system of K-Electric. NEPRA's Performance Standards and Distribution Rules 2005 address transmission system leaks. Similarly, thousands of people are injured every year because of poor transmission and distribution equipment.

**Privatization**

NEPRA is not directly involved in the privatization of electric power, but it must provide a feasible environment for privatization and facilitate the process. The population of Pakistan is burgeoning exponentially, and thus there arises the need for more power i.e., electricity, which is not possible without the contribution of the private sector. NEPRA provides licenses to private entities and IPPs, but the proportion of private players in the power sector is low. Instead of encouraging competition, this increases cooperation among players. The insufficient number of private players in the power sector is a failure of NEPRA and governments in Pakistan. Moreover, private players are often involved in rent-seeking.

**Complaints redressals**

The NEPRA Act contains a provision for the redressal of complaints of consumers that will resolve the complaints of consumers. NEPRA has also established complaints centers. But according to some reports, it only values the complaints of industrial consumers and does



not give any weight to domestic consumers. Furthermore, it does not raise consumer awareness about their rights, which is why most customers are unaware of such authorities. In addition, the underprivileged masses face countless challenges due to over billing and disconnections. Moreover, to make new connections, they must bribe the authorities.

### NEPRA enforcement pyramid

The first step of an investigation by a regulator is a proper investigation. At this stage, everything is evaluated and observed. If the regulator finds something which is against the rules and regulations, then a formal show-cause notice or warning is issued to the breaching party. If the party does not satisfy the regulator, then administration sections are imposed. In the final stage, the execution is done in the form of fines or other sanctions. i.e., the canceling of the licensing is done.



Fig. 6. Pyramid of enforcement

### Comparison of electric power Regulatory Authorities of Pakistan with India

Power sector reforms were launched in both Pakistan and India in the 1990s to promote competition and efficiency. In Pakistan, electricity is regulated by a single authority, the National Electric Power Regulatory Authority (NEPRA). In India, the two authorities involved in regulating electricity are the State Electricity Regulatory Commissions (SERCs) and the Central Electricity Regulatory Commission (CERC) (Abbas et al., 2018).

According to the Indian Electricity Act, 2003, CERC and SERC have clearly defined goals and taken decisions without the intervention of anybody. The 2003 Electricity Act is a powerful factor for reform. The new Act calls for de-licensing of generation, including captive power generation, and non-discriminatory open access to the transmission network. Trading is acknowledged by the Act as a separate activity. These Act provisions generate a positive climate for the growth of the bulk electricity market in the nation. Phased open access of the distribution network by respective state utilities provides consumer choice subject to open access regulations, including the cross-subsidy surcharge.

Before the Electricity Bill 2003, the electricity sector in India was regulated by three Acts:

- The Indian Electricity Act 1910 deals with the functioning and regulation of private licensees.
- The Electricity (Supply) Act, 1948, was responsible for the creation of State Electricity Boards (SEBs), the integrated monopoly utilities under state 47 governments' control that are responsible for the generation, transmission, and distribution of electricity in their respective states.
- The Electricity Regulatory Commission (ERC) Act 1998 mandated the creation of an independent regulatory commission by central and state governments.

The most recent significant policy shift toward improving the power sector was the legislative ratification of the Electricity Bill 2003. The Electrical Regulating Commissions (ERC) Act of 1998 was approved by the federal government and thus made it simpler for all states to establish independent ERC. This commission's role was to support and advise the government as it developed its tariff strategy. In addition, it was anticipated that the commission would oversee and control the autonomous agencies in addition to facilitating the acceleration of the implementation process.

The electricity Act 2003 is a major boost to the reform process. The Act goes to the core of the most complex issues. It combines structural and regulatory reforms to promote competitive markets, promote private participation and transform the state's role from service provider to regulator. Moreover, High-skilled professionals and efficient members are selected for specified posts in CERC and SERC; while such a trend is missing in NEPRA, it often relies on bureaucrats and ex-military personnel. Successive governments in Pakistan

intervene in the decisions of NEPRA and come under political capture. Contrastingly, CERC and SERC are completely independent. The decision-making process is extremely complex in NEPRA, while CERC and SERC have defined parameters for decision-making.

## **Conclusion**

The main purpose of NEPRA formation was to protect the interests of electricity consumers. Moreover, it must provide a feasible and competitive environment for the generation, transmission, and distribution of electricity. There is no doubt that NEPRA has worked to some extent on some goals, but from the above discussion, it is crystal clear that it has failed in some areas as an efficient regulator.

Organizational weaknesses, widespread corruption, massive line losses, and inefficient electricity tariffs continue to affect the power sector of the country. NEPRA's regulatory governance has been weakened due to a lack of independence.

Over the years, it has not developed into a completely independent authority. In addition, it faces a shortage of professionals and relies on government-appointed bureaucrats and retired military personnel. Apart from this, a scarcity of transparency and accountability are also problems. Similarly, it has failed to provide consumers with a safe and reliable electrical supply. Providing permits to coal-run power plants is a clear violation of consumer safety.

Furthermore, rising circular debt and burgeoning subsidies to the electricity sector indicate the failures of NEPRA tariff determination mechanisms. Transmission and distribution losses are also harming consumers' interests. Every year, hundreds of citizens die, and thousands are injured due to faulty T & D infrastructure.

Similarly, it has not attracted enough private investors to fulfill the augmenting demand for electricity. In Pakistan, 58 million people still have no access to electricity; on the other hand, 95 percent of Bangladesh's population has access to electricity (Robert et al., 2020). Considering the discussion, we must reject the *H<sub>0</sub>* hypothesis that NEPRA is performing efficiently.

## **Future Research Directions**

Considering the preceding discussion, some policy recommendations are provided to enhance the regulatory effectiveness of NEPRA.

- Pakistani markets are not as competitive as economic theory emphasizes. Instead, it is thought that they are concentrated and governed by a small number of strong lobbies with connections to both politicians and government employees. Despite the market economy's long and rich history, competition is still poorly regulated in Pakistan. However, much work remains till we can reap the potential advantages of a competitive private sector. For example, we continue to fall short in terms of the degree of local competition, the number of steps required to launch a firm, trade obstacles, or our ability to innovate, among other things.
- More professionals should be hired to increase efficiency. In this regard, Lessons can be learned from India's successful regulatory policies.
- A well-governed regulatory body is required in Pakistan. This is a prerequisite, but it's not sufficient to raise the sector's performance. It must be accompanied by well-planned market and industry frameworks. An efficient governance system is also necessary for the electricity sector.
- To attract more investors, systemic and bureaucratic barriers should be reduced.
- Citizens' participation will also enhance the regulatory mechanism of NEPRA. However, it is difficult to offer concrete benefits to electricity consumers and other stakeholders without expanding the regulatory power legally and administratively to monitor the sector and service quality and enforce the required standards.
- Moreover, a mechanism for transparency and accountability should be promulgated.
- The complaint redressal mechanism needs to be improved further so that citizens are not dissatisfied.
- Finally, the regulatory process must be made simple and more inclusive. The existing ambiguity around duties, responsibilities, and decision-making autonomy may allow for excessive government interference in NEPRA operations. The NEPRA laws should expressly establish the necessary standards to guarantee the regulator's independence from politics, much like in European nations (EU, 2019).

## **Limitations**

Though this study has several strengths, it still bears some limitations. Evaluation relies only on information (both qualitative and quantitative) gathered from informal interviews, discussions, and published sources; a perception survey is not conducted. If done so, that will improve the effectiveness of the regulators even more. Similarly, there is little (if ever) been a study on the evaluation of the regulatory authorities that could give us a heads-up in terms of this study. Moreover, this study can also be conducted across countries and more developed markets.

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