

National Electric Power Regulatory Authority (NEPRA)*

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BACKGROUND

Historically, electricity sector policymaking, regulation, and service provision were all under the State's control. However, they lacked the managerial capacity and financial resources necessary to keep up with the growing demand for their services.

The government in 1992 prepared a strategic plan for restructuring the electricity sector. It unbundles vertically integrated utility, WAPDA, into separate generation, transmission, and distribution companies for better management. The government invited private capital in the generation sector to augment state-owned generation resources. The establishment of an autonomous regulatory agency to introduce transparent and judicious economic regulation in the power sector of Pakistan was also part of this plan.

The National Electric Power Regulatory Authority (NEPRA) was established under Section 3 of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 (NEPRA Act No. XL 1997) to regulate the provision of electric power services in Pakistan. In 2018, the NEPRA Act was amended to create a legal basis for developing a competitive electricity market.

Initially, NEPRA was established as an autonomous body with no administrative control from the government. However, for interaction with Federal and Provincial Governments, it was an attached department to the Ministry of Water and Power. Later, it was linked with the government through the Ministry of Law and Justice. Since June 2000 NEPRA has been under the Cabinet Division (Malik, 2007).

NEPRA Act

As in the NEPRA Act 1997, the aim behind the formation of NEPRA was to have an independent regulatory body to improve the efficiency and availability of electric power services while protecting the interests of consumers, investors, and the operators equally, and to promote competition and deregulate power sector activities where competition exists.

* It was published in *Evaluations of Regulatory Authorities, Government Packages and Policies*, Pakistan Institute of Development Economics (PIDE), 2022.

Box 1. Major regulatory obligations under NEPRA Act No. XL 1997

- Grant of licenses, approval of power acquisition programs.
- Determination of tariff, terms and conditions and rates.
- Prescription and enforcement of quality-of-service standards, approval of operating codes and investment standards; and
- Industry structure/privatisation including the transition towards a competitive market where feasible; and
- Consumer rights and obligations_ complaint redressal.

Under the act, NEPRA's policy guidelines for power sector reforms revolve around: cost-effective tariff structure to ensure investments in the short run; expansion of generation, transmission, and distribution capacities in the long run to meet the growing energy demand; and to ensure a reliable provision of electricity to consumers (Malik, 2007).

However, the Regulation of Generation, Transmission and Distribution of Electric Power (Amendment) Act, 2018 has increased its responsibilities to include not only the regulation of generation, transmission and distribution of electric power and matters connected therewith and incidental thereto, but also to ensure high standards of transparent, certain and effective regulation of the electric power markets of Pakistan; specification of the legal framework within which a competitive electric power market can develop and sustain; and to manage conflict of interest between the state and the development of the electric power markets. Key amendments are reported in Appendix A.

Besides, ensuring the elimination of energy poverty and facilitating the development of environment-friendly renewable electricity markets are among the major responsibilities of NEPRA.

Box 2. NEPRA Mandate under Amended Act [Act No. XII of 2018]

In addition to grant licenses and tariff determination, NEPRA is given authority to,

- *Specification of procedures & standards for registration of persons providing electric power services.*
- *Advisory to the Federal Government in the formulation of electricity plan, policy, and public sector projects.*
- *Specification and enforcement of performance standards for generation companies and persons licensed or registered under the Act.*
- *Specification of procedures & standards for investment programs by generation companies and persons licensed or registered under the Act.*
- *Specification of accounting standards and establish a uniform system of account by generation companies and persons licensed or registered under the Act.*
- *Ensuring efficient tariff structures and market design for sufficient liquidity in the markets.*
- *Specifying fees.*
- *Review of its own decisions.*
- *Settle dispute between licenses in accordance with the specified procedure.*
- *Issue guidelines and operating procedure to promote market development, including trading in accordance with national electricity plan and policy.*
- *Review of organisational affairs of generation companies and persons licensed or registered under the Act for efficient supply of services.*
- *Encourage uniform industry standards and code of conduct for generation companies and persons licensed or registered under the Act for efficient supply of services; and*
- *Submit report on the activities of generation companies and persons licensed or registered under the Act to the Federal Government.*

In short, under the amended act, NEPRA's policy guidelines revolve around creating a legal basis for moving to a competitive market structure.

Purpose of Evaluation

The purpose of this evaluation is: to review the operational structure, governance, and effectiveness of the National Electric Power Regulatory Authority (NEPRA), to identify flaws in the current regulatory infrastructure, and to suggest ways to improve it.

Methodology

To evaluate regulatory effectiveness in NEPRA, a case study approach is adopted. The data is collected from interviews (interactive sessions) with officials at the authority, sector experts, and government officials.

Besides, the evaluation relies on secondary data sources_ NEPRA Annual Reports, State of Industry Reports, and other published reports and documents available.

Limitation: The evaluation relies only on information (both qualitative and quantitative) gathered from informal interviews/discussions and published sources; no perception survey is conducted.

Audience

Authority and the policymakers are the primary audiences for this evaluation, as both can influence the design of the regulatory framework.

Scope of Evaluation

The evaluation covers the subject matter under three main headings:

Organisational Structure and Regulatory Framework

- What is the organisational structure at NEPRA? How does NEPRA carry out its functions and make its decisions?
- What is the status of its policies, strategies, various processes (that is, regulatory framework) involved in the grant of licenses, in the determination of tariffs, and in the making of rules, regulations, standards, and specifications? What are the flaws in execution? To what extent its rules/ regulations are facilitating market development and competition?

Regulatory Governance

- Does NEPRA Act facilitates an effective governance structure at NEPRA?
- To what extent does NEPRA establish its independence, competence, integrity, and accountability while performing its duties?

Effectiveness of Regulatory Framework

- What is the impact of the regulatory framework at NEPRA on power sector outcomes?
- Did NEPRA achieve its objectives as in NEPRA Act, 1997?

Structure of Evaluation

Findings in this evaluation are developed after carrying out detailed discussions and review of available documents.

Recommendations in the evaluation identify specific areas/ policies that can be revised for improved outcomes.

ORGANISATIONAL STRUCTURE AND REGULATORY FRAMEWORK

What is the organisational structure at NEPRA? How does NEPRA carry out its functions and make its decisions?

Findings

NEPRA is a *quasi-judicial organisation* to regulate the power sector of Pakistan, including issuing licenses, determining tariffs, monitoring for maintenance of proper standards and quality of services as well as addressing complaints of consumers. NEPRA issue licenses for generation, transmission, and distribution; and after the amendment in the ACT in 2018, issuing licenses for an electricity supplier, market operator, system operator, and a market trader is the mandate of NEPRA.

Box 3. Experience/ Qualification of the Authority

1997 Act, Section 3 (3) states that the Chairman shall be an eminent professional of known integrity and competence with at least twenty years of related experience in law, business, engineering, finance, accounting, economics, or the power industry. While Section 3 (4) states that every member shall be a professional of known integrity and competence with at least fifteen years of related experience in law, business, engineering, finance, accounting, economics, or the power business.

2018 Amended Act, Section 3 (3) states that the chairman shall be person known for his integrity and eminence having experience of not less than twelve years in any relevant field including law, business, engineering, finance, accounting, or economics preferably in the electric power services business. Same rule is applicable to four members as stated in Section (4).

Section 3 (1) of the Act defines the *governing structure* of the ‘Authority’. The ‘Authority’ consists of a chairman to be appointed by the Federal Government; and four members, one from each province, to be appointed by the Federal Government after considering the recommendations of the respective Provincial Governments. While section 3(2) states that the Vice-Chairman shall be appointed from amongst the members for one year, by rotation.

At present, the chairman and three members are all engineers with experience directly/ indirectly in the power sector. Member Punjab completed his tenure a few months backs, and he was from the civil service of Pakistan (District Management Group). The new Member Punjab is yet to be appointed.

In the new Act, the experience in the power sector shall be given preference in the selection of the chairman and four members (Box 3), which is a positive change. The aim of the amendment is apparently to make the Authority more responsive to the needs and challenges in the power sector.

In terms of *organisational structure*, NEPRA is designed with various units/ departments corresponding to each basic function of the regulatory body as in NEPRA Act, 1997, that is, licensing, tariff, consumer affairs & complaint and monitoring and enforcement. Then there is the legal department, information technology department, coordination and implementation department, finance, media, and human resource (development and management) departments to support the above-mentioned departments. There are specific roles and responsibilities for each staff member. Apart, so far, no significant change is evident in its organisational structure in the light of the amended Act to support the development of a competitive electricity market.

The key challenge in this kind of setup is the *lack of communication across various units*. Though, the staff at NEPRA claim that good communication exists between various units and staff members when required to respond to organisational priorities. But in reality, while analysing NEPRA's intended objectives in NEPRA Act 1997, one can observe no progress regarding market development, competition, elimination of monopolies, or privatisation. It could be because of a lack of inter-departmental communication; most issues and discussions take place at the managerial level among individual departments (USAID, 2019).

As per Section 5 (1), the Authority has powers to perform its functions and conduct proceedings under regulations made under this Act. As per section 5 (2) of the Act, the 'Authority' to decide must have three members to make up a quorum. Besides, the 'Authority' may delegate its powers to the Chairman, any member or any of its officers or a special tribunal constituted under section 11, all, or any of its powers to carry out its functions or duties under this Act. However, the *decision-making* is only at the top, and various departments only provide input when required.

NEPRA has become increasingly more centralised; overburdening authority in such routine matters which otherwise could have been dispensed at the divisional level. This has increased regulatory meetings on every matter, which not only delays decisions but affects their quality.

Due process of consultations with all stakeholders, including consumers through public hearings, is followed. However, it is observed by experts that the time allocated to general consumers is relatively small.

NEPRA is statutorily empowered to enhance its *human resources*, that is, to appoint employees, consultants, experts, advisers, etc., on such terms and conditions as the regulator deems fit. The Act also lays down a requirement of prescribing these conditions through statutory regulations. The authority is incapacitated in terms of professionals for competent working at the authority. International consultants were engaged in evaluating IGCEP, CTBCM, wheeling and supply regime, etc. (NEPRA Annual Report, 2019-20).

The serious constraint identified in all interviews, whether at NEPRA or with experts, is the lack of competent staff with regulatory knowledge, experience, and training. The view at the organisation is they don't find suitable/ qualified persons⁹⁴.

⁹⁴ Despite repeated attempts, the information on number of professional staff, that is, number of economists, engineers, tariff specialists, lawyers etc. is not shared by NEPRA.

As a result, there is an inadequacy in emergency planning and preparedness; in the preparation to participate in national decision-making and communiqué concerning power sector challenges. Above all, there are delays in preparing the regulatory framework required for the establishment and development of a competitive market. However, it is noted that NEPRA, being aware of the need to improve its human resource capacity, is taking steps⁹⁵.

Theoretically, to be effective, NEPRA as a regulatory body must have some regulatory standards, regulatory guides, and internal guidance for use by the regulatory staff. This suite of documentation not only needs to exist, but it needs to be reviewed regularly and updated according to need. But it is revealed in an informal discussion with the staff, the set-up at NEPRA is no different from other organisations (especially in the public sector). Most of the trainings are also not very helpful, as the ground realities in Pakistan differ from other countries. The report on NEPRA (USAID, 2019) revealed that the officials at the authority are learning from experience. With time they have successfully managed most of the issues, for instance, in the grant of licenses.

In the amended Act, Section 10A provides *legal protection* to NEPRA authority, officers, and employees for their actions in good faith or intended to be done in pursuance of this Act or any rules or regulations made. This provision shall facilitate officers in carrying out their functions, in particular, monitoring and enforcement without fear of courts. As reported in NEPRA Annual Report, 2020, 1304 litigations are pending in different courts on June 06, 2020, in which either a decision of NEPRA is challenged, or NEPRA is made a party. A significant number of pending cases also indicates a shortage of a sound legal team at NEPRA; also pointed out by experts.

Regarding NEPRA's *financial Resources*, the 'Authority' approves the annual budget of NEPRA to ensure effective monitoring and control of operating and capital receipt/spending items. In pursuance of section 14 of the NEPRA Act, the statutory audit of annual accounts of NEPRA is carried out by the Auditor General of Pakistan. Similarly, an external audit of NEPRA accounts is also carried out annually via some well-reputed chartered accountant firm. This initiative by NEPRA needs appreciation, as NEPRA is not bound by the Act to do so.

The initial funding of NEPRA was provided through a grant from the Federal Government amounting to Rs 100.5 million. Since then, NEPRA has been meeting its expenses from licensing fees on a constant basis and filing fees for tariff applications, etc. At present, an annual license fee is its major source of income. NEPRA collects annual license fees under the base rates, as defined in NEPRA (Fees) Rules, 2002 computed/indexed with the most recent Consumer Price Index (CPI) published every month by the Pakistan Bureau of Statistics (PBS) (NEPRA Annual Report, 2020).

Under total administrative expenses, salaries and benefits account for 76 percent to 80 percent in the last five years; whereas the budget allocated for training and development remained 1 percent or less of total administrative expenses (Table 1).

⁹⁵ The chairman's message in the NEPRA Annual Report 2019-20 mentions online training programs on different subjects were developed for the employees to enhance their professional knowledge and skills. Besides, Massachusetts Institute of Technology (MIT) and Florence School of Regulation were engaged for the capacity building of NEPRA employees.

Table 1

NEPRA Income and Expenditure Account (Rs million)

Year	Fee Income	Other Income	Administrative Expenses	Finance Cost	Tax	Surplus after tax
2016	918.96	36.2	815.1	4.1	38.2	97.8
2017	1026.4	29.4	935.6	4.0	43.8	72.4
2018	1163.4	34.8	1013.5	3.95	53.2	127.6
2019	1264.0	69.8	1047.1	3.9	114.2	168.5
2020	1405.03	115.5	1157.2	3.7	123.9	235.7

Source: NEPRA Annual Financial Statements (Various Years).

Via section 12 of the Finance Act 2012, NEPRA is required to deposit its surplus funds, fines, and penalties with the Federal Consolidated Fund (FCF) of the Government of Pakistan. As evident from its financial statements, NEPRA has been depositing its surplus funds since 2011 (Table 2).

Although, NEPRA claims that this is not affecting its financial planning and management. In the future, the amendment may hamper in maintaining high human resource standards, IT standards, IT systems, research & development activities, extensive consultations with stakeholders, etc. Besides, these surpluses also raise the question of a high fee collected by NEPRA, as suggested by some licensees from time to time (Khan and Qawi, 2014).

Table 2

NEPRA Surplus Transferred to Federal Consolidated Fund (Rs Million)

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
	300	400	–	93.2	169.3	150.0	157.8	67.7	110.0	45.0

Source: NEPRA Annual Financial Statements (Various Years).

In the IT department, some positive developments have been taking place since 2015-16. The department is evolving to introduce e-Governance, paper-less environment, and Open Electricity Data concept in NEPRA. As a first step, NEPRA Dashboard is developed. In 2019-20, the digitisation of files and records started, which will be made available in the SharePoint ECM intranet server. Besides, the online complaint management system was launched for the general public in 2018; it is expected to be functional soon. Similarly, e-licensing is also on the cards.

What is the status of its policies, strategies, various processes (that is regulatory framework) involved in the grant of licenses, in the determination of tariffs and in the making of rules, regulations, standards and specifications? What are the flaws in execution? To what extent its rules/ regulations are facilitating market development and competition?

Findings

To be effective, NEPRA needs to have processes to deliver licensing, determining tariffs, monitoring, review and assessment, and enforcement functions, including the withdrawal of previous authorisations. Within the broader framework of the 1997 Act, NEPRA has prescribed rules, regulations, guidelines, codes to oversee the power sector. Processes are defined clearly in the NEPRA Regulatory Framework (Figure 1).

However, after the amendment in 2018, new rules, regulations, and specifications of standards are required. As per the amended Act, distribution will be separate from the electricity supply by 2023, which requires new standards/rules/regulations. Similarly, a competitive market is envisaged to be developed by 2023.

Section 50(1) of the NEPRA Act requires the secondary legislative instruments notified before 2018 to be brought in line with the amended NEPRA Act within one year from the date of coming into effect of the Regulation of Generation, Transmission, and Distribution of Electric Power (Amendment) Act, 2018. However, three years have passed, but the requisites are not in place. There are delays in the finalisation of all the rules/regulations/ guidelines required for the market.

Its latest Annual Report 2019-20, its websites, and inquiry at various levels revealed that most of the new rules/ regulations are still in the making process. The exception is NEPRA Licensing (Application, Modification, Extension, and Cancellation) Procedure Regulations, 2021.

Further, NEPRA has approved a Competitive Trading Bilateral Contract Market Model (CTBCM) on 5 December 2019, which was prepared under rules made before the passage of the amended NEPRA Act. Section 14A of the NEPRA Act requires the Federal Government to develop "an efficient and liquid power market design" along with any matter on development, reform, improvement, and sustainability of the power sector. It is the regulator's job to ensure that the CTBCM Model is in line with the amended NEPRA Act. But the irony is CTBCM was evaluated by a foreign consultant on behalf of NEPRA.

It is pertinent to mention here, according to the NEPRA Act, it is the prerogative of the Federal government to make rules; authority can only recommend or ask of it. But the government must consult the Authority and the Provincial Governments. While NEPRA has powers to formulate regulations, issue directives, codes, guidelines, circulars, or notifications as are necessary to carry out the purposes of the NEPRA Act. Further, it is stated in 14A (5), the Authority shall perform its functions under the national electricity policy and plan, which after long delay, has been announced in the last week of June 2021. The processes allow for a timely response as rules, regulations, and guidelines mention the time frame. However, it is only the organisation's capacity that can ensure that all its' regulatory decisions and requirements are met in a timely and correct manner. The fundamental constraint highlighted in the evaluation is the *lack of ability at NEPRA to carry out its functions in a timely manner*. It is elaborated further below in the discussion on the existing regulatory framework.

Fig. 1. Regulatory Framework at NEPRA



(a) Grant of Licenses

Licensing is one of the principal activities at NEPRA. No company may carry out generation, transmission, and distribution without getting a license from NEPRA. NEPRA is performing this function in the light of NEPRA Licensing (Application and Modification Procedure) Regulations, 1999; NEPRA Licensing (Generation) Rules, 2000 and NEPRA

Licensing (Distribution) Rules, 1999. As per the NEPRA regulations 1999, Section 5(2), it is an instrument used to allow market entry; an instrument to check the development of capacity more than required; fuel mix; to evaluate the professional ability of an operator to execute the project; and the financial viability of the project.

The procedure for allotting licenses starts by submitting an application; and is stated in the NEPRA legal framework. These rules state licenses' fees, terms for issuance and renewal, revocation and suspension; licensees' accounting practices and audit, provision of information, fines and penalties, resolution of disputes, and so on. In law, there is a specified period in which NEPRA must approve or refuse a license application. *The process involves a public hearing.*

The process is cumbersome in terms of the documentation required and the time involved in the final decision. In most cases (as is obvious from the dates for final decisions), the time taken in making the final decision is more than what is prescribed in the rules. For instance, in the case of generation licenses to IPPs, the determinations took more than a year in some cases against the four months allowed time.

There are provisions to force companies to relinquish licenses or permits for a legal or contractual violation, though, as with penalties for violating contractual terms, they are seldom applied.

In the generation licensing decision, the professional ability of an operator to execute the project, financial and technical feasibility of the project are reviewed, but no focus to check the capacity required or towards fuel mix. The fact is it is the government that decides about the projects; the job of the regulator is to check for the technicalities and issue licenses. Officials at NEPRA complain about the non-availability of the national electricity plan to guide them.

Market entry regulatory framework has remained weak in Pakistan, mainly due to the limited role of NEPRA in Power Purchase Agreements. The prices and guarantees offered to new entrants in the generation sector did not allow competition among the generation companies. Contrary to NEPRA regulation, which says that the review and approval of a project are based on least-cost considerations, new contracts have been justified in filling the demand and supply deficit. NEPRA was not involved in the review and approval of the contract, but it determines the generation tariff that will apply to a power plant, and the PPA must follow.

NEPRA competitive bidding tariffs (approval procedure) regulations were notified in 2008, amended in 2014, 2017, and then in 2019 but not applied in practice. The absence of competitive bidding for these projects and non-transparent procurement processes has always raised serious concerns about the potential for corruption. The guarantee clauses in power purchase agreements (PPA) with these IPPs have not only restrained the dispatching efficiency but overburdened the power sector and the government with hefty liabilities.

Section 3(6) of NEPRA Licensing (Generation) Rules, 2000, allowed NEPRA for additional terms and conditions for the good cause. But it is the lack of regulatory oversight that today Pakistan's power sector is in a "capacity trap."

The details of all categories of licenses granted by NEPRA under Sections 14B, 14C, 16, 17, 19, and 20 of the NEPRA Act up to June 2020 are given in Figure 4.2 and new license categories established under the amended Act are listed in Figure 3.

Fig. 2. Licenses issued under Three Main Categories

Generation	Transmission	Distribution
Hydro (34)	NTDC (1)	DISCOs (10)
Nuclear (5)	K-Electric (1)	K-Electric (1)
GENCOs (4)	Private (3)	SPPs (9)
IPPs (53)		CPPs (1)
K-Electric (1)		
Wind/ Solar/ Bagasse/ biomass (129)		
SPPs (17)		
CPPs (79)		
Net-metering (3334)		
Others (31)		

Fig. 3. New license Categories in the Amended NEPRA Act, 2018.

Generation: to be de-licensed after 2023
Transmission: National Grid Company; Provincial Grid Company
Distribution: DISCOs
Market Operator: Existing CPPA-G
System Operator: Envisaged to be National Power Control Centre (NPCC)
Electricity Supplier: Existing DISCOs & Other Companies
Electricity Trader: Existing IPPs & Other Companies

For distributed generation (DG), the “National Electric Power Regulatory Authority (Alternative & Renewable Energy) Distributed Generation and Net Metering Regulations” (2015) specify the rules for connecting these generators to the main grid. The regulator is responsible for determining whether distributed generators can sell power back to the utility.

As reported in a research report by Bacon (2019), new entrants (mainly solar) have faced problems getting through the various initial stages of approval. For both wind and solar, the number of Letters of Intent (LOI) issued with associated land allocation rights is greater than the land available and the interconnection potential of the grid. As a result, only those private participants who have links with the government have land identification and allocation and have moved on to the stage of conducting the feasibility; otherwise, not.

Another issue is the delay in getting the interconnection permit from NTDC. Under the influence of the Ministry, not only did NTDC take more than the allowed 30 days (sometimes more than a year) to comment on the inter-connection study, its Planning department (responsible for interconnection permits) also delayed the process. Though utilities are required to connect distributed generation assets to the grid within a specified period, this gets delayed generally.

Licensing for transmission and distribution licensing was not an issue in the past because of restricted market entry⁹⁶. But with the implementation of CTBCM, market participation in transmission and energy supply will increase, thus increasing license requirements.

In the view of NEPRA officials, the existing processes and procedures do not require immediate reform, but the experts had a different viewpoint. However, the hope is, once e-licensing is in practice, the delay issue would resolve to some extent.

(b) Tariff Determination

NEPRA determines electricity tariff, keeping in view the principles of economic efficiency and service quality according to the prescribed Tariff Standards and Procedure Rules, 1998. Under Section 7 (3) of the NEPRA Act, 1997, NEPRA has been bestowed with the power to determine tariff rates/ charges and other terms and conditions for supplying electric power services by generation, transmission, and distribution companies.

NEPRA Tariff Standards and Procedure Rules (1998) provide guidelines for process and parameters for setting tariffs. Any licensee, consumer, or person interested in the tariff may file a petition with the NEPRA by submitting it before the Registrar along with such fee as may be determined by the Authority. On receipt of tariff petition, the process is followed as elaborated in Figure 4.

Tariff determined by NEPRA is forwarded to the Federal government pursuant to Section 31(4) of the NEPRA Act for notification in the Official Gazette. It was stated in the NEPRA Act, 1997 that the Federal Government may file a reconsideration request with reference to the determination/decision of the Authority in 15 days. The authority within 15 days shall decide upon the matter and intimate the Federal government for notification in the official gazette. As per the rules, five days are allowed to file a motion for a recalculation; and ten days to file a review motion.

⁹⁶ For the first time in 2015, a license was granted to a private transmission company.

The tariff structure for generation, transmission, and distribution is elaborated in Figure 5.

Fig. 4. Steps Involved in Tariff Notification

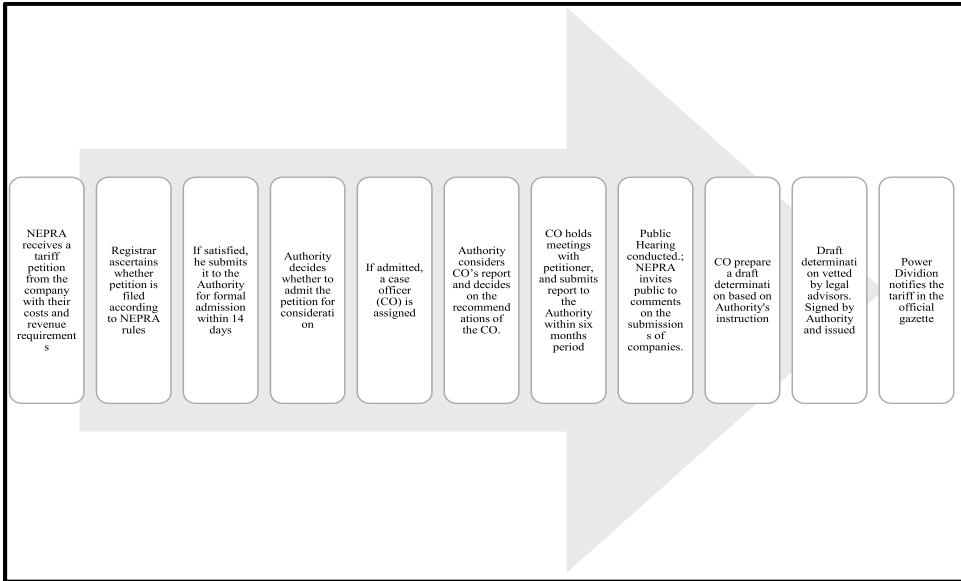
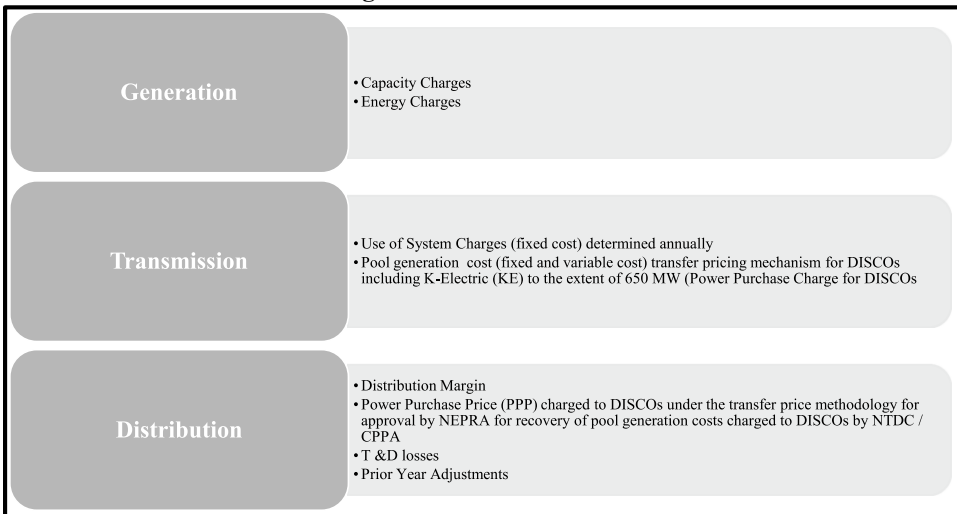


Figure 5. Tariff Structure



Before the amendment in NEPRA ACT, NEPRA determined consumer-end tariffs for each distribution company (DISCOs) separately. Consumer-end tariff determined by NEPRA was meant to recover the cost of the whole supply chain⁹⁷. In deciding the average

⁹⁷ During the transition phase towards the full corporatisation of the former WAPDA companies, the bulk tariffs charged for the electricity purchased by the distribution companies have been determined at the discretion

sale price, NEPRA considers the annual revenue requirement of DISCOs which considers all the costs involved. The main factors in the annual revenue requirements include power purchase price⁹⁸, net distribution margin⁹⁹, transmission and distribution (T&D) losses, and prior-year adjustments¹⁰⁰.

The tariff so determined was different for each DISCO because of its distinct characteristics: the difference in annual revenue requirement and T & D losses. NEPRA used to make its valuation of cost and revenue requirements, determine the average sale price of each DISCO, set tariffs for different slabs of various categories of consumers for each DISCO, and send its recommendation to the Government of Pakistan (Power Division).

The government of Pakistan notified the final tariff for different consumer categories but the same across all DISCOs. Usually the minimum consumer-end tariff for a particular consumer category among all DISCOs was adopted for application across the board to all DISCOs.

However, in the Amended Act, 2018, NEPRA shall determine a uniform tariff for distribution licensees wholly owned and controlled by a common shareholder based on their consolidated accounts. In the amended Act, it is further stated that guidance will be taken from the National Electricity Policy to determine, modify or revise rates, charges, and terms and conditions for the provision of electricity services.

To sum up, *the tariff structure in Pakistan is not based on regional and consumer-specific long-run marginal cost but is used as an instrument to achieve political and socio-economic objectives.*

Apart from monthly fuel price adjustments, NEPRA also allows for quarterly adjustments in the determined tariff of DISCOs. This in itself is the result of regulatory failure, as it is made when DISCOs do not use the allowed energy quota and ask for a quarterly adjustment. Instead of regulating DISCOs, the burden is transferred to the consumers.

Besides, over the years, the determinations process has seen issues in terms of delays; and the regulator not allowing prudent cost (Box 4). In the generation tariff, the BOOT tariff was applied to the BOO regime—a payment of 80 percent plant cost in the first 10-15 years. The 15-18 percent returns on equity with return in dollars despite substantial cost incurred in Pakistani rupees caused huge capacity payments. Not only higher outages were allowed; higher capital costs were allowed making capacity purchase price higher (Sohail, 2014).

of NTDC. Until 2000, a uniform bulk tariff was charged to all distribution companies for their purchase of electricity. In 2001, a new pricing methodology was established, through which each distribution company would retain a margin that reflects its cash expenses, debt services, and line losses (but not capital expenditures or non-cash expenses).

⁹⁸ It includes generation and transmission costs of the power that a DISCO has projected to purchase.

⁹⁹ It is the difference between gross margin and other income of DISCO. Gross margin includes operation and maintenance (O&M) costs, depreciation and returns on the asset base of DISCO. While other income refers to remuneration of deferred credit, meter and rental income, late payment surcharge, profit on bank deposit, sale of scrap, income from non-utility operations and commission on PTV fees and miscellaneous incomes.

¹⁰⁰ It is the gap between the projected and the actual cost in the previous year which is built into tariffs for that year. This adjustment is for the difference between the projected and actual electricity units purchased by DISCOs; the difference between the projected and actual distribution margins; the difference between actual and notified previous year adjustment; the difference between projected and actual other income; and the difference between the projected and actual consumption mix.

Box 4. Tariff Anomalies

- Actual heat rate/efficiency of GENCOs plant are more than NEPRA determined heat rate. The additional heat rate consumed per unit produced is not covered in any tariff.
- Increased pay and allowances due to the hiring of employees in GENCOs, NTDC and DISCOS beyond NEPRA determined manpower cost, and is not covered in any tariff (generation, transmission, and DISCOs).
- NTDC tariff is set on 2.5 percent transmission losses whereas actual losses are much higher. As a result, the cost relating to excess transmission loss is not being recovered from any tariff which ultimately adds to the circular debt.
- Late payment surcharges paid by CPPA-G to the IPPs resulting from the inability of the DISCOs to pay for the power cost in a timely manner is also not covered in any of the tariff setting mechanisms.
- DISCOs network loss is more than NEPRA determined T&D loss which ranges from 0.5 percent to 11 percent among efficient performing DISCO to worst performing DISCO. The cost pertaining to excess loss of and above the NEPRA determined loss level is not being recovered from any tariff; is added to circular debt.
- Poor revenue collection by the DISCOs due to which liabilities of power sector towards power cost is not being paid and this poor revenue collection is adding to the circular debt as wells as load shedding.
- Prolonged stays on fuel price adjustments granted by the Courts and impact of court decisions that delayed payments to DISCOs.

It would be unfair to attribute all issues to NEPRA. Sometimes delays are from the side of licensee or because of legal challenges¹⁰¹ or government interventions due to political considerations. But still, it is primarily the regulator which will have to take responsibility and lead reform in this area, especially in terms of providing guidelines and solutions.

To give the credit where it is due, NEPRA established for the first time in South Asia a CPI-X based Multi-Year Tariff (MYT) regulatory framework. In 2002, NEPRA approved a framework of MYT for KESC for seven years from its privatisation (given its expected privatisation). Later, the same tariff regime was established for FESCO, IESCO, and GEPCO, anticipating their privatisation.

(c) Performance Standards and Enforcement

According to section 7(2) clause c and section 34 of the NEPRA Act (XL of 1997), the authority is obliged to prescribe performance standards for the generation,

¹⁰¹ As per the NEPRA Annual Report 2019-20, the regulator is presently facing litigation in around 1304 cases pending before various courts. Some of the important issues among others in litigation were Exclusivity of DISCOs, Inclusion of "surcharges" in the "Schedule of Tariff" by NEPRA upon re-consideration request filed by Federal Government, Fuel Adjustment Charges, Recovery of fixed charges during load-shedding.

transmission, and distribution companies for safe and reliable service. All the required Standards under NEPRA Act 1997 for distribution, transmission, and generation are put in place, although after a long and delayed process. While after the amendment, new performance standards for generation, transmission, distribution, electricity supply, and electricity trader are in the making. NEPRA has not prescribed environmental standards; all the generation companies granted a license by NEPRA are required to maintain environmental standards as may be prescribed by the Federal Environmental Protection Agency.

On papers, the regulatory framework for service quality is there¹⁰². All the companies (generation, transmission, and distribution) are bound by law to meet these standards for quality, supply, and commercial service; otherwise, they would be eligible for a fine or penalty. For quality-of-service enforcement regulated entities are required to report various indicators, such as System Average Interruption Duration Index (SAIDI), System Average Interruption Frequency Index (SAIFI), voltage indicators, recovery rates and transmission & distribution losses. These are evaluated by NEPRA, and the report is uploaded on its website.

But, in general, the enforcement mechanism is extremely weak at NEPRA. Fines are rarely applied (as is evident from NEPRA its annual reports¹⁰³); also, there is no consistent approach to apply a penalty if the company fails to meet standards. Above all, there is no evidence of recovery of these fines.

NEPRA's role is limited to sending an advisory to the government about DISCO's performance. But the authority itself is unable to enforce these performance standards.

(d) Consumer Affairs and Complaint

The Consumer Affairs Division (CAD) is responsible for handling the complaints of consumers who can approach NEPRA under NEPRA Complaint Handling and Dispute Resolution (Procedure) Rules, 2015 read with Section 39 of the NEPRA Act against a Licensee for breach of any provision of the Act or any Order, Rule, Regulation, License, or instructions made or issued thereunder. NEPRA has established Regional Offices to facilitate consumers for the speedy redressal of their grievances.

As reported in NEPRA Annual Reports, the complaints are mostly regarding excessive and detection billing, delay in the provision of connections and replacement of defective meters, low voltage problem, augmentation of transformers, non-receipt of electricity bills, delay in replacement of damaged transformers, and excessive load shedding, etc. As the reported data revealed, in the last five years, on average, about 92 percent of complaints were resolved. Any information from other resources is not available to countercheck NEPRA's claims.

¹⁰² Old rules are applicable as long as the new ones are finalised and announced.

¹⁰³ In 2019-20, fines were imposed on DISCOs on account of violations of Performance Standards, Distribution Code, and other applicable documents as well as occurrence of fatal accidents. Similarly, a fine of Rs. 50 million was imposed on K-Electric on account of 19 fatal accidents that occurred in Karachi as a result of heavy rainfall during the months of July and August 2019.

(e) Competitive Market Development

The driving force behind the Amended NEPRA Act is to guide NEPRA to adapt to new challenges involved in creating a competitive electricity market. Though, NEPRA was mandated in the previous Act to smooth the transition towards a competitive market where it is possible. But unfortunately, it didn't happen.

The Amendment creates a legal basis for the licensing of various stakeholders in the market to smooth the transition towards a 'competitive market' structure by 2023. Many new stakeholders (units) were introduced, which require the development of a comprehensive framework by the regulator to implement and enforce competitive market reforms.

Besides, under the NEPRA amended Act, the two distribution functions, that is 'wire or distribution network', and 'sale' are required to be separated by 2023, which traditionally were covered in a single distribution license. The amended act also provides for a gradual cessation of the licensing requirement for generation companies after 2023 and a complete exemption for 'Captive Power Plants' to obtain a license.

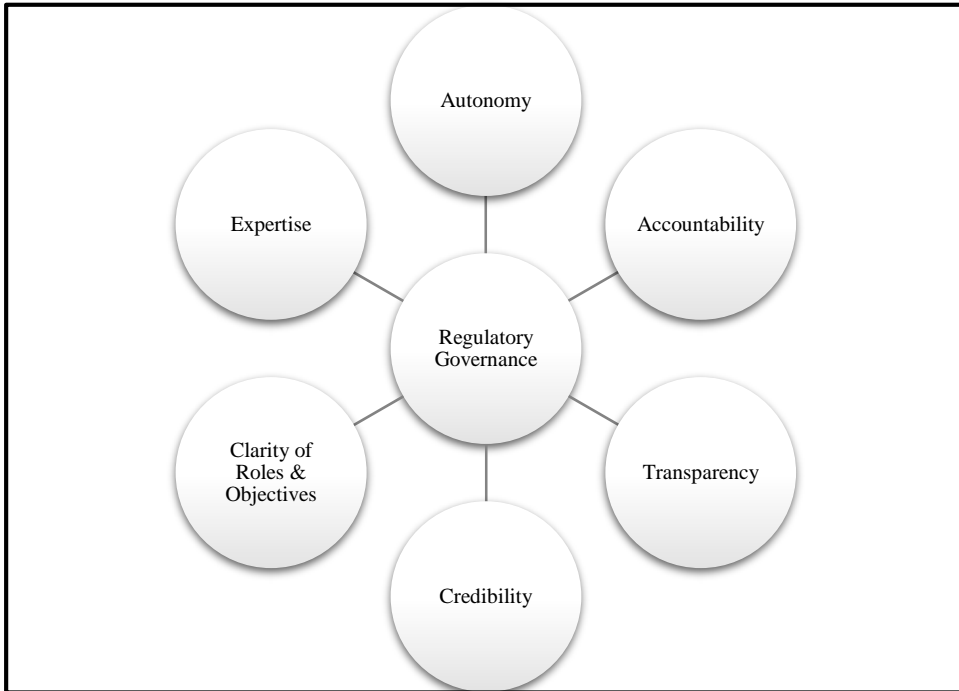
Under the amended act, the regulator has been granted powers to monitor and enforce the competitive market. However, the amendments only provide a legal basis for developing a competitive electricity market, that is, legal guidelines for guaranteeing de jure regulatory performance. The successful transition towards a competitive market requires de facto regulatory performance, which is dependent on significant preparation not only at NEPRA but at the Power Division, Central Power Purchasing Agency-Guarantee (CPPA-G), PPIB, and all other related institutions. It requires new pricing and procurement rules, new software at each entity, capacity building of staff to enable them to handle market forces while meeting their basic objective of supplying electricity to consumers.

The USAID Report (2019) also testifies what is informed by experts that various departments at NEPRA are not yet ready for this change. Management has little knowledge of different competitive market models, their strengths, and weaknesses. NEPRA's expertise in supervising long-term bilateral contracts and spot purchasing is minimal at present.

So far, the plus point is, to facilitate wheeling of power, NEPRA made NEPRA (Wheeling of Electric Power) Regulations in 2016. Under these regulations, generation companies connected to the transmission and distribution networks or those who intend to be connected to these networks can transport their power using the transmission network of NTDC or distribution networks of DISCOs to the Bulk Power Consumers. This is the first step considered towards the development of the market¹⁰⁴.

¹⁰⁴ Bulk Power Consumers wanted to pursue 'Wheeling of Power' under the Wheeling Regime. But hurdles are being created by Power Division & CPPA-G to protect DISCOs,

REGULATORY GOVERNANCE



Does the NEPRA Act facilitates effective governance structure at NEPRA? To what extent does NEPRA establish its independence, competence, integrity, and accountability while performing its duties?

Findings

(a) Regulatory Autonomy

In the law, NEPRA needs to be provided with powers to perform licensing; determine tariffs; specify standards, review, and assess their implementation; and regulate processes. To be effective, NEPRA should be institutionally *independent* of the influence of power sector companies, which it regulates, and also independent from the influence of the Ministry of Energy (Power Division) who is effectually running public sector generation companies (GENCOs), National Transmission and Dispatch Company (NTDC) and state-owned distribution companies (DISCOs).

By the provisions of the Act, NEPRA is an autonomous organisation under the Cabinet Division according to rule Schedule II of Rule 3(3) Distribution of Business among the Divisions. In the past, some efforts were made by the Ministry of Energy (when a new amended Act 2018 was in the making) to bring it directly under the Ministry of Energy for better coordination, but it was resisted.

However, amendments in the law, where have given more powers in some aspects, also have compromised regulatory independence in others. For instance, Under Section 14A (5), it is mandatory for NEPRA to perform its regulatory duties in accordance with the

government of Pakistan electricity policy and plan. The law requires that all the clauses will be implemented through various rules and regulations, where rules are formed by the government.

The authority is empowered to “issue such directives, codes, guidelines, circulars or notifications as are necessary to carry out the purposes of this Act and the rules and regulations made hereunder.” With reference to rules or regulations, previously, NEPRA was empowered (under Section 12D) to make or repeal rules or regulations. In the amended Act, it is only authorised to “recommend rules, or to make or repeal regulations”. This may impact the regulatory autonomy of NEPRA in carrying out its functions.

The rules and regulations provide processes and guidelines to determine tariffs, issue licenses, and monitor the company’s performance. If the rules give enough leeway to NEPRA to obtain all necessary information, the regulator would be able to take decisions objectively based purely on technical considerations. Otherwise, NEPRA’s ability to make objective assessments could be affected (USAID, 2018).

NEPRA is not autonomous in matters of tariffs as the government continues to exercise considerable control over it. Although there is no formal condition or rule allowing the ministry to reverse NEPRA’s decisions, yet major decisions, i.e., tariffs rates, are subject to Ministry approval. The regulator determines tariffs and can only recommend, which are notified by the Ministry. Moreover, the Ministry may ask NEPRA to reconsider its determined tariffs or charges.

Additionally, in recent years, particularly in generation projects under China Pakistan Economic Corridor (CPEC), the government has been influencing the tariffs that NEPRA determines. Undue interference and influence of the government hamper the independent functioning, which in turn affects the consumers and producers. The success of electricity restructuring in Argentina and Chile is attributed to a very large extent to the performance of their independent regulators (Stern, 2000).

Besides, under section 31 (31) of the amended Act, NEPRA powers to perform its functions have been reduced if not curtailed. Under this clause, NEPRA determines a *uniform* tariff for all government-owned DISCOs based on their consolidated financial accounts. Differentiated tariffs are, however, allowed in the case of privatised utilities (currently only K-Electric). This will create difficulty for the regulator to evaluate the managerial performance of DISCOs based on objective criteria and accordingly reward or penalise them.

For effective monitoring of DISCOS, it is essential that company-specific performance, challenges, and issues are compiled and assessed regularly. However, when ISCOs financial accounts are consolidated, the disparity among companies will be camouflaged, thus, creating difficulty for NEPRA to evaluate each company independently.

On the other side, NEPRA is given more autonomy in enforcing regulatory standards, rules, etc. Section 27(A) allowed NEPRA to investigate any matter that is violating this Act, or any rule, regulation, code, or license issued under the Act. NEPRA is empowered to appoint investigating officers and levy fines on licensees that are found to violate the Act. The power to conduct the investigation was not with NEPRA in the past. The authority had to request the police, NAB, FIA, or other agencies to conduct the required investigations. This change will help NEPRA to conduct its affairs with reference to enforcement more effectively.

But again, even though NEPRA's decisions are legally binding. However, there is no reliable penalty if the distribution or generation company fails to meet regulatory standards in practice. In other words, the de facto decision-making autonomy is much lower than de jure.

To enforce its integrity, NEPRA does send advisories to the Ministry of Energy (Power Division) from time to time for effective utilisation of available generation sources and for improving efficiency in the distribution companies. But unfortunately, their advisories are generally ignored.

Financially, NEPRA is independent. NEPRA has the power to determine its structure and allocation of budget. In comparison, in our neighboring country India, the regulator's budget comes directly from the government budget (Bacon, 2019). NEPRA's funding is established by law (NEPRA Act) and is taken from license fees, filing fees, etc., as prescribed by it from time to time and approved by the Federal Government. Therefore, there is no chance of any influence or 'political capture'.

The success or failure of power sector restructuring, i.e., development of the competitive market, depends upon the effective and independent functioning of NEPRA. As discussed above, NEPRA has its funds, therefore, it must have the authority to invest or otherwise utilise them. Even if there is surplus, the authority has the right to use them to pursue their stated objective.

As discussed in the Organisation Structure of NEPRA, through section 12 of the Finance Act 2012, NEPRA is required to deposit its surplus funds, fines, and penalties with the Federal Consolidated Fund (FCF) of the Government of Pakistan. NEPRA as a regulator, is performing policy functions of the state. It is established as a body independent from the influence of ministries, so it must function free of bureaucratic considerations. NEPRA, giving up its surplus to the Federal Consolidated Fund and asking the government to make up for shortfall (if any) in its expenditures may make it vulnerable to political and bureaucratic pressures, thus, weakening its independence.

Regarding leadership autonomy, NEPRA was established through an Act. It has the power to allocate its budget but has no power to decide about its organisational structure and rules. According to the NEPRA Act, the regulator's leadership, composed of a chairman and four members, is selected by the Federal government based on nominations by the provinces. The selection of a new regulator or a member often involves long delays, thus affecting NEPRA's capacity to deliver in a timely manner.

(b) Regulatory Expertise

Adequate human capital resources are essential for quick and effective decision-making. The personal qualification of a regulator is also a key in independent decision-making. Under section 3(3), the experience requirements have been reduced. But their association with the power sector is made compulsory. The new selection criteria and process may favour evaluating an individual's capabilities and adequacy for a position based on his/her performance and not only on the length of service. This way, Act has enabled a selection process based on technical/academic strengths and performance. This amendment will block the appointment of retired civil servants, army officials as members or chairman, which used to be the practice at NEPRA.

In the past, NEPRA leadership had problems in terms of regulatory expertise as people from bureaucracy or military didn't have power sector background. By the time the regulator (member) may develop some understanding of the sector's complexities his/her tenure is over.

Whereas, regarding other staff, NEPRA has not been able to develop expertise in relevant areas that may facilitate effective interventions in the future. In addition, NEPRA has not acquired the services of professional support staff transparently that could establish a proper regulatory framework for the benefit of the consumers and producers alike. Most of the existing professional staff have zero to little exposure to regulatory concepts and functions or are drawn from the sectors which have no relevance to the operational requirements of a power utility.

It is because of the lack of expertise that NEPRA so far is unable to develop or explore new tariff methodology to counter excess installed capacity or to improve the financial viability of the sector. There are several instances where DISCOs, K-electric, even provinces in case of net hydel profit remained unsatisfied with NEPRA decisions and often have gone to courts against NEPRA determinations.

(c) Accountability & Transparency

The regulator's independence needs to be compliant with measures to ensure that the regulator is accountable for its action. For accountability of the regulator, legislation should ensure *transparency* of the decision-making process; detailed justifications of decisions; opportunities for all interested parties to take part in public hearings; and provisions for the removal of regulators in case of the proven misconduct or incapacity. Proper checks and balances can ensure that the regulator does not drift away from its mandate, engage in corrupt practices, or become grossly inefficient (Malik, 2007).

According to Section 42 of the NEPRA Act, NEPRA is required to prepare its Annual Reports and the State of Electric Power Services Report. The report shall be submitted to the Council of Common Interests (CCI) and the Federal government. No doubt, NEPRA has been publishing its annual reports since 2003-04 and state of industry reports since 2006 regularly. These reports are available on its website. But as such, these are never evaluated at the Federal level or in CCI.

Additionally, according to the NEPRA Act, the regulator shall keep public files open in a convenient form for public inspection. This Act also establishes that NEPRA shall maintain complete and accurate books of accounts of its actual expenses and receipts, which shall be audited annually by the Auditor General of Pakistan. There are also several rules, procedures, and guidelines which provide transparency to the distinct regulatory processes.

As mentioned earlier, in pursuance of section 14 of the NEPRA Act, the statutory audit of annual accounts of NEPRA is carried out by the Auditor General of Pakistan. Similarly, an external audit of NEPRA accounts is also carried out annually via some well-reputed chartered accountant firm. Moreover, transparency at NEPRA is ensured through public participation in the decision-making process by holding public hearings, inviting written comments of stakeholders and the general public, availability of public documents including Rules/Regulations, licenses, tariff determinations, petitions, etc., on the NEPRA website. Most of NEPRA's decisions are publicly available on their website. However, information regarding its staff expertise is not publicly available.

The law also allowed for removing the chairman or any member. Section 4(2) says that the Chairman or a member may be removed by the Federal Government after he is found incompetent or found guilty of misconduct in an inquiry by the Federal Public Service Commission. Though, no such example exists.

The amended Act (section 12 A) allows to establish an Appellate Tribunal, chaired by a former high court judge nominated by the Federal government or provinces, by rotation. Besides, the tribunal will have member finance and member electricity, nominated by the Federal government or provinces, by rotation. Under the 1997 Act, concerning legal appeals, there were legally established processes to allow regulated companies or other affected parties to challenge or appeal against the decisions of NEPRA. The process was established under the NEPRA (Procedure for filing appeals) Regulations, 2012. The appeal body was NEPRA itself. However, there was a provision for resorting to courts in case of dissatisfaction with the NEPRA appeal system.

This provision of Appellate Court may provide a forum to check or review NEPRA decisions. It may be considered accountability, as the orders and determinations of the Appellate Tribunal shall be binding on the Authority. Though appealable before the High Court. The formation of an Appellate Court is common in other countries as well (USAID, 2018). However, apprehension is that this provision may compromise the independent decision-making of the Authority if the Tribunal makes decisions under the government's influence.

(d) Credibility

In the optimal design of any regulatory institution, there is always a risk of organisational failure unless credibility and transparency in regulatory decisions are in place. Independence, accountability, and proficiency of the regulator are crucial for credibility (Malik, 2007). Direct involvement of ministers/ bureaucrats in pricing and licensing decisions can affect regulatory credibility and investment decisions (as in CPEC power projects).

For short-term political goals, politicians turn down the justified increase in tariff at the expense of long-term benefits of consumers and investments, thus undermining regulatory credibility. In the absence of regulatory credibility, investors being aware of organisational risks associated with their investments will demand high tariffs (as happened in IPPs case) to compensate for increased risk. The preference of any investor would always be to invest in industries with an independent regulatory agency (with no government involvement).

(e) Clarity of Roles and Objectives

In the case of Asian regulators, as Jacob (2004) observed, many conflicting public policy missions, government intervention and market competition go along together and are emphasised equally. So is in Pakistan. *Powers and Functions* are spelt out in Section 7(1) and (2). About NEPRA and government relationship, section 7(2ab) is clear that it will aid and advise the Federal Government, in formulation of the national electricity plan.

However, about electricity tariffs, section 7(2ac) states that it is the responsibility of NEPRA to ensure efficient tariff structures and market design for sufficient liquidity in the power markets; while section 31(4) is contradictory as it states that the authority in the public interest determines a uniform tariff for distribution licensees wholly owned and controlled by a common shareholder, based on their consolidated accounts. This clause challenges the efficient

tariff structure condition, as the uniform tariff cannot justify the true market principle, where electricity prices reflect the actual cost of service. Besides, this provision of uniform tariffs will seriously jeopardise any effort or incentive for efficiency.

Additionally, the lack of relevant expertise of the regulatory staff makes it difficult to define regulatory missions clearly and carry out the functions effectively.

EFFECTIVENESS OF REGULATORY FRAMEWORK

What is the impact of regulatory framework at NEPRA on power sector outcomes? Did NEPRA achieve its objectives as stated in the NEPRA Act, 1997?

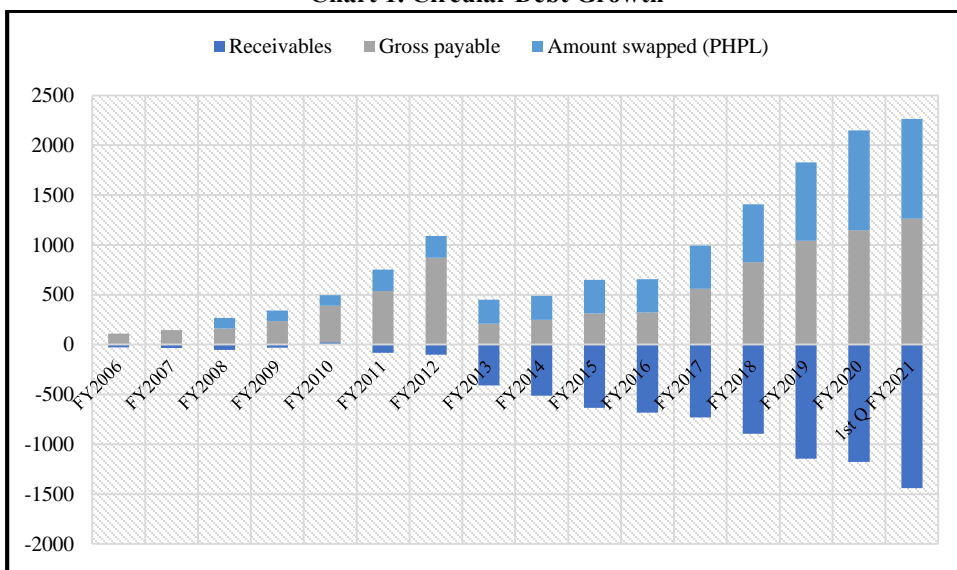
Findings

What ultimately matters are sectors outcomes, not regulatory processes, institutional characteristics, or regulatory governance. The key objective behind the formation of NEPRA was to develop and pursue a regulatory framework to improve efficiency and reliability and to provide affordable electricity to consumers while protecting the interests of consumers, investors, and operators equally. In addition, to facilitate the transition from a protected monopoly structure to a competitive environment was also NEPRA mandate in NEPRA Act 1997.

(a) A Balance between Consumer, Investor, and Operator

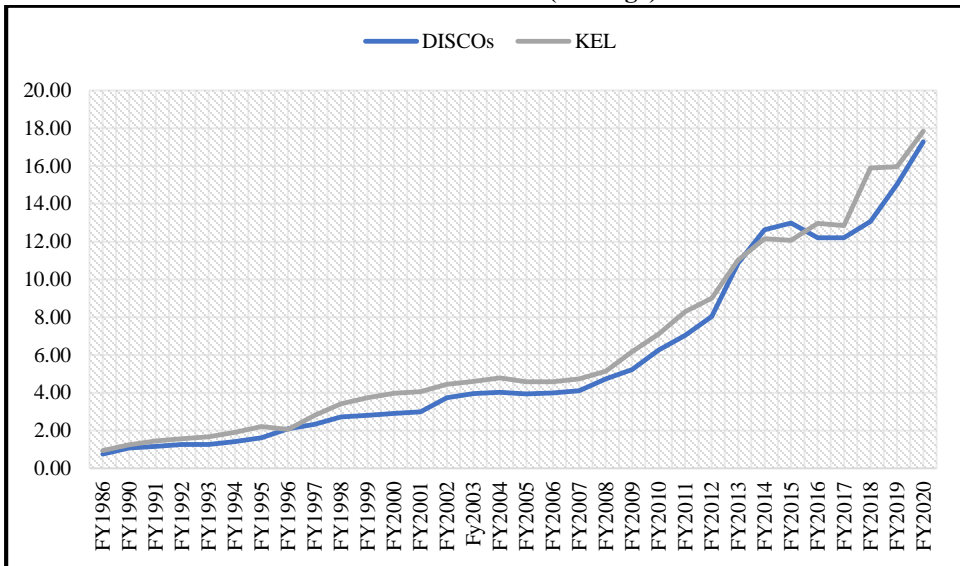
NEPRA was mandated to create a balance between investors and consumers, where it failed as the problems faced in the power sector in the last two decades are unexemplary. Apart from the government fiscal and financial issues due to enormous and rising circular debt (Chart 1), consumers remained the worst sufferers. Not only power outages of 8 to 10 hours in urban areas and up to 16 hours in rural areas; a significant increase in electricity prices (Chart 2 and Chart 3).

Chart 1. Circular Debt Growth



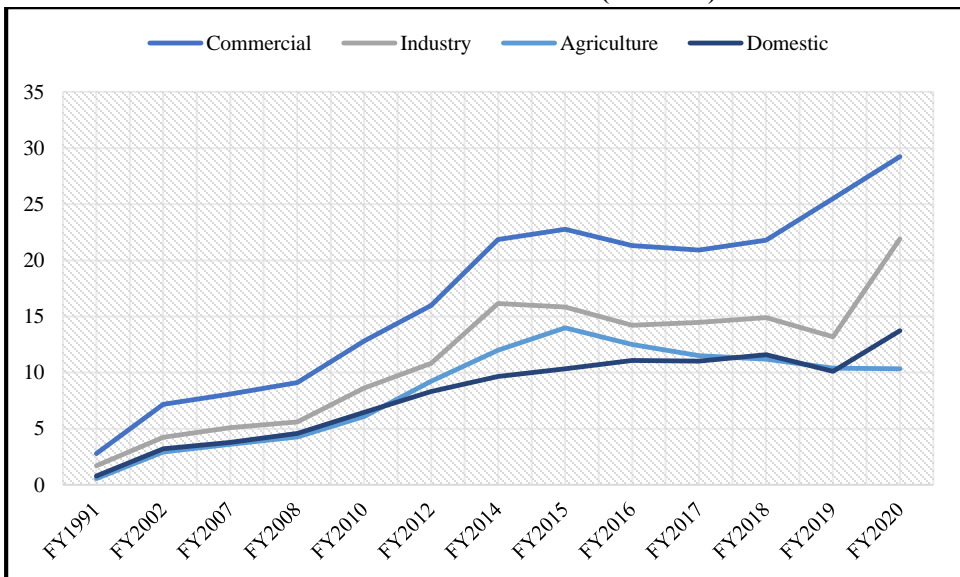
Source: NEPRA State of Industry Reports, CPPA-G Annual Reports, and Various Government Documents.

Chart 2. Consumer Sale Price (Average) Rs/ Kwh



Source: Electricity Marketing Data (Various Years) and NEPRA State of Industry Report (Various Years).

Chart 3. Consumer Sale Price (Rs/ Kwh)



Source: Electricity Marketing Data (Various Years) and NEPRA State of Industry Report (Various Years).

While power sector policies allowed unreasonably very high profits to independent power plants¹⁰⁵. Excess payments have been made to power producers because of either misreporting by the producers or regulatory oversight (Report on the Power Sector, 2020).

¹⁰⁵ Profits generated were as high as 18.26 times the investment and dividends were taken out as high as 22 times the investment (Report on the Power Sector, 2020).

Pakistan has the highest cost of electricity across all major consumer groups in South Asia (Table 3). Some of our low value-added exports rely heavily on electricity consumption. The high cost of electricity has reduced the competitiveness of our exports, thereby impacting on the country’s trade deficit and balance of payment. Large cross-subsidies (especially in favour of domestic and agriculture consumers) and heavy tax incidence are contributing to grid defection by large consumers (industry, commercial and high-end consumers) (Report on the Power Sector, 2020).

Table 3

Cost of Electricity- Regional Comparison

Cents/ Kwh	Residential	Commercial	Industry
Pakistan	1.3-15.4	12.4-15.9	118.12.5
India	4.2-11.2	8.4-11.9	10.9
Bangladesh	4.1-12.6	10.8	6.8

Source: Power Sector Report, 2020.

(b) Efficiency, Reliability, and Financial Viability

No serious effort by a regulator has been made by NEPRA to minimise if not reduce inefficiencies in the public sector generation (GENCOs) and distribution companies (DISCOs).

The performance of (GENCOs) remained lacking in terms of all Key Performance Indicators (KPI) for the past many years. These GENCOs are running below their net available capacities because the desired maintenance and scheduled outages over the years as per standard industry practices are not in place. Lack of maintenance has increased the cost of generation. These power plants not only have poor operational results, the workforce, which is already on the higher side on a per MW basis, remained idle due to their closure and non-operation, contributing towards higher cost of generation. The Framework of Economic Growth by PIDE (2020) reports that an amount of Rs 251.6 billion was lost due to inefficiency in these public sector generation companies.

Similarly, the state-owned distribution companies (DISCOs) and even privatised utility K-Electric, KPIs indicate poor performance and inefficiency. One of the policy tools adopted by NEPRA to improve the operational performance is to set some targets for T & D losses for each DISCO in their revenue requirements. Via this tool, NEPRA anticipates that to avoid deficits, DISCOs would improve their operational efficiency. However, this strategy has not worked in most of the DISCOs. Rather, when the respective DISCO does not meet the target, it is added to the payables of that respective distribution company, as it is not compensated by tariff differential subsidy.

Likewise, in tariff determination, NEPRA counts 100 percent recovery. However, the reported recovery percentage of DISCOs remained around 90 percent. Wrong energy billing is also responsible for low recoveries by DISCOs. The Transmission system is also constrained by overloaded transformers and transmission lines.

These all indicate regulatory oversight in monitoring and enforcement of KPIs in generation, transmission, and distribution companies. These inefficiencies jeopardise sectors' financial viability and negate NEPRA's objective to ensure a reliable supply of electricity to consumers. NEPRA lacks the authority to make DISCOs accountable for their performance, whether related to operational and commercial inefficiency or over-billing to consumers. Similar is its role regarding the accountability of generation companies (whether in the public or private sector). In particular, the enforcement of service quality is weak. There is no mechanism to incentivise for good performance or impose a penalty in case of poor performance.

Table 4

Distribution Losses

FY	2006	2009	2012	2015	2018	2019	2020
PESCO	34.1	37.4	36.0	34.81	38.15	36.6	38.69
TESCO				21.68	12.47	11.97	16.19
IESCO	13.2	10.8	9.5	9.41	9.14	8.9	8.69
GEPCO	10.2	10.7	11.2	10.72	10.01	9.9	9.51
LESCO	13.1	13.3	13.5	14.10	13.83	13.2	12.4
FESCO	11.6	10.7	10.9	11.03	10.53	9.8	9.62
MEPCO	20.5	18.4	17.9	15.50	16.59	15.8	15.23
HESCO	39.2	35.1	27.7	27.08	29.88	29.5	28.82
SEPCO			39.5	38.29	36.67	37.0	36.27
QESCO	20.7	20.4	20.9	23.10	22.44	23.6	26.68
K-EI	37.5	38.5	29.7	23.7	20.4	19.1	19.8

Source: NEPRA State of Industry Report (Various Years).

Table 4.5

% Recovery

FY	2008	2010	2012	2014	2016	2018	2019	2020
PESCO	92	85	83	86	89	89	89	88
TESCO				7	437	67	68	68
IESCO	98	96	96	90	91	90	88	90
GEPCO	98	96	99	96	99	97	96	94
LESCO	98	96	96	98	99	98	98	95
FESCO	99	97	100	100	100	99.6	99.2	94
MEPCO	97	94	97	96	100	97	99	93
HESCO	77	60	69	79	72	77	75	73
SEPCO			51	60	55	60	63	57
QESCO	86	76	36	42	72	26	27	49
K-EI		100	91	87	88	91	92.6	92.1

Source: NEPRA State of Industry Report (Various Years).

The overloading of power transformers of DISCOs is shown in Table 6. It is evident that (except for FESCO) power transformers of all the DISCOs are overloaded.

Table 6

Overloading of Distribution Transformers

DISCOs	Total Distribution Transformers		% Distribution Transformers loaded above 80 %	
	2015-16	2019-20	2015-16	2019-20
PESCO	60365	77307	31.99	4.50
TESCO	15634	18903	1.11	35.35
IESCO	45438	50210	6.83	3.31
GEPCO	60080	72007	2.58	2.70
LESCO	97048	116030	43.23	22.19
FESCO	97761	113079	3.36	0.58
MEPCO	152806	178730	4.65	3.26
HESCO	35334	37896	23.59	3.20
SEPCO	35029	38616	18.39	6.93
QESCO	53646	62337	16.30	10.93
K-EI	653141		15.31	

Source: NEPRA State of Industry Report (Various Years).

(c) Privatisation and Market Competition

Privatisation was not directly the function or responsibility of NEPRA, nor is it after the amended Act. But under law, NEPRA was supposed to facilitate the process to bring efficiency in the power sector and helps in ensuring competition where feasible. The privatisation process remained slow in the last two decades. Except for K-electric and Kot Addu Power Plant, the privatisation of ex-WAPDA distribution companies has been pending. After unbundling, these distribution companies have been corporatised with independent Boards of Directors, yet operationally they are still under the administrative control of the government.

Moving toward competition and market forces represents the major element of the sector reform program which has still not been implemented in Pakistan -- partly because of the lack of government willingness and capacity and partly because of the exemptions given to IPPs -- whose operations were exempted from market forces by sovereign guarantees provided by the Government of Pakistan.

Besides, a financially viable sector and a reliable payment chain are crucial for a market to function. The creditworthiness of all, in particular, distribution utilities is critical. Presently, the power sector is not fully solvent; its deficit, that is, circular debt, is rising continuously and has reached an all-time high of Rs. 2.4 trillion.

The weak administrative governance in NEPRA results in the overall institutional inability to carry out the desired function effectively. As we find in previous sections, NEPRA lacks the professional expertise to supervise and control the power sector and the authority to establish a rational pricing regime. Being the regulator, it was NEPRA's job to resolve all the power sector problems, including system losses, rising costs, and high tariffs. Again, the outcome of regulatory oversight is that the circular debt emerged for the first time in 2006. Since then, it has been there and rising. Besides the increasing costs of generation and sector inefficiencies, it is the method of tariff determination and delays in tariff determinations responsible for the circular debt issue.

An overall assessment of NEPRA regulatory performance indicates that the overall de jure performance is high, indicating a regulatory system with many necessary qualities for the power sector. However, de facto performance highlights a significantly poor regulatory functioning in practice. The regulatory reform required to make the transition towards a competitive market has historically been resisted in Pakistan. This reluctance could be because of fear of losing control over assets that provide socio-political leverage to the State. NEPRA being an autonomous organisation (by law) didn't make serious efforts to improve regulatory infrastructure in the power sector.

RECOMMENDATIONS

- The transition towards a competitive market requires substantial preparation at NEPRA; NEPRA needs to build the capacity of its staff to work and cope with market forces while meeting their obligations as a regulator.
- Capacity building through the employment of more tariff specialists, regulatory economists, and analysts, equipped with better and advanced techniques and sufficient background knowledge of Pakistan's Power sector. In addition, negligible expense by NEPRA in training and development, in the presence of surplus accounts, emphasised the need to invest more in training and development of its staff for improving efficiency in its regulatory duties.
- The human resource department should be closely associated with other departments dealing with primary regulatory functions for understanding these functions and the expertise required to carry out those functions.
- A research wing at NEPRA may also help handle challenges related to market development, new technologies and for giving input in government policy and planning, keeping in mind the ground realities.
- Decentralisation of decision-making powers for effective and speedy decisions in routine matters is suggested. The power sector used to have such a structure under WAPDA.
- One of the ways to reduce the tariff determination period is to strengthen NEPRA's tariff division by employing more staff. In the tariff department, tariff specialists and economists are required to explore new tariff methodologies to ensure the financial viability of the sector and to ensure competitive electricity tariffs for reducing the cost of doing business and the country's trade deficit.
- NEPRA needs to improve its institutional capacity to supervise the electricity business; acclimatise itself with newer challenges being emerged as a result of a constantly evolving technological framework of the sector, including smart grid development, distributed generation, grid integration as well as the development of new innovative models of financing.
- NEPRA is in the process of making new rules/regulations/guidelines in line with the Amended Act; have to complete it at the earliest to ensure that the requisite regulatory framework is in place before the formal commencement of competitive wholesale market.
- More use of information and communication technologies is recommended to minimise delays. To improve coordination among the departments, something like e-office and digitisation of its operations can be helpful.

- The monitoring and enforcement department needs to be strengthened, redefined, and should focus on the overall performance of the power sector. Review/ revise the existing KPIs for the energy companies to improve their performance.
- There is an urgent need to simplify regulatory processes and enhance Federal Government and NEPRA coordination.
- For effective accountability, NEPRA reports (Annual and State of the Industry) must also be evaluated by independent experts, just like its financial reports. Above all, it is essential to have some KPIs for NEPRA, covering not just sector outcome but also internal efficiency and human resource development of the organisation.
- The financial accounts may also be submitted to Parliament for review and discussion. This will create a balance between granting financial autonomy to the regulator and its accountability to ensure that the regulator uses its funds in compliance with the law.
- In law, NEPRA is allowed to play purely an advisory role, its recommendations are required to be made publicly available, as well as the responses of the government. Moreover, if the government body receiving the recommendations rejects or modifies them, it is required to provide a public explanation for doing so. This will ensure the regulators' integrity.
- One of the NEPRA objectives is to alleviate energy poverty; NEPRA must provide an enabling environment for increasing access to those who are under-served or un-served; strategies to promote sustainable energy for all. Ensure standards and measures which encourage the provision of low-cost meters for urban poor and facilitation of distributed generation for rural areas all over the country.
- Some external factors are also influencing the effectiveness of NEPRA. The most important of these would be the court orders. There is a tendency in Pakistan for frivolous litigation by vested interests to evade regulatory measures against them. For instance, a petition against the initiation of investigations or inspections by the regulator may impede regulatory action. In such cases, great care has to be taken to ensure that judicial intervention does not deter regulatory decision-making. A strong in-house litigation team is required at NEPRA to defend stay orders before the various courts.

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Annex A: Key Modifications in New NEPRA Act

- *It defines market operator, electricity trader, electricity seller and system operator; and identify their responsibilities, qualifications, and duties of each of them. The Amendment creates a legal basis for the licensing of all these by the authority.*
- *NEPRA is mandated to perform its regulatory functions in accordance with the national electricity policy and national electricity plan, which the government will prepare and update with the approval of the Council of Common Interests (CCI).*
- *Appellate Tribunal (appointed by the federal government) is allowed to which aggrieved parties can appeal against any NEPRA decision. Previously, complaint or grievance redressal was through high courts or through tribunals that NEPRA itself was authorised to establish.*
- *NEPRA powers to ‘make or repeal rules or regulations’ is replaced with NEPRA powers to ‘recommend rules, or to make or repeal regulations.*
- *NEPRA will determine a uniform tariff for all government-owned DISCOs, based on their consolidated financial accounts. Differentiated tariffs are allowed only for privatised utilities (currently only K-Electric).*
- *NEPRA is now authorised to conduct investigations required for managing its regulatory affairs, appointing investigating officers, and levy fines on licensees that are found to be in violation of the Act. The quantum of the fines has been enhanced. Earlier NEPRA had to request the police, NAB, FIA or other agencies to conduct the required investigations. This provision will thus add further clout to NEPRA’s decisions and help strengthen their enforcement.*
- *The Amendment eliminates Section 22, which required the addition of DISCO cross-subsidies to any business-to-business (B2B) transaction tariffs.*
- *The experience and qualification requirements for NEPRA’s Chairman and Members have been reduced.*
- *Generation licenses will no longer be required after 2023. However, generators will still be required to comply with technical and safety standards.*
- *Criteria for additional licensees (e.g., private investors, provincial governments) in the transmission sector have been clarified. This amendment follows the path of power sector reforms, common to all countries—and removes the exclusivity which public sector (or publicly-owned) companies or entities previously enjoyed in providing transmission services.*