

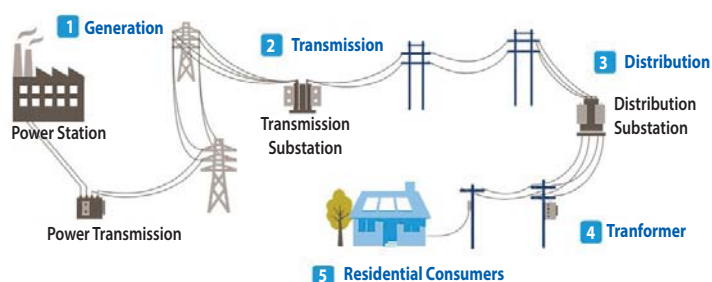
SECTOR BRIEF

Electric Power Distribution Sector in Pakistan

By ICMA Research and Publications Department

Over the past three decades, Pakistan's energy sector has undergone significant reforms to enhance operational performance and meet growing energy demands. However, the electricity market still faces challenges, including prolonged blackouts, electricity theft, high circular debt and poor service quality. The power distribution sector in Pakistan consists of **ten** State-Owned Distribution Companies (DISCOs), Karachi Electric (KE), and several local authorities, all licensed by NEPRA to supply electricity within designated regions. The sector was restructured through WAPDA's unbundling in 1998, creating DISCOs, GENCOs and NTDC. Despite this structured network, Pakistan ranks **14th** among **131** countries for transmission and distribution losses, reflecting ongoing inefficiencies of the sector.

Classification of Electric Power Distribution Network



Historical Background

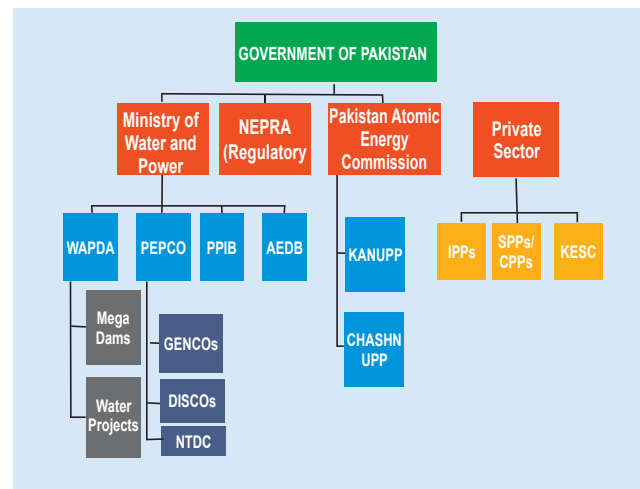
Year	Details
1947	<ul style="list-style-type: none"> After independence, Pakistan retained the Electricity Act of 1910 and implemented subsequent reforms.
1997	<ul style="list-style-type: none"> To regulate generation, transmission and distribution the National Electric Power Regulatory Authority (NEPRA) was established.
1998	<ul style="list-style-type: none"> The National Transmission & Dispatch Company (NTDC) managed 12 500 KV and 29 220 KV grid stations and transmission lines. The WAPDA Act was introduced to drive operational and financial efficiency. The Lahore Electric Power Company (LESCO) was established to serve 5.9 million consumers in Punjab, operating 82 grid stations and 879 feeders. The Faisalabad Electric Supply Company (FESCO) was founded to supply electricity to 5.4 million customers across 8 districts, serving a population of over 26 million. The Multan Electric Power Company Limited (MEPCO) was established, serving over 8.3 million consumers across 13 districts of southern Punjab, with 4,41133 new connections. After WAPDA's unbundling, Gujranwala Electric Power Company (GEPCO) was established, serving 4.04 million consumers across 4 districts with 60 grid stations and 951 feeders. The Islamabad Electric Supply Company (IESCO) serves 3.2 million consumers across six districts, with 108 grid stations (5,224 MVA capacity), 951 feeders and an Advanced Metering Infrastructure (AMI) system comprising approximately 900,000 meters. The Peshawar Electric Supply Company (PESCO) was established serving 4.2 million consumers across 8 circles, covering 1.2 million hectares, with a distribution network of 132 KV, 66 KV sub-transmission lines, substations and 11 KV and 440 V low-tension lines. The Quetta Electric Power Company (QESCO) was established to serve 680,000 consumers across 43% of Pakistan, while Hyderabad Electric Power Company (HESCO) was established to serve 1.2 million consumers in 12 districts of Southern Sindh.

2004-5	<ul style="list-style-type: none"> The Tribal Electric Power Company (TESCO) was established serving 440,000 consumers across 1 circle and 6 divisions, with a distribution network of 132 KV and 66 KV sub-transmission lines, substations, and 11 KV and 440 V low-tension lines. The NEPRA established the Performance Standards (Distribution) Rules under the Electric Power Act, 1997 approved by Federal government.
2010	<ul style="list-style-type: none"> After bifurcation of HESCO, the Sukkur Electric Power Company (SEPCO) was established to serve 820,000 consumers in Sindh, with a distribution network of 132 KV and 66 KV lines.
2015	<ul style="list-style-type: none"> The Transmission Line Policy 2015 aimed to expand the national transmission network, encourage private investment and improve grid reliability and stability for smooth distribution.
2017-18	<ul style="list-style-type: none"> The Ministry of Water and Power was renamed the Ministry of Energy, comprising the Power and Petroleum Divisions, overseeing 29 key institutions in the power sector. The Amendment Act 2018, privatized DISCOs as network operators, separating wire and supply functions for easier privatization. On Provincial Scale, the NEPRA (Amendment) Act 2018, provides Provincial Governments the right to establish one Provincial Grid Company (PGC) in each province.
2019	<ul style="list-style-type: none"> NEPRA granted Distribution License to Aujla & Associates Town Developers (Pvt) Ltd (AATDPL) for distribution facilities at Village Attawa, Mehalowala, and Musapur, east of Railway Line, Grand Trunk Road, near Chan Da Qila, Gujranwala.
2021-23	<ul style="list-style-type: none"> The National Electricity Policy of 2021 aims for affordable, secure and sustainable energy focusing on efficiency, investment and infrastructure in the power distribution sector. The Hazara Electric Supply Company (HAZEKO) was established to serve 688,970 consumers in the Hazara region, operating 217 feeders and 12 grid stations. It generates annual billing of Rs. 33.119 billion with a 26% loss rate.

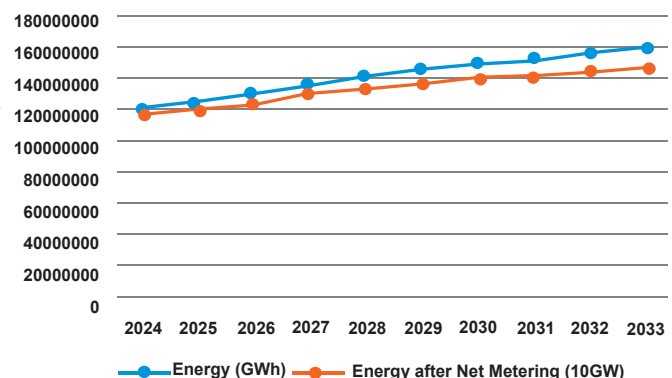
Power Distribution Capacity & Dynamics in Pakistan

Pakistan's power distribution sector serves over **36 million** customers through **Power Information Technology Company (PITC)**, supporting **ten** DISCOs and having over **100,000** utility employees. Despite infrastructure upgrades, such as the **±660 KV HVDC** Transmission Line from Matari to Lahore, distribution remains underinvested, facing overloading and frequent transformer failures. NEPRA oversees various distribution sources, including XW-Discos, K-Electric and others.

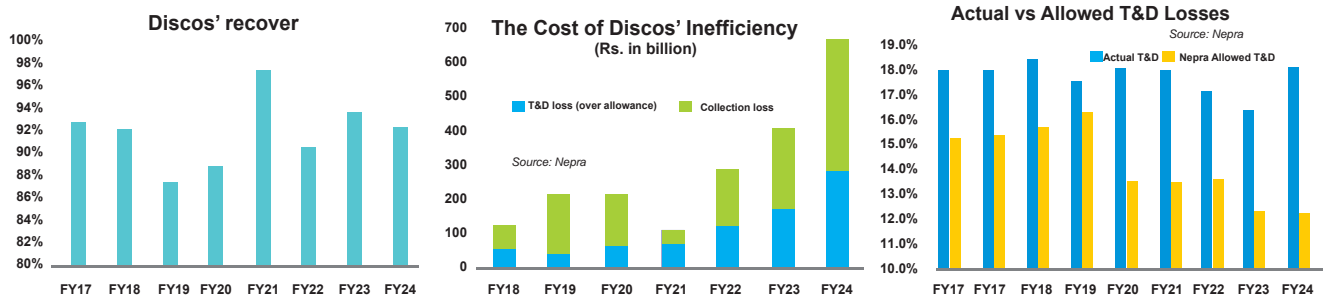
A report by the **Competition Commission of Pakistan (CCP)** released in **November 2024** highlights the dominance of State-Owned Enterprises (SOEs) and barriers to competition in power sector and recommends reforms like the **Competitive Trading Bilateral Contracts Market (CTBCM)** model. Additionally, the **World Bank** stresses that private sector involvement and sector reforms are key to improving service quality, reducing losses and attracting investment. However, the **NEPRA Performance Evaluation Report FY24** notes a significant decline in performance, with rising T&D losses and financial losses of **Rs. 662 billion**, emphasizing the need for structural reforms, including privatization and tariff rationalization. Lastly, the **Pakistan Development Update Oct 2024** outlines that private sector participation in power distribution could improve service quality, cut losses and attract investment. The continued reliance on tariff hikes and pricing adjustments has proven ineffective, underscoring the need for structural reforms, including privatization, targeted tariff rationalization and performance-based incentives, to address the sector's ongoing challenges.



Yearly reduction in Energy demand



Source: <https://www.brecorder.com/news/40320213>



SWOT Analysis of Electric Power Distribution Sector in Pakistan

STRENGTHS

- ◆ NTDC restructuring boosts efficiency and transparency.
- ◆ GIS mapping enhances distribution networks.
- ◆ Focus on smart grids and integrated planning.
- ◆ Smart metering improves billing accuracy.
- ◆ CPEC projects upgrade infrastructure, reducing T&D losses.
- ◆ Competitive Trading Bilateral Contract Market (CTBCM) on cards
- ◆ Capacity-building modernizes DISCO operations.
- ◆ Rollout of 1.06 million AMI meters by 2025.
- ◆ Separation of distribution networks enhances transparency.
- ◆ K-Electric reduced AT&C-based load shedding by 75%.
- ◆ K-Electric's 2024-2030 plan targets eliminating load shedding from 95% of feeders.



WEAKNESSES

- ◆ Inefficient and financially unsustainable power sector.
- ◆ Excessive and incorrect billing causing consumer dissatisfaction.
- ◆ High reliance on imported fuel, increasing financial vulnerability.
- ◆ Neglect of maintenance in aging distribution networks.
- ◆ Delays in transmission line projects affecting supply.
- ◆ Fluctuating fuel prices worsening the circular debt crisis.
- ◆ Limited public financial disclosures by DISCOs.
- ◆ Shortfall in T&D loss reduction and theft recovery targets.
- ◆ High T&D losses undermining efficiency (over Rs. 660 billion).



OPPORTUNITIES

- ◆ Power sector reforms and privatization of loss-making DISCOs.
- ◆ Installation of AMI meters in DISCOs.
- ◆ Upgrading transmission capacity to improve power evacuation.
- ◆ Pakistan Vision 2025 emphasizes reliable, cost-effective energy.
- ◆ Mobile meter reading reduces billing errors.
- ◆ Reducing commercial and non-commercial load shedding to boost consumer satisfaction.
- ◆ Power theft reduction and improved recovery rates.
- ◆ World Bank's Electricity Distribution Efficiency Improvement Project (\$195 million).
- ◆ 'Bijli Sahulat Package' offers relief, alongside the National Electricity Plan 2023-27.
- ◆ Public-private partnerships attract investments in sustainable practices and smart technologies.
- ◆ Effective governance to address circular debt and reduce high T&D losses.



THREATS

- ◆ Increased electricity costs due to high losses and poor financial performance.
- ◆ Worsening circular debt from DISCOs' failure to collect revenues and fluctuating fuel prices.
- ◆ Disrupted supply caused by delays in system repairs and transmission projects.
- ◆ Greater financial vulnerability from reliance on imported fuel.
- ◆ High transmission (17%) and distribution losses (50%) due to inefficiency.
- ◆ Losses from technical issues like corona, Joule, magnetic, and skin effects.
- ◆ Non-technical losses from theft, vandalism, and poor record-keeping.
- ◆ Low electricity supply reliability due to poor DISCO performance.
- ◆ Financial strain on DISCOs from load shedding and a shift to solar power.
- ◆ Threats to DISCOs from unmet T&D loss and safety targets, according to NEPRA.



SOURCES:

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