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The Transmission System Expansion Plan (TSEP) and Khyber Pakhtunkhwa: Provision and Dispute

A POLICY REVIEW

JULY, 2026
Publication Date

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The Transmission System Expansion Plan (TSEP) and Khyber Pakhtunkhwa: Purpose, Provision and Dispute

Policy Review

Prepared by: Centre for Regional Policy & Dialogue (CRPD)

Series: CRPD Policy Review

Date: July 2026

Location: Islamabad, Pakistan

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1. Executive Summary:

For Khyber Pakhtunkhwa, the Indicative Generation Capacity Expansion Plan (IGCEP) and the Transmission System Expansion Plan (TSEP) are central to determining whether the province can convert its hydropower potential into usable and bankable electricity. Although Khyber Pakhtunkhwa received 44% of the overall country's transmission investment allocation under the FY2023-25 Transmission Investment Plan, much of this infrastructure is designed to evacuate power from the province to load centers elsewhere rather than improve electricity access within the province. This imbalance is reflected in ongoing disputes over transmission priorities, the removal of PEDO's Madyan and Gabral-Kalam hydropower projects from the committed category of IGCEP 2025-35, inconsistencies between generation and transmission planning, delays in critical transmission projects, and the constitutional limits placed on the province's efforts to develop its own grid. Together, these disputes expose a fundamental structural problem: Khyber Pakhtunkhwa hosts much of the country's future hydropower generation, but has limited control over the country level planning decisions that determine whether that power can be connected, transmitted, and used for its own development. The IGCEP determines which provincial projects exist in the country's generation pipeline; the TSEP determines whether they can exist on the grid.

2. What Is the TSEP?

The Transmission System Expansion Plan (TSEP) is Pakistan's rolling ten-year master plan for the high-voltage grid (500 kV and 220 kV, now extending to 765 kV). It is prepared by the country's transmission planner, historically the National Transmission and Dispatch Company (NTDC), whose planning function has since been carved into the Independent System and Market Operator (ISMO), with NTDC re-designated as the National Grid Company (NGC); under Planning Code PC-4 of the Grid Code 2023, and is filed with NEPRA for public hearing and approval.**[1,2,3]** The current iterations are TSEP 2024-34, filed with NEPRA in May 2024, and TSEP 2025-35, which for the first time is being processed jointly with the generation plan (IGCEP 2025-35) as a single 'Integrated System Plan' (ISP 2025-35), heard by NEPRA on 20 May 2026.**[1,8]** In one sentence: the IGCEP decides what gets built, and the TSEP decides what gets connected; which is why a province's fortunes can turn on lines buried deep in its annexures.

3. What Purpose Does It Serve?

The TSEP has five functions in the regulatory machinery:

(i) Power evacuation. It designs the transmission schemes needed to bring committed and candidate generation from the IGCEP to load centers. For Khyber Pakhtunkhwa this means the corridors that carry Tarbela, Dasu, Suki Kinari and Mohmand power south. **[2,4]**

(ii) Constraint removal and reliability. It identifies overloads, voltage and stability problems (load-flow, short-circuit and stability studies against the Grid Code) and proposes reinforcements, the class of failures behind Pakistan's repeated country-wide blackouts. **[2,4]**

(iii) The legal basis for spending. NEPRA's tariff guidelines (clauses 6.2(g) and 7.3.A.1 of the 2017 Guidelines for Determination of Revenue Requirement) require the three-year Transmission Investment Plan (TIP); the actual rupee allocations recovered from consumers; to be aligned with the TSEP, with each project 'technically justified' by it. **[3,4]** No place in the TSEP, no place in the ratepayer-funded budget.

(iv) Investor signalling. Generation developers, provincial governments and lenders read the TSEP to know whether their plants will have a wire to connect to and by when; the World Bank, ADB and AIIB all condition hydropower lending on credible evacuation plans.**[5]**

(v) Coordination with provincial grids. Since the 2018 amendment to the NEPRA Act (Section 18A) allowed provinces to build their own intra-provincial transmission, the TSEP is also the reference plan with which any Provincial Grid Company's network must align; a condition written directly into Khyber Pakhtunkhwa's provincial grid license. **[6,7]**

4. What the Plan Contains for Khyber Pakhtunkhwa

Khyber Pakhtunkhwa is, on paper, the TSEP's biggest beneficiary. In the TSEP-aligned Transmission Investment Plan for FY2023-25, 18 of NTDC's projects worth Rs 224 billion, 44% of the entire allocation across Pakistan, were located in Khyber Pakhtunkhwa, the largest provincial share by a wide margin (Punjab: Rs 178bn/35%; Sindh: Rs 43bn/9%; Balochistan: Rs 12bn/2%). **[4,9]** The reason is not provincial generosity but physics: the north's new hydropower is in Khyber Pakhtunkhwa, and the grid must be extended to reach it.

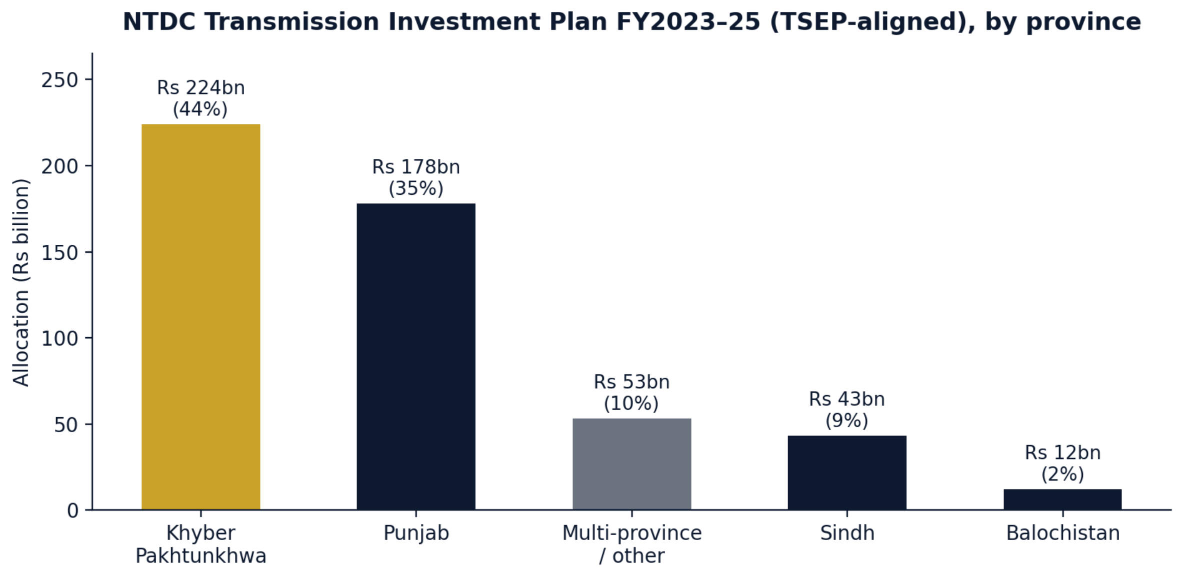

Figure 1 — TSEP-aligned Transmission Investment Plan FY2023-25 by province. Khyber Pakhtunkhwa's 44% share reflects hydel evacuation needs, not load-side investment. Sources: [4][9].

The Khyber Pakhtunkhwa-relevant schemes fall into four clusters:

Hydel evacuation. The flagship is the 765 kV corridor; Pakistan's first at that voltage class in AC; from Dasu HPP to a new 765/220 kV Mansehra substation (157 km) and onward to the 765/500/220/132 kV Islamabad West grid station, World Bank-financed and allocated Rs 9.38 billion in PSDP 2026-27, with Rs 10.8 billion for Dasu Stage-I evacuation itself.**[10,11,12]** Suki Kinari's 884 MW is evacuated by a 75 km 500 kV double-circuit in/out arrangement on the Neelum Jhelum–Nokhar line (Rs 3 billion in PSDP 2026-27 for SK and allied schemes); Tarbela 5th Extension gets a 55 km 500 kV double-circuit to Islamabad West; Mohmand Dam gets ADB-funded 220 kV lines to Jamrud (65 km) and Nowshera Industrial (70 km), allocated Rs 3.9 billion.**[10,11]**

Regional interconnection. The CASA-1000 HVDC bipole from Tajikistan terminates at a ±500 kV converter station at Nowshera (Azakhel), with 113 km of DC line inside the plan; making Khyber Pakhtunkhwa the landing point for Central Asian summer power.**[11]**

Load-side reinforcement. 500 kV reinforcement of the Peshawar–Nowshera area (29 km), a second source to Sheikh Muhammadi, the 52 km Nowshera–Ghazi Barotha bypass, 220 kV works at Chakdara, Swabi (3×250 MVA) and Haripur New, and reconductoring of Burhan–ISPR.**[11]**

Provincial grid interface. NEPRA's transmission performance report for FY2024-25 records Khyber Pakhtunkhwa's own Provincial Grid Company planning direct evacuation from the 18 MW Pehur HPP and most ambitiously; a 500 kV Chitral–Chakdara transmission line with grid station for dispersal of up to 3,000 MW of future Chitral-basin hydropower, a corridor absent from the central plans.**[7]**

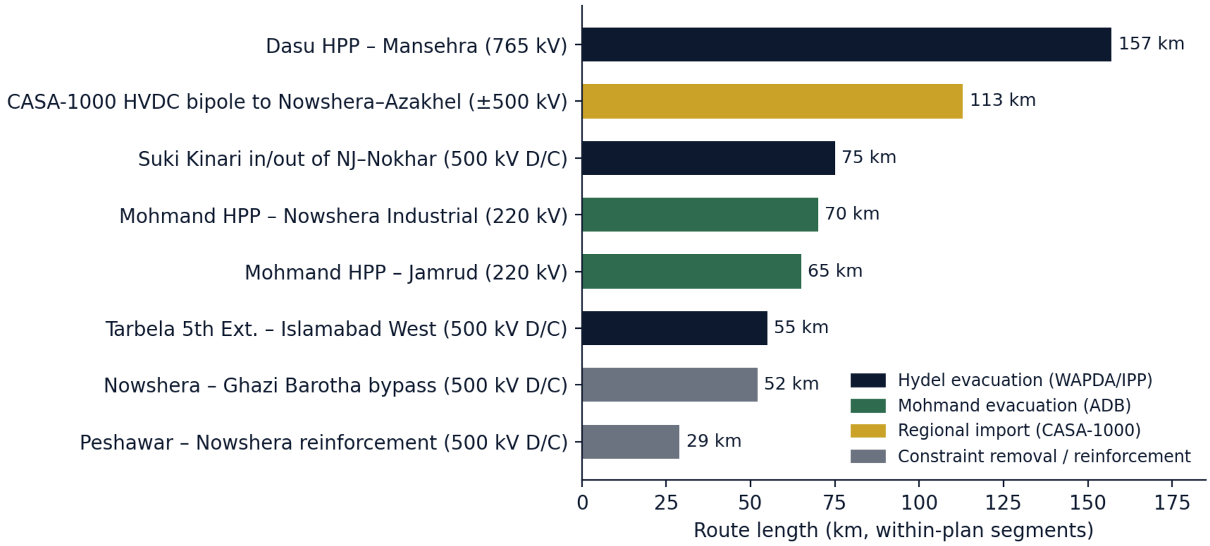

Figure 2 — Major Khyber Pakhtunkhwa-related schemes in NTDC planning documents, by route length. Sources: [10][11][12].

Table 1 — Key Khyber Pakhtunkhwa-related provisions across the TSEP framework

Provision / scheme	What it does for Khyber Pakhtunkhwa	Instrument & status
765 kV Dasu–Mansehra–Islamabad W.	Evacuates Dasu Stage-I (2,160 MW); first 765 kV AC corridor	TSEP/TIP; WB-financed; KEPCO design consultancy; delayed
500 kV Suki Kinari in/out (75 km)	Evacuates 884 MW CPEC plant	TSEP/TIP; PSDP Rs3bn FY2026-27
500 kV Tarbela T5–Islamabad W. (55 km)	Evacuates 1,530 MW extension	TSEP/TIP; WB/AIIB project scope
220 kV Mohmand–Jamrud / Nowshera Ind.	Evacuates 800 MW Mohmand Dam	TSEP/TIP; ADB-funded; Rs3.9bn PSDP
CASA-1000 converter, Nowshera–Azakhel	Lands 1,300 MW Central Asian import in Khyber Pakhtunkhwa	TSEP/TIP; multilateral-funded
Grid Code 2023, PC-4 (TSEP clause)	Requires planner to justify every scheme; TIP must align with TSEP	NEPRA guidelines cl. 6.2(g), 7.3.A.1
Section 18A, NEPRA Act (2018)	Ends NTDC exclusivity; lets Khyber Pakhtunkhwa build intra-provincial grid	KPTGSCPL licensed as first PGC, 26 Feb 2021

PGC licence conditions (LAT-07)	Khyber Pakhtunkhwa grid company's plans must align with TSEP; NTDC must consult PGC; CCI oversight per Art. 154	NEPRA determination, Feb 2021
500 kV Chitral–Chakdara (PGC concept)	3,000 MW dispersal corridor for Chitral hydel	Khyber Pakhtunkhwa PGC pipeline; not in central plans

Compiled from NEPRA licences, performance reports, PSDP documents and NTDC project listings [3][6][7][10][11][12].

5. The Disputes

Five distinct disputes surround the TSEP as it touches Khyber Pakhtunkhwa. They share one root: the plan is written at the federal level, but its consequences are provincial.

5.1 The evacuation-allocation fight (2023)

When NTDC filed its Rs 370 billion TIP for 2023-25, the provinces; Khyber Pakhtunkhwa among them; objected in January 2023 that allocations for evacuating their priority power plants were insufficient. NEPRA returned the plan to NTDC with instructions to consult provincial governments, AJK and Gilgit-Baltistan; NTDC came back with a plan enlarged to Rs 510 billion. Even then, NEPRA's own panel called the revised scheme 'unrealistic' against the system constraints that had produced repeated country-wide blackouts, and NTDC conceded that projects pointed out by provinces would be completed later than the three-year window.**[4,9]** The structural point stands: provinces have no vote on the plan, only a comment period.

5.2 The IGCEP–TSEP linkage: Madyan and Gabral-Kalam

This is the sharpest live dispute. Because the TSEP only plans evacuation for projects recognised in the IGCEP, exclusion from the IGCEP's 'committed' list effectively deletes a plant from the transmission plan too; no wire, no bankability. In IGCEP 2025-35, the planner dropped PEDO's World Bank-financed Madyan (157 MW) and Gabral-Kalam (88 MW) projects from the committed category, applying; retrospectively; a new criterion requiring at least 10% physical and financial progress.**[13]** Khyber Pakhtunkhwa's counsel argued at NEPRA's public hearing that this violates the Council of Common Interests decision of 13 September 2021, which mandated that all provincial public-sector projects with approved PC-1s as of 1 October 2020 and secured financing (including World Bank funding arranged up to March 2021) be treated as committed; a decision carried into Clause 5(c) of the National Electricity Plan 2023-27, which requires continuity of committed status across successive plans. Both projects were committed in IGCEP 2021-30 and 2022-31; their removal, Khyber Pakhtunkhwa argued, occurred without notice or hearing.**[14]** PEDO has now taken the matter to the Islamabad High Court, which admitted the petition in May 2026 and issued notices to the federal government, ISMO and NEPRA. The petition asks the court to declare the exclusion unconstitutional, restore committed status, and strike down the retrospective 10% test, and, failing that, to remand the entire IGCEP 2025-35.**[13]**

5.3 Internal inconsistency of the ISP 2025-35

At the May 2026 hearing on the Integrated System Plan, the FPCCI pointed out that TSEP 2025-35 was built on the superseded IGCEP 2024-34 rather than the IGCEP 2025-35 it is filed alongside, meaning the country's transmission plan and generation plan; presented as one integrated document; model different generation fleets.

FPCCI also flagged inconsistent treatment of the Khyber Pakhtunkhwa and AJK hydropower pipelines across IGCEP iterations, the unresolved 500 kV Matiari–Moro–Rahim Yar Khan corridor stranding southern generation, and the plan's assumption of negligible future self-generation despite 22 GW of solar panel imports in 2024.**[8]**

5.4 Delivery failure and stranded provincial plants

A plan is only as good as its execution, and NEPRA's own performance evaluation for FY2024-25 is blunt: the National Grid Company 'was unable to complete its critical transmission projects' despite approved investment plans, prolonging constraints, overloading grid stations and leaving major assets; including the 4,000 MW HVDC line underutilized.**[7]** Khyber Pakhtunkhwa has felt this before the TSEP era in miniature: the completed 108 MW Golen Gol plant sat as stranded capacity for Upper Chitral for years while PEDO and PESCO argued over tariff and wheeling mechanics.**[15]** The province has drawn the operational conclusion: PEDO celebrated commissioning Khyber Pakhtunkhwa's first own transmission line (the 132/220 kV Gorkin-Matiltan corridor works for the Swat projects) and the Energy Department is fast-tracking a 40 km Swat corridor line to sell PEDO power directly to industry, bypassing the central grid altogether.**[16,17]**

5.5 The constitutional layer

Beneath the technical disputes sits a federalism question. Electricity is a Federal Legislative List Part-II subject, meaning policy decisions belong before the Council of Common Interests under Article 154; a point NEPRA itself recorded when granting Khyber Pakhtunkhwa's provincial grid licence. Article 157(2) gives provinces the right to construct power houses and grid stations and lay transmission lines for use within the province, and Section 18A of the amended NEPRA Act operationalizes it by ending NTDC's transmission exclusivity for intra-provincial networks. Khyber Pakhtunkhwa was the first province to use it: the Khyber Pakhtunkhwa Transmission and Grid System Company (Pvt.) Ltd was licensed as a Provincial Grid Company on 26 February 2021, but the licence itself binds the PGC's transmission business to alignment with the federal TSEP under Grid Code PC-4, with NTDC obliged only to 'consult' the PGC for input.**[6]** The province thus holds a constitutional right whose exercise is conditioned on a plan it does not write. Whether TSEP/IGCEP determinations that strip provincial projects of committed status can lawfully bypass the CCI is precisely the question now before the Islamabad High Court.**[13,14]**

6. Assessment

Two readings of the record are possible, and both have evidence. The federal reading: Khyber Pakhtunkhwa receives the single largest provincial share of transmission investment (44% of the FY2023-25 plan), the 765 kV Dasu corridor is the most expensive evacuation scheme in the country's history, and planners applying a 10% progress test to a congested pipeline are doing least-cost discipline, not discrimination; every 'committed' megawatt carries capacity-payment obligations that all consumers fund. The provincial reading: that 44% evacuates federally- and Chinese-owned plants through Khyber Pakhtunkhwa rather than serving Khyber Pakhtunkhwa's load; the committed-status rules were changed retrospectively against two projects the CCI had settled; and the province's only constitutional remedy; building its own grid; is licensed subject to the very federal plan it disputes. Both readings converge on one practical conclusion: for Khyber Pakhtunkhwa, the decisive battles over its energy future are no longer fought at dam sites but inside planning documents, the IGCEP decides whether a Khyber Pakhtunkhwa plant exists in law, and the TSEP decides whether it exists on the grid.

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