9 Point Energy Reforms by 2028

Following measures incentivized by EFF Key Priorities, endorses known challenges and homegrown solutions that with political will 77 years later can be translated into federation's power sector delivering reliable and cost effective services, primarily to its rural citizens starting within coming 3 years.

> **EFF Key Priorities**
>
> a. Rebuilding policy making credibility and entrenching macroeconomic sustainability through consistent implementation of sound macro policies and a broadening of the tax base;
>
> b. Advancing reforms to strengthen competition and raise productivity and competitiveness;
>
> c. Reforming the state-owned enterprises (SOEs) and improving public service provision and energy sector viability; and
>
> d. Building climate resilience

1. Human capital with project management, technical skills, ability to anticipate and proactively cater to needs of citizens and industry

2. Grid Operators with forecasting and balancing mechanisms using AI delivering stable and reliable on demand power in a competitive market.

3. Organizations tackling variability, storage, transmission in an infrastructure managed intelligently to match supply with demand in real-time with storage to avoid excess energy generated does not go unused.

4. Digitalization of processes, payment instruments, AMI infrastructure and multiple revenue services provided to the adult population as Internet of things gains traction.

5. Competitive capacity procurement, timely development and execution of projects

6. Role of MoE limited to policy making.

7. Managing transformation with an empowered regulator to deliver power tariff of 9$cents per unit.

The approach within the Energy sector varies; gas sector is bundled and plans suggested ~7 years ago requiring breakup into provincial distribution companies and a national transmission company are pending, possibly due the challenges confronted in the power sector. The oil sector is limited to a marketing organization while E&P under take their core business as an integrated firm delivering molecules like electrons by IPPs to GOP entities.

Power sector solution has been to increasingly disintegrate the supply chain functionally, driven by hopium and expectation of change ensuing, overcoming challenges and reduced firefighting. The holistic and macro perspective is seemingly lost in the reform agenda started 22 years ago and today the sector is being managed by similar number of SOEs. This is not sustainable and proven so.

We need to aggressively readopt and pursue the fundamentals of 1992 WAPDA Strategic Restructuring Plan vision by introduction of Competition to the power sector and with passage of time providing the greatest possible role through Privatization in a Deregulated market.

Reforms need to deliver within 3 years an operational competitive market, flexibility in distribution and transmission network that caters for electrons sourced from different technologies and proactively responsive to changing demand.

Power sector organizations, despite State-Owned Enterprises (Governance and Operations) Act, 2023, Companies Act 2017, Listing Regulations of the Pakistan Stock Exchange Limited, Public Sector Companies (Corporate Governance) Rules 2013 (where applicable), Listed Companies (Code of Corporate Governance) Regulations 2019, and Securities Act 2015, have not been able to transform, effectively undertaken changes nor timely executed measures for improving governance.

The macro perspective necessitates independent regulator, functions operating under 3P, GOP hands off with present Power Sector SOEs designated as private companies under SECP with no regulations of GOP applicable.

And without these requisite transition measures to move away from a Public to Private sector operation in the interim, till over due privatization process still spread over next 3-5 years or 3P structure is attained, continuing approach of functional disintegration will continue to fail. This is not sustainable and we need to learn from the past to take out of box destructive measures.

First paramount measure is tackling the continuing Governance and Human resource ability; issues which have and are having adverse impact on policymaking & oversight functions across the upstream, midstream and downstream segments.

Governance requires Walk the Talk to rebuild confidence by updating and implementing laws against Political Victimization and Abuse of Authority from statutory bodies

Decisions need to be protected under Foreign Investment (Promotion and Protection) Bill, 2022.

NAB, FIA, AGPR are undergoing changes post realization that their actions have been limiting decision taking, resulting in non judicious actions to the determinant of organization and country.

Secondly, Human Resource approach necessitates aggressive structural changes by development of skills to lead the change in house with a committed leadership team focused on self-reliance as deliverance criteria. Finding over 200+ BODirectors and 20+ CEOs for the Power sector SOEs is difficult.

Capacity Building increasingly needs skilled labor in a complex energy market and our education system requires, not mending, but overhauling to encourage thinking and challenging concepts and approaches to solve problems. That is a generational effort but Power sector needs to work on upgrading skills of its workforce and fresh graduates.

Specialized HR organizations undertake such functions to assist organizations in defining Culture, Ethos of Delegated Authority, Ownership and Responsibility, development of Efficient Processes development backed by a continuous improvement approach, digitization, back office Synergy and strong Performance Accountability. Additionally, imparting knowledge on Customer Service, Project Management and Soft Skills, Communication, Ethics and Values.

Internally today, multiple institutions are undertaking training, which is also used for selection for promotion and employment. There is a visible conflict of interest, as Career growth is to be based on Competence, on upgrade of Qualification, visible Merit (not seniority) based award and recognition policies, on the job training and development assignments. HR policies need to be reformed as seniority assures progress to mediocre and unjust societies hide behind seniority.

Power Sector needs to act disruptively by consolidating its learning centers with Institutions from China by merging of PIM, IIEE PCSIR and in house training functions of WAPDA, NTDC, PITAD, OGDCL, HDIP and CPPAG to provide Technical, Management and Industrial Electronics Engineering degree.

Under 3P, this merged Energy Sector Human Capital Development Company ("ESHCDC") to undertake above role, bring synergy by combining their assets and resources to become a center of excellence.

Hands on Vocational training link could be possibly undertaken at Gwadar University built at a cost of $10m and as part of China-Pakistan Vocational and Technical Exchange and Training Program to impart knowledge of Smart Metering, Smart Grid and distributed energy, AI techniques, Internet of Things, 4th industrial revolution base expected on Cyber-Physical Systems to our Gen Z would also be responsibility of ESHCD.

PITC (Power Information Technology Company) would assist for online training programs for future skills development and collaboration with China enterprises for building digital infrastructure; undertaking high quality projects in the field of software, cloud computing, promotion of technological innovation; and digital security should be mandated to *PITC operated under 3P with its equity limited to 49%.*

State-Owned Enterprises (Governance and Operations) Act, 2023 conceptualizes positives but culture change is a long drawn out exercise; KE took 15 years whereas full year GDP Growth in China averaged 8.92 percent from 1992 until 2023, reaching an all time high of 14.30 percent in 1992 and a record low of 2.20 percent in 2020.

Message: it takes time and there is no magic wand.

The **next** functional element necessitates timely execution of CTBMC in FY26 with PMEX as partner with DISCOs, planned ISMO (Independent System Operator and Market Operator being formed by merger of NPCC and CPPAG) and PITC together, having 49% equity, under a 3P regime as there is limited skill in MoE to undertake next day trading, building a trading platform and attracting high caliber professionals with energy trading experience will be a difficult ask.

The **fourth** element in the restructuring starts with merger of DISCOs (limiting to 2 per Province), as part of a holding company listed on PSX takes the difficult sustained measures while learning from peer success stories to bring in efficiency, professional team and leadership while privatization takes place in coming years.

DISCOs to have equity in holding company to the extent of 49% and under 3P or privatization, 51% of each DISCO is to be with the new investor.

Repeating ad nauseam misinformation regarding IPPs with half cooked facts by detractors is not providing a way out nor suggesting practical solutions in a single buyer market. So far measures expected reduction of ~Rs 1per kwhr reduction is not significant and lower demand of 8.1% in 1Q25 will balance it with estimated increase in capacity charges by Rs 5.6 per kwhr in Dec'24 to Feb'25.

Contrary to current plans to privatize only efficient power plants (Combined Cycle) carved out of the GENCOs, MoE should form Water, Fossil and Alternate Power Development organization as holding company of PAEC, WAPDA, GENCOs, PHL and PPIB is the **next** element in the restructuring plan.

It is to undertake RE (hydel, nuclear, solar, wind, hybrid and other technologies) and fossil fuel projects, where possible under 3P.

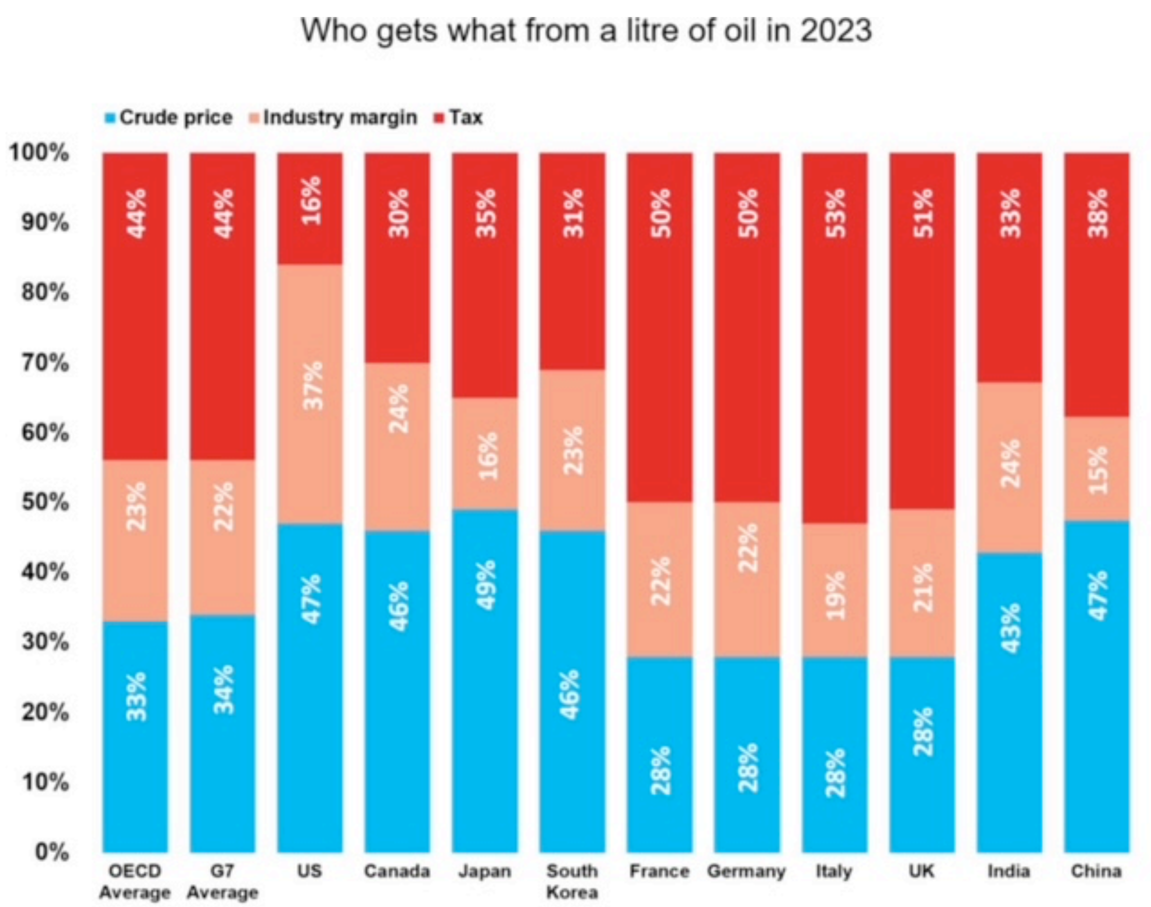
PPIB to focus on SDG Goal 13 targets delivery by 2030, enabling trading platform for carbon credits locally and internationally, obtaining resourcing from Climate Change Funds, undertaking diversified businesses of Solar, Wind and Hydel Hybrids, Green Liquid Ammonia for use as liquid fertilizer and Coal Gasification, all under 3P.

Sixth pillar needs to tackle Circular debt of Rs2.26 trillion (~Rs683 billion Power Holding Limited, Rs 1.060 tr payable by the Central Power Purchasing Agency to power producers and another Rs520 billion is non-interest bearing), thereby, Rs1.74 tr impact of roughly Rs 3.23 or 3.81per kwh after adjusting for taxes is financing costs of such debt for most non-protected consumers and is embedded in the electricity bills as a PHL Charge.

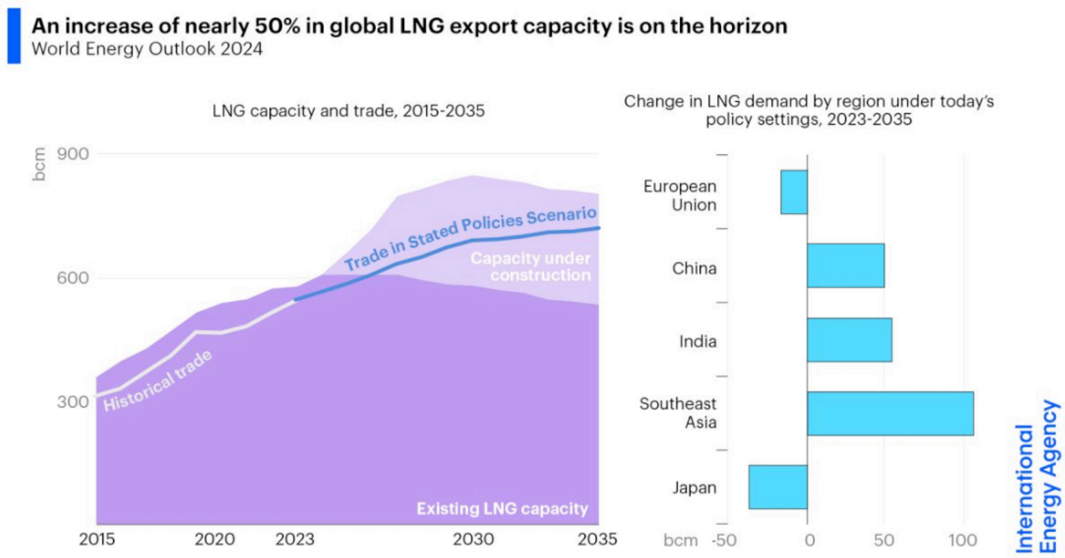
This and Disco debt and liabilities need to be parked in PHL with mandate to take measures to reduce the interest cost, settle through financial engineering by evolving funding instruments with banks and DFIs and floating of bonds

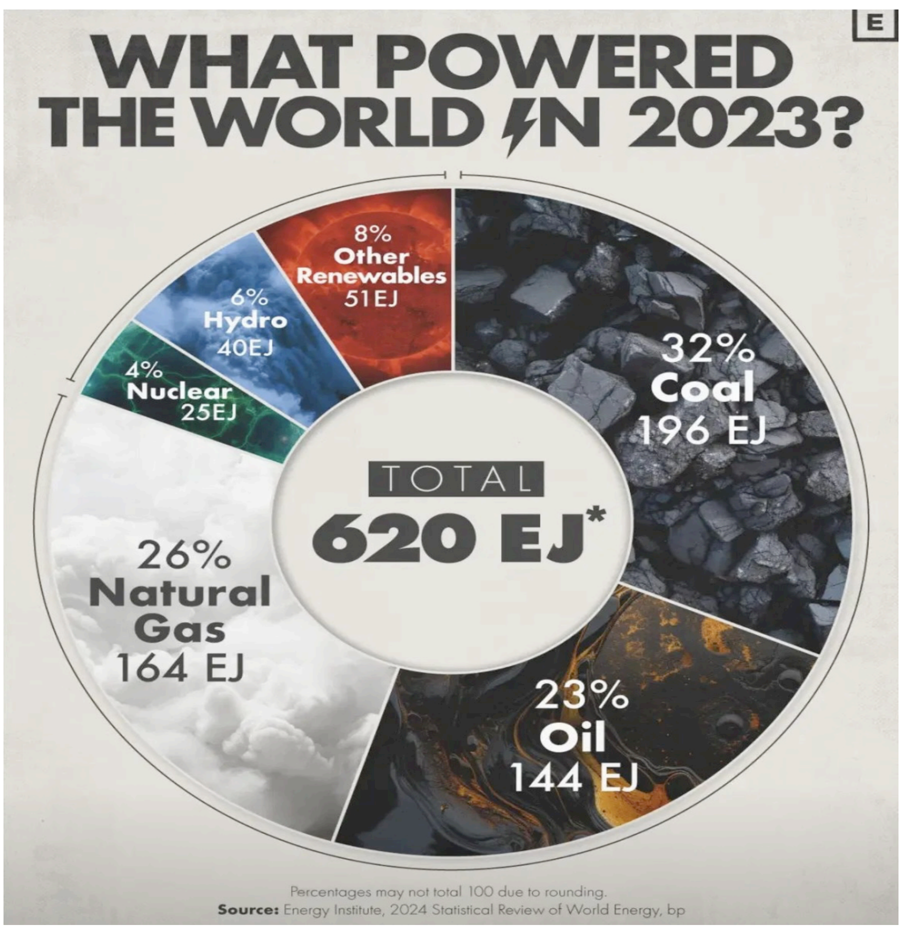
The **next** pillar of restructuring has NTDC being replaced by National Transmission Maintenance Company (NTMC) and delivering electrons to ISMO of capacity procured from capacity owners for delivery to consumers of DISCOs and those directly contracting with the generation firms.

The **eighth** functional pillar is of merged OGRA and NEPRA to become an independent energy regulator.
Fuel cost has and will play a significant role in in our generation costing. In Pakistan, product price accounts for more than 60% of the price of fuel and taxes account for more than 30%. However, the picture is very different in other countries.



The LNG sector is also expected to see a change due to larger volume production





Thus there is need to improve our fuel procurement process and utilization strategy.

The **last** functional pillar is of PPMC to undertake planning (IGCEP, TSEP), overseeing (NEP), strategic planning and design of the country's electricity, fuel and gas networks.

PPMC (Power Planning and Monitoring Company) as an independent National Energy System Operator will undertake to break down the silos existing between the planning of electricity and gas systems and independent oversight for the design of Pakistan's energy networks is the fifth functional pillar.

Electricity, oil and gas network planning be brought under its roof to support the clean energy transition, accelerating government's clean power mission of 2030, facilitating our energy security with regional play, focus on keeping energy bills down in the long term and as PMO, undertake projects with its subsidiary Power Transmission Infrastructure Development Company (PTIDC).

We need to learn and not repeat past failures of NPCC, NCC, PWD and Railcorp which were/are "shutdown" or operating beyond envisaged domain.

Solution is not having Pakistan Infrastructure Development and Asset Management Authority in Public Sector and for it to be carved out of NTDC for improving planning of transmission lines and reducing 7 to 8 years delay in execution.

PTIDC formation under 3P with its equity limited to 49% will ensure success with design capability built by addition of Power Division of NESPAK.

PPMC has to be that Nimble Organization to Reinvent sector with Disruptive Measures and In Box Solutions, manages the National Energy Plan with MoE and Regulator to

- Build Capacity, create culture of Delegation with Authority, instills Ownership, ensure Financial powers, undertakes efficient Processes and undertakes Back Office synergy in the power companies
- Delivers People Customer Service focused integrated (1+3 and 5+10 year) revolving plans ingrained on Data and Financial Analysis of business cases that increase revenue streams, create efficiency, enhance productivity and conservation
- Facilitates Mergers, Vertical Integration, expediting 3P, doing away with Rules of Business Impediments and improving Processes in redefined firm
- Has strong Project Management capability to build credence with DFIs through PTIDC

PPMC will also encourage advocacy by Think Tanks as part of effective learning that starts with use of data and analysis for a better contextual nudge, information sharing, and building knowledge and information bridges by publicly posting data to facilitate better research, analysis and understanding; being repositories of data, Power Sector should make available reports, studies, and policy papers to researchers.

Similarly, tabulation reports of LUMS, PIP, OCAC and HDIP need to find an alternate distinct domain focus without overlap of information.

It will also be representative of MoE in the following initiatives

- Research, Micro, Small and Medium Enterprises hand holding to develop engineering goods and services, innovation and capacity building with technical institute and universities facilitated by endowment fund of Export Development Surcharge.

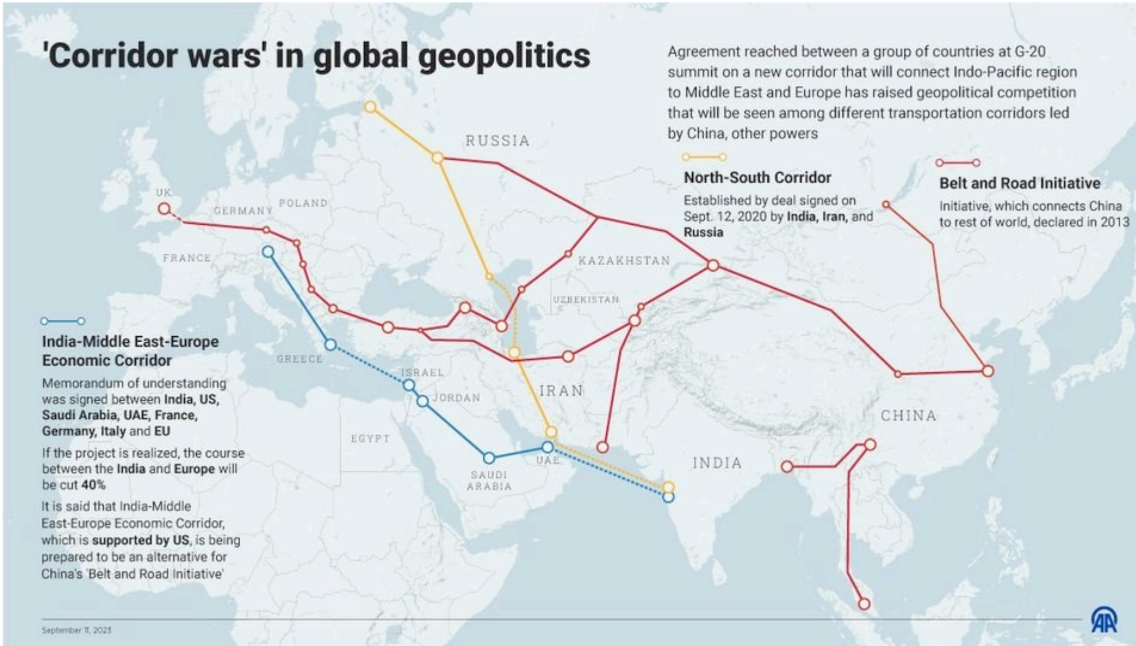
  Efficient equipment development under lead of revitalized merged entity of EDB, NEECA, PCSIR, TADP and PEC/IEP rebranded as Innovation and Technology Development Company ("ITDC").

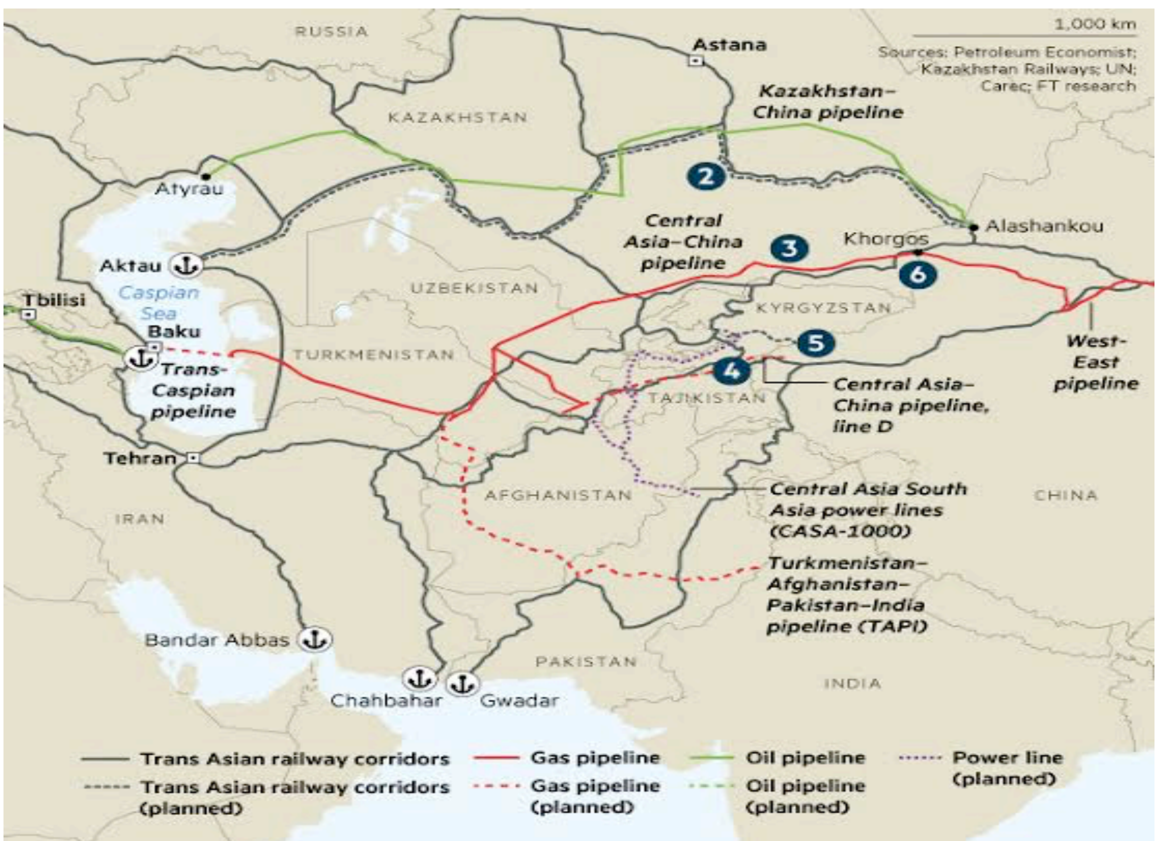
  ITDC aim is to catalyze forced energy conservation resulting in reduce capacity additions, small hydel and water turbine manufacturing and vertical axial wind system for residences facilitated by endowment from Workers Welfare Fund (2% of income >Rs 0.5m from industrial establishments) of Rs 208.6bn with AGPR and Rs 48.4bn under MoF Consolidated Fund.

- Furthermore, be part of undertaking Economic Diplomacy for Regional Play for which a careful assessment is required and overdue as Board of Investment, attaches at Embassies, Foreign Office, Inter State Gas System and Ministry of Energy have not delivered.

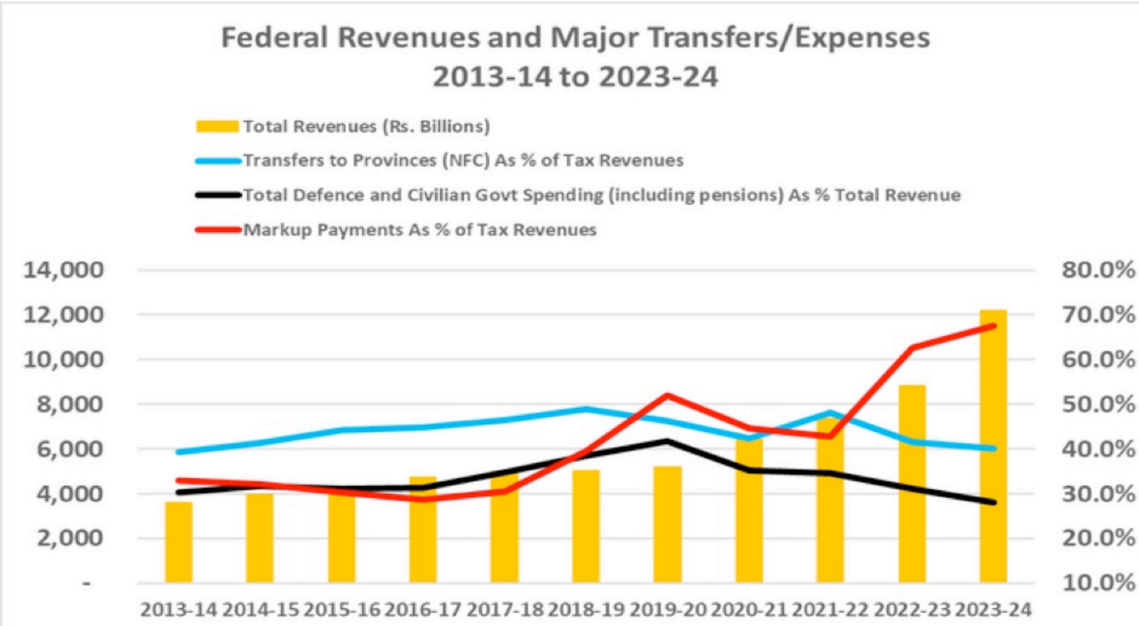
  Barter trade agreements to overcome sanctions, laying out a network of pipelines and transmission network or connecting with regional energy infrastructure evolving would need consideration.

  For this possibility to however catalyze, cooperation is paramount and important for us to resolve strenuous matters on our borders and build on the National Security Policy by redefining our approach focus with aggressive and diligent target deliverance.


'Corridor wars' in global geopolitics
Agreement reached between a group of countries at G-20 summit on a new corridor that will connect Indo-Pacific region to Middle East and Europe has raised geopolitical competition that will be seen among different transportation corridors led by China, other powers
North-South Corridor
Established by deal signed on Sept. 12, 2020 by India, Iran, and Russia
Belt and Road Initiative
Initiative, which connects China to rest of world, declared in 2013
India-Middle East-Europe Economic Corridor
Memorandum of understanding was signed between India, US, Saudi Arabia, UAE, France, Germany, Italy and EU
If the project is realized, the course between the India and Europe will be cut 40%
It is said that India-Middle East-Europe Economic Corridor, which is supported by US, is being prepared to be an alternative for China's 'Belt and Road Initiative'
RUSSIA
UK
GERMANY
POLAND
FRANCE
KAZAKHSTAN
UZBEKISTAN
GREECE
ISRAEL
JORDAN
IRAN
CHINA
EGYPT
SAUDI ARABIA
UAE
INDIA
September 11, 2023


RUSSIA
Astana
1,000 km
Sources: Petroleum Economist; Kazakhstan Railways; UN; Carec; FT research
Kazakhstan–China pipeline
KAZAKHSTAN
Atyrau
Central Asia–China pipeline
Khorgos
Alashankou
Aktau
Tbilisi
Caspian Sea
Baku
UZBEKISTAN
KYRGYZSTAN
TURKMENISTAN
Trans-Caspian pipeline
West-East pipeline
Central Asia–China pipeline, line D
TAJIKISTAN
Tehran
AFGHANISTAN
Central Asia South Asia power lines (CASA-1000)
CHINA
IRAN
Turkmenistan–Afghanistan–Pakistan–India pipeline (TAPI)
Bandar Abbas
PAKISTAN
INDIA
Chahbahar
Gwadar
Trans Asian railway corridors
Trans Asian railway corridors (planned)
Gas pipeline
Gas pipeline (planned)
Oil pipeline
Oil pipeline (planned)
Power line (planned)

MoE role in Economy is significant and it needs to be recognized that almost all challenges Pakistan faces today stem from its low economic growth impacting every citizen of the country



The last **ninth** element requires pursuit of FDI with Sovereign Fund and restore their confidence in the sector by undertaking 5year plan to reduce circular debt through PSDP, provide stable environment, strengthen institutions and increase competition and productivity. It is not so much about increasing savings or about education or high returns on capital.

Investment requirements to improve the state of T&D infrastructure are quite high and can't be met only through public finance and development funds given State debt levels that has curtailed available fiscal space for investment in the sector and SOEs having high levels of debt due to inefficiencies and power theft (in turn impacting their creditworthiness). Private sector investments are required to complement public finance and development funds, but the private sector needs an enabling environment.

Therefore the above require aggressive structural interventions to ensure development of skills to lead the change in house with a committed leadership team focused on self-reliance as deliverance criteria to be based on MOE's **Imagineering of Energy Reforms into the Next Decade**