

19 - 20 November, 2024

# ENERGY CRISIS

## PROBLEM, IMPACT & SOLUTIONS

A Policy Dialogue



Organised by the:  
**Executive Development Institute**  
of the  
**National School of Public Policy**  
Government of Pakistan - Lahore





# Table of Contents

Rector's Message	i
Executive Summary	ii
Acronyms	iv
<b>Energy Crisis: Challenges and Context</b> Mr. Abid Saeed, retd. Federal Secretary	01
<b>Economic Cost of Crisis</b> Dr. Khaqan Hassan Najeeb, Economist & Mr. Sohail Lashari, Businessman	04
<b>Hydropower Dynamics and the Energy Crisis</b> Mr. Shahid Hameed, Senior Advisor, Hydrology & Water Management, WAPDA	09
<b>Gas Sector Challenges –Circular Debt</b> Mr. Liaqat Nehra, GM Accounts, SNGPL & Mr. Abdul Rasheed Jokhio, DG (Gas), Ministry of Energy, Federal Government	12
<b>Energy Governance: The Interlinkage of the Crisis</b> Dr. Fiaz Chaudhry, Chairman BoD (NTDC) & Dr. Khalid Waleed, SDPI	16
<b>The Climate Cost of Crisis</b> Dr. Naveed Arshad, LUMS Energy Institute & Dr. Abid Qayyum Suleri, Executive Director, SDPI	20
<b>Energy Crisis: In the Backdrop of Devolution of Powers between Centre &amp; Provinces</b> Mr. Ahmad Nazir Warraich, Dean, EDI & Mr. Amjad Hafeez, Civil Servant	24
<b>Circular Debt &amp; IPPs: Financial and Legal Lens</b> Mr. Abid Latif Lodhi, USAID & Mr. Waleed Khalid, Partner, CLM	29
<b>Pictures Gallery</b>	33

## Rector's Message

The National School of Public Policy is the premier national institution for long and short trainings of civil servants as well as executives, academia and social sector professionals in Pakistan. The training methodology of the school as followed by both the Executive Development Institute (EDI) & the Pakistan Administrative Staff College (PASC) aims at fostering an environment of intellectual curiosity amongst participants for analysis and skill enhancement. In addition, through the EDI, NSPP also holds policy dialogues, where experts of the chosen topic come and share their knowledge as well as discussing the issues and way forward related to them. EDI also holds webinars on issues of topical importance. These functions of EDI help it in fulfilling the overarching aim of the NSPP, which is to improve the quality and effectiveness of public policy formulation and its implementation.



This Dialogue was part of the policy series that EDI conducts on issues of current importance. The Energy Crisis Policy Dialogue was deemed necessary as the country faces a severe energy crisis, characterised by circular debt in the energy sector, inefficiencies in power distribution, regulatory challenges, and climate-related issues. The mounting liabilities in the power sector and financial burdens in the gas sector have significantly strained the economy. These challenges have resulted in high energy costs adversely affecting the general public, industrial productivity and financial growth. Addressing these issues through policy reforms, investments in renewable energy, and improving energy efficiency is crucial for stabilising the economy and ensuring a sustainable future.

At EDI, we examine issues from a comprehensive perspective by inviting speakers and experts from Government, Industry, and Academia. The Policy Dialogue was successful in its aim of generating much-needed debate on various issues of energy crisis including electricity and gas circular debt, climate challenges and financial and legal angles of the said topic. The sessions led to vibrant discussions and a rich exchange of ideas for formulating concrete recommendations.

The salient points of this critical discourse have been captured along with recommendations in this Report. The Report will hopefully lead to a better understanding and help in policy formulation by various stakeholders.

**Dr. Ijaz Munir**  
**Rector, NSPP**

## Executive Summary

The Executive Development Institute (EDI) at the National School of Public Policy (NSPP) is a premier public sector institute that organises Policy Dialogues, Trainings, and Webinars on critical issues of topical importance. In keeping with this, EDI hosted a Two-Days' Policy Dialogue on "Energy Crisis: Problem, Impact & Solutions" on 19<sup>th</sup> Nov-20<sup>th</sup> Nov, 2024. This was in consonance with the Government of Pakistan's commitment to addressing the ongoing severe energy crisis which is adversely impacting the businesses and the common man equally. In keeping with the EDI's tradition, this time also it invited prominent experts from various sectors, including government, industry, private sector and academia, to share their insights and recommendations. This ensures a 360° comprehensive view of an issue. The sessions were carefully structured to cover all important aspects of the topic. EDI always structures its Policy Dialogues in such a way that both the initiated and the non-initiated are taken through the Two-Days' workshop in step-by-step manner.



The experts discussed numerous issues and proposed potential solutions. This Report captures the essence of their talks, either in their own words or in a paraphrased form. Among the issues highlighted were the circular debt surpassing 5 trillion rupees, the dependence on non-renewable energy sources, and the fragmented energy governance, resulting in high-cost of gas and electricity. They pointed that these issues have the potential to disrupt daily life, lower productivity, and worsen the economic position. Fluctuating dollar rates and subsidies further strain the economy. The soaring energy costs expose significant weaknesses in planning and demand forecasting, ultimately hampering export competitiveness, reducing productivity, and diminishing investor confidence compared to regional counterparts. Circular debt in the energy sector, encompassing both power and gas, originates from unpaid obligations in the gas supply chain, dependence on imported fuel, and subsidised gas for electricity production. Inefficiencies in distribution companies, billing collections, subsidised RLNG for domestic use, and energy theft further exacerbate the issue. The installed electricity capacity in the southern regions far exceeds that of the northern regions, where the demand is higher. This imbalance necessitates costly power transmission to the north, resulting in significant line losses and incurring billions of rupees in cost annually. Different pricing regimes for imported LNG and local gas add to the inefficiencies. Experts highlight that aligning revenue with consumer prices, timely tariff updates, and rationalising subsidies and incentives for exploration, are essential reforms. Additionally, effective data-driven forecasting, well-planned generation scheduling, and energy-efficient building practices are crucial. There is a pressing need to revamp the energy governance infrastructure to address inefficiencies such as transmission losses, inadequate billing collection processes, and a disjointed regulatory system. Improving these areas will ensure a more efficient and reliable energy sector.

One of the speakers pointed out that the intricate issues surrounding Independent Power Producers (IPPs), capacity payments, and their contractual frameworks require thorough re-examination. Additionally, addressing the role of regulatory bodies like NEPRA and resolving the guarantees provided by the government in these contracts is essential.

Hydropower projects are vital for energy and water needs, supplying electricity and supporting agriculture. An expert noted that with per capita water availability dropping significantly, Pakistan faces severe water stress due to population growth, reservoir sedimentation, and climate impacts like floods and droughts. In addition, over 50% of water resources are transboundary, requiring better management to store surplus water and mitigate shortages. The provisions of Indus Water Treaty and the unpredictable release and stoppage of water further complicate the situation. Pakistan's water storage capacity of 30 days is far below global standards, highlighting the need for more dams to ensure a stable and sufficient water supply. Timely completion is essential to boost storage, hydropower generation, and irrigation.

It was pointed out that the energy and climate crises are interconnected, necessitating accessible, affordable, clean energy solutions. Balancing energy needs with environmental sustainability requires Pakistan to balance energy sources mix and align its policies with global strategies to maintain export competitiveness. Despite contributing less than 1% of global emissions, Pakistan remains highly vulnerable to climate impacts, underlining the need for actionable plans and international financial support.

Understanding the energy crisis within the framework of Pakistan's federal structure and political landscape is vital. One of the speakers highlighted that sometimes issues arise from the division of legislative and administrative powers between the centre and provinces. This division often leads to misaligned priorities, which in turn impacts decision-making and policy implementation. There is a crucial need for cooperative federalism and robust governance to navigate these challenges effectively. It was also pointed out that privatisation and deregulation are required for creating a competitive energy market. Transparency, innovation, and adoption of electric vehicle infrastructure can boost efficiency and sustainability.

The Institute had requested the speakers' to not only highlight the issues but also provide recommendations based on their experience and knowledge. The Report captures these recommendations in a tabular format at the end of each section. These included targeted subsidies, restructuring and privatisation of SOEs, investments in renewable energy projects, timely completion of water reservoirs and implementation of WACOG, evidence-based policymaking, environmentally friendly energy initiatives, integrated planning and cooperative federalism.

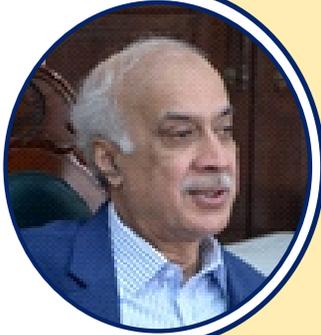
**Mr. Ahmad Nazir Warraich**

**Dean, EDI**

## Acronyms

COP	Conference of Parties
CCI	Council of Common Interests
EVs	Electric Vehicles
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
IMF	International Monetary Fund
IPPs	Independent Power Producers
DISCOs	Distribution Companies
KESC	Karachi Electric Supply Company
LESCO	Lahore Electric Supply Company
LNG	Liquified Natural Gas
NEPRA	National Electric Power Regulatory Authority
CPPA	Central Power Purchasing Authority
H & WM	Hydrology and Water Management
NTDC	National Transmission and Dispatch Company
OGDCL	Oil and Gas Development Company
OGRA	Oil and Gas Regulatory Authority
PESCO	Peshawar Electric Supply Company
PPL	Pakistan Petroleum Limited
PSO	Pakistan State Oil
QESCO	Quetta Electric Supply Company
RLNG	Re-Liquified Natural Gas
SNGPL	Sui Northern Gas Pipelines Limited
SOEs	State Owned Enterprises
SSGPL	Sui Southern Gas Pipelines Limited
USAID	United States Agency for International Development
WACOG	Weighted Average Cost of Gas
WAPDA	Water & Power Development Authority

## Energy Crisis: Challenges and Context



### Mr. Abid Saeed

Mr. Saeed is a Retd. Civil Servant currently serving as the Chief Executive Officer of the Punjab Rural Support Programme (PRSP). He has held significant roles, including Chief Secretary of the Government of Khyber Pakhtunkhwa, Secretary, Petroleum and Natural Resources Division and Member of the Federal Public Service Commission. He holds a Masters in Administrative Sciences from George Washington University, Washington D.C., and a Masters in Economics from Government College, Lahore

Mr. Abid Saeed started off by discussing the complicated nature and far-reaching implications of energy crisis. He discussed critical issues such as circular debt, underpricing, and the fragmented energy governance, while emphasising the urgent need for integrated planning and effective policy-making to ensure long-term energy security and economic stability.

The speaker while talking about the causes mentioned that shortages of fuel, gas, and electricity negatively impact various sectors of society, disrupting daily life and hindering industrial and agricultural productivity. The energy issues are a common topic of discussion due to their widespread and visible implications on everyday activities, such as cooking, heating, and cooling, particularly in urban areas where the majority of the population experiences these challenges.

“  
*The energy crisis affects everyone, not just industries*  
”

The broader implications of energy shortages, such as environmental degradation and rising oil and gas prices were also discussed. Mr. Saeed highlighted how these shortages lead to increased reliance on fossil fuels, contributing to air pollution and climate change. He also pointed out that the volatility in oil and gas prices exacerbates the economic instability, affecting both consumers and industries, and further stressing the need for sustainable energy solutions.

### The Linkage of Energy, Economy and National Security

The speaker emphasised the critical link between energy security, economic security, and national security. The energy security, defined by the availability of sufficient, reliable, affordable, and sustainable energy, is fundamental to economic growth. This economic growth, in turn, provides the necessary resources for national security.

“  
*He highlighted that energy security is crucial for national security*  
”

He said that the historical negligence in addressing energy security in Pakistan & lack of foresight has led to the current energy crisis. He cautioned that

without energy security, economic stability and national security are compromised, as evidenced by the impact of energy shortages on industrial productivity, foreign investment, and overall economic health.

### **Circular Debt in Energy Sector**

Mr. Saeed addressed the significant issue of circular debt in Pakistan's energy sector, highlighting it as a major drain on the national economy, with debt figures reaching over 5 trillion rupees. This enormous debt, added problems which nobody clearly owns or is accountable for, poses a substantial risk to the country's financial stability, preventing the country from moving forward.

He also discussed the political interference and the role of special interest groups in exacerbating the energy crisis. Constituency politics and special interest lobbying have led to inefficient and unsustainable energy policies, further complicating efforts to resolve the sector's financial woes. He highlighted the need for comprehensive reforms to manage circular debt and reduce political meddling to ensure a stable and efficient energy sector.

### **Underpricing and Subsidies**

The speaker underscored the critical issue of underpricing and subsidies in Pakistan's energy sector, which are often justified in the name of poverty alleviation and industrial development. However, these financial measures ultimately lead to significant economic burdens, as someone has to bear the cost eventually.

“  
*Underpricing and subsidies in Pakistan are often justified in the name of poverty alleviation and industrial development*  
”

### **Fragmented Nature of Energy Planning**

In his talk, Mr. Saeed also highlighted the fragmented nature of energy governance in Pakistan, with multiple ministries and divisions involved, often leading to inefficiencies and a lack of cohesive planning. He stressed that holistic solutions require integrated energy planning.

The speaker emphasised the importance of addressing the deficiency of human capital, as the sector struggles with a shortage of technological experts who often seek opportunities abroad. Additionally, he discussed the role of Pakistan's development partners, such as the IMF and World Bank, in shaping energy sector reforms.

### **Need for Effective Policy Making**

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*Population growth in Pakistan has outpaced energy production, leading to significant strain on resources*  
”

While discussing the need for effective policy making, the speaker noted that population growth in Pakistan has outpaced energy production, leading to significant strain on resources. This imbalance contributes to the ongoing energy crisis and exacerbates issues like technological stagnation and economic disruption. He underscored the importance of

effective policy-making and stakeholder collaboration to navigate these challenges and ensure a stable and sustainable energy future for the country.

In conclusion, Mr. Saeed emphasised the importance of balanced energy strategies and the necessity of investing in both traditional and renewable energy sources to ensure long-term energy security and economic stability, improved energy efficiency, and robust policy reforms to address the circular debt problem.

Issues	Recommendations
Rising Circular Debt	Implement comprehensive reforms to manage circular debt, reduce political interference, and ensure accountability.
Energy Underpricing and Subsidies	Reform subsidy structures to balance affordability with economic sustainability and target the most vulnerable populations.
Fragmented Energy Governance	Establish a unified and cohesive energy planning framework with better coordination among ministries and divisions.
Reliance on Fossil Fuels	Shift focus to renewable energy to reduce environmental degradation, air pollution, and economic dependence on volatile oil prices.
Deficiency in Human Capital	Invest in training and retaining skilled energy professionals through incentives

## Economic Cost of Crisis



### Mr. Khaqan Hassan Najeeb

Mr. Najeeb is a Senior Economist and a Public Policy Expert with experience in economic policy-making, fiscal management, regulatory, corporate and investment reforms.

He has served as Advisor to Ministry of Finance and Director General of Implementation & Economic Reforms Unit and in Prime Minister's Economic Advisory Council. He holds a Ph.D. in Economics from University of New South Wales (UNSW), Australia and an MBA from Lahore University of Management Sciences (LUMS)

In his session, Mr. Khaqan Hassan Najeeb shed light on the urgency for a fundamental overhaul of Pakistan's energy sector. He addressed the sector's inefficiencies, including transmission and distribution losses, circular debt, and the fragmented regulatory framework, emphasising the need for comprehensive reforms.

### Poor Energy Infrastructure and Economic Landscape

The Speaker said that Pakistan's economic landscape faces considerable challenges, with the energy sector playing a crucial role in shaping the growth trajectory. Despite energy sector reforms being a core focus of discussions, Pakistan's energy infrastructure remains

*“Stable energy supply with effective subsidy management is a monumental challenge for Pakistan's economy”*

strained due to inefficiencies, regulatory hurdles, and rising costs. In addition to this, technical losses and theft, have compounded the problem. The country faces difficulties in ensuring adequate energy supply and managing subsidies, which place a strain on government finances.

Mr. Najeeb noted that the country's energy policy has failed to address long-term structural issues,

*“Inefficient policies are dragging down Pakistan's competitiveness in international market”*

leading to mounting circular debt, transmission and distribution losses, and increased costs, which have a direct impact on inflation and affordability. These inefficiencies stall productivity, limit investment, and further undermine Pakistan's competitiveness in regional

and global markets, making the country less competitive and adversely affecting its economic landscape.

## Inefficient State-Owned Enterprises'

In the opinion of Mr. Najeeb, the inefficiencies within Pakistan's state-owned enterprises (SOEs), particularly in the energy sector, highlight how the top 23 SOEs, including major power distribution companies like PESCO and QESCO, are burdened with significant financial losses and negative equity. He said that these inefficiencies not only translate into substantial economic losses but also weaken the balance sheets of these companies. And this situation exacerbates Pakistan's investment-to-GDP ratio, a critical factor in its economic development.

*Poor Performance by SOEs exacerbates low investment to GDP ratio*

He added that despite efforts to attract Foreign Direct Investment (FDI) and boost the public and private sectors, the persistent challenges within SOEs affect competition and innovation, leading to economic stagnation and reduced investor confidence. Addressing these structural issues within SOEs, along with better management of public and private sector investments, is essential for driving growth and improving the country's fiscal health.

## Competitive Energy Market

*Privatisation & deregulation are necessary for energy sector reforms*

Furthermore, Mr. Najeeb stressed the importance of creating a competitive and innovative energy market in Pakistan. He advocated for the privatization and deregulation of the energy sector, drawing parallels to the

successful liberalisation of the telecommunications sector. By fostering competition and innovation, the energy sector can become more efficient and responsive to consumer needs. He stressed the establishment of a unified and professional energy ministry to oversee the sector's transformation, ensuring that regulatory and policy frameworks support sustainable growth and development.

In speaker's opinion Pakistan's energy sector faces immense challenges, particularly concerning the privatization and efficiency of state-owned enterprises. He stressed the need for a professional and well-

*In speaker's opinion, a unified and professional energy ministry is the need of the hour*

regulated approach to managing the sector, with a focus on creating competitive markets, addressing HR issues at the leadership level & collaborative effort to rethink and disrupt the current system, which in his view would pave the way for a more resilient and efficient energy sector.

Issues	Recommendations
Transmission and Distribution Losses	Upgrade energy infrastructure to reduce technical losses and implement advanced technology to monitor and prevent energy theft.
Circular Debt and Rising Costs	Adopt transparent and consistent energy pricing mechanisms while reducing subsidies through targeted reforms to address inefficiencies.
Inefficiencies in State-Owned Enterprises (SOEs)	Restructure SOEs through privatization or public-private partnerships, improve management practices, and implement performance-based accountability systems.
Limited Foreign Direct Investment (FDI)	Enhance investor confidence by creating a stable regulatory environment and offering incentives for investment in energy infrastructure.
Fragmented Regulatory Framework	Establish a unified and professional energy ministry to streamline regulatory and policy frameworks, ensuring cohesive decision-making.
Lack of Competition in the Energy Sector	Liberalise the energy market to encourage privatization and foster competition, drawing lessons from successful reforms in other sectors like telecommunication

## Economic Cost of Crisis



### Mr. Sohail Lashari

Mr. Lashari is the Chairman of The Sozo Group of Companies & the former Chairman of Lahore Chamber of Commerce of Industry (LCCI) & Pakistan Industrial & Traders Associations Front (PIAF). He is an accredited mediator and the founding Head of Mediation Center at the LCCI. He has also served as the Chairman of Citizen Police Business Liaison Committee (CPBLC), Lahore. Mr. Lashari holds a BSc. in Mechanical Engineering from University of Engineering and Technology (UET) Lahore

In his talk, Mr. Sohail Lashari stressed on the need to reform Pakistan's energy sector to counter high production costs & energy inefficiencies while modernizing infrastructure and enhancing energy efficiency through comprehensive reforms, stakeholder collaboration, and innovative approaches for a sustainable future and industrial competitiveness.

### The Need for Energy Efficiency

The speaker pointed out the critical role of human energy, particularly political will and determination, in driving economic growth and progress. He said that energy consumption is not just about increasing supply but

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*Economic growth is not about expanding energy use but improving efficiency*  
”

significantly reducing the energy required for industrial or other utilisations. The world's economic growth has been driven not by expanding energy use, but by improving energy efficiency. Mr. Lashari added that Pakistan's energy sector suffers from significant losses, with inefficiencies in energy distribution, and the billing collection system. These inefficiencies contribute to a cycle of stagnation in industrial growth, preventing the optimal utilization of existing energy resources.

### High Cost of Production & Economic Challenge

“  
*High electricity cost directly impacts export competitiveness*  
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Mr. Lashari highlighted the high cost of electricity in Pakistan, which is 14 cent per kilo watt hour (KWH), compared to Bangladesh's 6 cent per KWH and India's 8 cent per KWH. He emphasised that this disparity significantly impacts Pakistan's export competitiveness and industrial growth. Mr. Lashari pointed out that the high cost of production, driven by fuel prices, currency devaluation, and capacity payments, further exacerbates economic challenges.

The speaker stressed the need for modernizing aging infrastructure, including grids and transmission lines, to reduce underutilization and improve efficiency. He underscored the importance of diversifying energy sources and improving local electricity production to enhance the country's economic stability and growth.

## Renewable Energy

The speaker discussed the importance of renewable energy programmes and the potential for growth in this area. He mentioned ongoing projects like the wind and solar corridors and suggested that new housing societies should mandate the installation of solar panels. He also touched on the need for upgrading transportation infrastructure to support electric vehicles and highlighted the rapid advancements in battery technology.

“  
*Solar Panels should be mandatory for new housing societies*  
 ”

In conclusion, the session underscored the urgent need for comprehensive reforms in Pakistan's energy sector to enhance efficiency, reduce costs, and improve competitiveness. Constant innovation and adoption of new technologies are required to stay competitive in the global market. The discussion also highlighted the importance of modernizing infrastructure, diversifying energy sources, and fostering a culture of transparency and accountability. By addressing these challenges, Pakistan can achieve sustainable economic growth and ensure a stable and prosperous future.

Issues	Recommendations
Inefficiencies in Distribution & Billing	Modernise energy distribution systems, implement smart grids and enforce efficient billing and collection mechanisms.
High Electricity Costs	Reduce production costs through fuel diversification, renegotiation of capacity payments, and improving energy sector governance.
Aging Infrastructure	Invest in the modernization of grids, transmission lines, and energy infrastructure to minimize losses and improve efficiency.
Lack of Renewable Energy Adoption	Expand renewable energy programmes, such as wind and solar corridors, and mandate solar panel installation in new housing societies.
Low Export Competitiveness due to Energy Costs	Implement policies to lower industrial electricity tariffs and provide subsidies or incentives for energy-efficient practices.
Absence of Electric Vehicle (EV) Infrastructure	Upgrade transportation infrastructure to support EVs and incentivise advancements in battery and charging technology.

## Hydropower Dynamics and the Energy Crisis



### Mr. Shahid Hameed

Mr. Hameed is the Advisor Hydrology and Water Management (H&WM) at Water & Power Development Authority (WAPDA). He has also served as the General Manager (H&WM) and General Manager Human Resource Management (HRM) at WAPDA. He holds a BSc. and an MSc. in Civil Engineering from the University of Engineering and Technology (UET), Lahore & also a Masters in Infrastructure Planning (MIP) from the University of Stuttgart, Germany. He is a Member of the Board of Governors, Centre of Excellence in Water Resources Engineering, UET, Lahore

Mr. Shahid Hameed began his talk by highlighting the critical importance of hydropower projects for national grid distribution and economic stability. By highlighting the example of the Tarbela Dam, which has supplied over 406 million acre-feet of water for agriculture and generated more than 600 billion units of electricity, he underscored the vital role of water storage projects in generating low-cost electricity as compared to other energy projects for the nation's growing energy demands.

### Water Management Challenges

Emphasising water and energy security as vital for national security, he said that more than 50% of Pakistan's water resources are transboundary e.g. Indus, Jhelum, and Chenab Rivers, as well as the Kabul River from Afghanistan.

“  
*More than 50 % of water resources are transboundary which makes them important with regard to overall national security*  
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“  
*Per capita water availability in Pakistan has been reduced from 5000 cubic meters in 1951 to less than 1000 cubic meters today*  
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Drawing on historical data, the speaker cited the decline in per capita water availability in Pakistan, from over 5,000 cubic meters in 1951 to less than 1,000 cubic meters today. This decline, coupled with an exponentially increasing population, places Pakistan amongst the most water-stressed nations in the world.

Mr. Hameed pointed out that despite having allocated 117 million acre-feet of water among provinces, sedimentation in reservoirs has reduced the actual transferable amount to about 100 million acre-feet, with the excess often flowing into the sea. He added that there is a stark variability in annual water availability, which can range from 99 million acre-feet in dry years to 183 million acre-feet in wet years.

Despite contributing minimally to global greenhouse gas emissions, Pakistan bears significant impacts from climate change, including floods and droughts. The speaker highlighted the urgent need for effective water management strategies, such as developing reservoirs to store surplus water for times of scarcity, to ensure sustainable water supply and mitigate climate risks.

“  
*Out of 117 million acre-feet, 17 million acre-feet water is wasted due to sedimentation*  
”

### Need for a Comprehensive Water Management Strategy

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*Both large and small dams are necessary to meet local and national requirements*  
”

Mr. Hameed further elaborated on the need for a comprehensive water management strategy that includes building both large and small dams to meet local and national needs. While small dams can address localized water requirements, larger dams are essential for broader water security. He cited Pakistan's current capacity to

store only 30 days' worth of water, compared to significantly higher storage capacities in countries like India and the US, underscoring the urgent need for more reservoirs.

### WAPDA's Role in Water Security

The Speaker emphasised the critical need for timely completion of key water projects to address Pakistan's pressing water needs.

“  
*Timely completion of water projects is critical for Pakistan's pressing water needs*  
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Mr. Hameed elaborated on the comprehensive strategy WAPDA has developed to enhance Pakistan's water and energy security through projects like Basha Dam and Dasu Dam, which, once completed, will significantly increase Pakistan's water storage and hydropower generation capacity. These projects will also support the irrigation of arid regions such as Thar and Punjab, promoting agricultural development and ensuring water and food security. He also underscored the strategic importance of projects like Bara & Kalabagh Dam, which are vital for ensuring long-term water and energy security.

He concluded by highlighting WAPDA's strategic approach to managing large-scale hydropower and water resource projects amidst financial challenges. To overcome this, WAPDA adopted a strategy of dividing projects into parts: land acquisition and resettlement, dam construction, and hydropower station development. This phased approach has allowed for more manageable financing solutions.

Issues	Recommendations
Decline in Per Capita Water Availability	Invest in large and small dams to increase water storage capacity and improve water distribution efficiency.
Sedimentation Reducing Water Transferability	Regularly dredge reservoirs to mitigate sedimentation and restore their full capacity for water storage and management.
Transboundary Water Dependence	Strengthen regional water-sharing agreements and implement policies for equitable and efficient use of shared resources.
Impact of Climate Change	Develop adaptive water management strategies, including flood control measures and reservoirs for drought resilience.
Limited Water Storage Capacity (30 Days)	Expedite the construction of large-scale reservoirs like Basha and Dasu Dams to enhance storage capacity and ensure long-term water security.
Financial Challenges in Large-Scale Projects	Adopt phased project management strategies and seek diversified funding sources, including public-private partnerships and international financial institutions.

## Gas Sector Challenges – Circular Debt



### Mr. Liaqat Nehra

Mr. Nehra is the General Manager (Finance) at Sui Northern Gas Pipelines Ltd. (SNGPL). He has a vast experience in the gas sector. In his 25 years of professional experience, he has worked in various roles including Finance, Billing, Regulatory Affairs, Gas Pricing, and Contract Drafting and Negotiation within the gas sector. He holds a Master's degree in Economics and a Master's degree in Commercial Law. Additionally, he is a Fellow of the Institute of Cost and Management Accountants of Pakistan

In his talk, Mr. Liaqat Nehra discussed the circular debt of the gas sector. While explaining the issues and challenges in the gas sector governance, he emphasised the need for a comprehensive approach, including better pricing strategies, targeted subsidies, and legislative changes.

### Circular Debt

The speaker said that circular debt in Pakistan's gas sector is due to recurring cycle of unpaid obligations among different entities in the energy supply chain, starting from upstream companies like PPL, OGDCL, and Mari Petroleum, down to gas utility companies such as SSGPL and SNGPL. Mr. Nehra said that various factors contribute to the accumulation of circular debt, including government policies, the provision of unfunded subsidies, and the diversion of costly RLNG to the domestic sector at highly subsidised prices. These practices, coupled with the spillover of circular debt from the power sector, exacerbate liquidity shortages, ultimately affecting the entire supply chain and the consumers.

*“Unfunded subsidies and costly RLNG are major causes of gas sector circular debt”*

### Need for a Comprehensive Approach

*“Timely determination and notification of tariffs and rationalising subsidies are essential to solve circular debt”*

In his opinion, addressing the circular debt issue requires a comprehensive approach, including better alignment of revenue requirements and consumer prices, timely determination and notification of tariffs by regulatory authorities, and rationalising subsidies to reflect actual costs. He also mentioned the recent legislative changes aimed at ensuring that prescribed price align with sale price, thus minimizing the gap that leads to circular debt. This strategic approach is crucial for maintaining the financial health and viability of the gas sector, ensuring a stable supply chain, and preventing the negative impacts on gas consumers.

## Expansion Based on Political Designs

While discussing the extensive challenges in the gas sector, he highlighted the reliance on both imported LNG and indigenous gas, each governed by different pricing regimes. The tariffs for domestic consumers are heavily subsidised, leading to significant circular debt. The speaker pointed out that while gasification of villages was intended as a solution for revenue requirements but it has contributed to inefficiencies and increased costs due to political motivations rather than practical planning. The expansion of networks for political gains has led to high maintenance costs and losses, further burdening the sector.

## Closure of Captive Power Plants and Legal Challenges

The speaker also underscored the legal implications related to gas tariffs and the closure of captive power plants, as demanded by the IMF. He highlighted various petitions have been filed against legislative changes, arguing that it conflicts with Article 158 of the Constitution, which gives priority to gas-producing provinces. He explained the complexities of implementing a weighted average cost of gas (WACOG) across different regions, noting that this would require significant legislative reforms and could lead to increased costs for consumers in gas-producing provinces.

*In the presence of article 158, Implementing WACOG is a major challenge*

In conclusion, Mr. Nehra advocated for a comprehensive approach to address circular debt, including better pricing strategies, targeted subsidies, and potential legislative changes to create a more efficient and sustainable energy sector.

Issues	Recommendations
Circular Debt in the Gas Sector	Alignment of consumer prices with revenue requirements, enforcement timely tariff notifications, and rationalization of subsidies to reflect actual costs.
Unfunded Subsidies	Rationalisation of subsidies and adoption cost-reflective pricing mechanisms.
Politically Motivated Gas Expansion	Planning of gas network expansions based on technical and economic feasibility
Legal Challenges to Gas Reforms	Resolve constitutional conflicts through stakeholder consultation, and implement legislative changes to enable WACOG across regions.
Impact of Captive Power Plant Closures	Development of alternative energy policies for industries reliant on captive power plants, ensuring a smooth transition to centralised energy systems.

## Gas Sector Challenges – Circular Debt



### Mr. Abdul Rasheed Jokhio

Mr. Jokhio is currently serving as the Director General (Gas) at the Ministry of Energy (Petroleum Division) in Pakistan. He holds a Master's degree in Management and Economics of Energy & the Environment from ENI Corporate University in Italy, and a Bachelor's in Petroleum & Natural Gas Engineering from Mehran University, Jamshoro. His expertise spans policy formulation, gas allocation, and pricing, and he has played a pivotal role in various capacities within the Ministry of Energy

In his session, Mr. Rasheed Jokhio underscored the importance of Pakistan's gas sector, highlighting its role in the energy mix and the pressing need for better regulatory practices. He shed light on the potential and challenges of natural gas reserves, the impact of pricing policies, and the necessity for comprehensive energy planning.

### Gas Sector Landscape in Pakistan

The speaker provided an overview of Pakistan's gas sector, emphasising its critical role in the country's energy mix, where natural gas accounts for 40% of the total energy supply.

Mr. Jokhio also discussed the potential for natural gas reserves in Pakistan, citing a USAID study that estimated the country has around 66 trillion cubic feet of potential gas reserves. However, the current recoverable reserves stand at 19 trillion cubic feet, sufficient for about 10 years.

*He cited a USAID study which estimates Pakistan's gas reserves around 66 trillion cubic feet*

He highlighted that the major consumers of natural gas are the power sector (30%) and domestic users, followed by fertilizer and industrial sectors. He noted that Pakistan's gas production peaked in 2012, and since then, it has been in decline due to several factors, including policy inconsistencies and non-compliance with agreements by major oil companies. This decline in indigenous gas production has increased the country's reliance on imported LNG, which poses financial challenges due to the outflow of foreign exchange.

### The Regulatory Challenges

According to speaker, consumer pricing, heavily influenced by federal government subsidies, creates inefficiencies. Lower tariffs for domestic and fertilizer sectors are offset by higher tariffs for other consumers, distorting market dynamics and impacting competitiveness.

“

*The mismatch between OGRA’s determinations & actual costs, leads to financial inefficiencies and accumulating circular debt*

”

Mr. Jokhio highlighted the complexities in the gas sector’s pricing and regulatory framework, managing both indigenous and imported gas supplies. He explained that OGRA’s determinations often do not align with actual costs, leading to financial inefficiencies and accumulating circular debt. This debt arises from delayed or adjusted price revisions, preventing utilities from recovering full revenue. He underscored the monthly LNG pricing versus biannual natural gas pricing, noting that this misalignment exacerbates financial strains on utility companies, hindering their sustainability and infrastructure investment. Additionally, he highlighted the sector’s challenges, such as the lack of integrated energy planning, insufficient investment, and inadequate gas storage facilities.

### Comprehensive Approach for Upgrading Production

The speaker stressed the need for extensive exploration and better incentives to attract major oil and gas companies back to Pakistan.

In conclusion, Mr. Jokhio underscored the need for an integrated approach to energy pricing and regulatory practices. By ensuring timely and accurate price adjustments and improving storage capabilities, Pakistan can better manage its gas resources and reduce financial burdens.

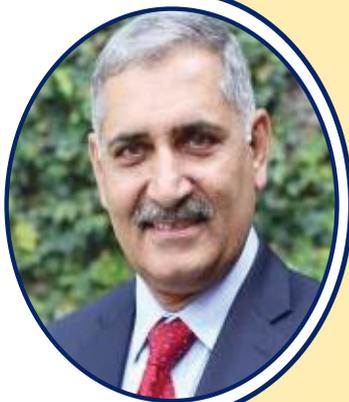
“

*The speaker underscored the need for an integrated approach to energy pricing and regulatory practices*

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Issues	Recommendations
Declining Indigenous Gas Production	Encourage exploration by offering better incentives to oil and gas companies, streamline policies, and ensure compliance with agreements.
Over-Reliance on Imported LNG	Develop domestic gas reserves through investments in exploration, improve gas storage capacity, and secure long-term LNG contracts.
Regulatory and Pricing Inefficiencies	Align OGRA determinations with actual costs, streamline tariff revision processes, and reduce discrepancies through integrated pricing frameworks.
Misaligned LNG and Natural Gas Pricing	Ensuring LNG and natural gas pricing timelines to avoid financial strain on utility companies and ensure market competitiveness.
Subsidy-Driven Market Distortions	Rationalize subsidies by targeting vulnerable sectors, and implement cost-reflective pricing to ensure sustainability and competitiveness.
Lack of Integrated Energy Planning	Develop a comprehensive, long-term energy plan incorporating exploration, pricing, infrastructure upgrades, and storage solutions.

## Energy Governance: The Interlinkage of the Crisis



### Dr. Fiaz Ahmed Chaudhry

Dr. Chaudhry is the Werner-Von-Siemens Chair and Professor of Practice at the Syed Babar Ali School of Science and Engineering at Lahore University of Management Sciences (LUMS). He is the founding Director of the LUMS Energy Institute and a former Managing Director of the National Transmission & Despatch Company (NTDC). Currently, he serves as the Chairman of the Board of Governors of NTDC. Dr. Chaudhry holds a Master's degree in Electrical Engineering from the Illinois Institute of Technology and a Ph.D in Electrical Engineering from Purdue University, USA

In his session, Dr. Chaudhry shed light on the numerous challenges confronting Pakistan's energy sector. He underscored the critical need for integrated system planning and robust institutional frameworks to secure affordable, sustainable, and reliable energy for the nation.

### Rising Electricity Prices and Institutional Planning

The speaker said that in recent years, Pakistan has faced significant challenges in managing its power system, with electricity per unit prices soaring from under 10 rupees to nearly six times their previous levels. This stark increase has raised concerns about the nation's energy governance and the underlying causes of such price hikes. Despite the efforts to mitigate the crisis, weaknesses in institutional planning and leadership have led to fragmented approaches and inconsistent policies.

“  
*In recent years, the per unit electricity price has increased sixfold*  
”

He said that Pakistan's energy demand is predominantly concentrated in the northern regions, with 81% of the country's total demand originating from areas north of country. In contrast, Sindh and Balochistan, including KESC, account for only 19% of the demand. This geographical disparity

“  
*81 % of country's electricity demands generates from north which necessitates careful energy planning*  
”

necessitates careful planning in the placement of power plants. For instance, while nuclear and coal-based power plants are situated near Karachi, they require significant energy transportation, leading to increased losses and potential collapses due to the high demand in Punjab and Khyber Pakhtunkhwa (KPK).

## Load Management and Sustainability

Dr. Chaudhry informed that the total installed capacity in Pakistan is around 42,000 MW, but the supplied peak last year was 25,516 MW, despite the actual demand being over 31,000 MW. This discrepancy is exacerbated by factors such as load shedding, particularly due to energy theft, which remains a significant issue. He added that the peak demand often occurs at midnight, driven largely by cooling loads from air conditioning systems. Addressing these challenges requires a focus on reliable, affordable, and sustainable energy planning, with an emphasis on demand forecasting and optimal generation scheduling.

In conclusion, the speaker highlighted the critical role that demand-side management plays in addressing Pakistan's energy challenges. He emphasised the importance of efficient building practices and retrofitting existing structures to reduce dependency on air conditioning and consequently, the strain on the power system. By focusing on demand control rather than merely increasing supply, Pakistan can better manage its energy resources and mitigate the ongoing issues of circular debt and system inefficiency.

*“The demand side electricity management is critical to solve energy challenge”*

Issues	Recommendations
Rising Electricity Prices	Strengthen governance and regulatory frameworks to ensure cost-effective energy pricing and reduce inefficiencies in the energy supply chain.
Weak Institutional Planning and Leadership	Develop an integrated energy system plan and invest in capacity-building initiatives to foster leadership in energy governance.
Geographical Disparity in Energy Demand	Optimise power plant placement based on regional demand distribution and enhance the energy transportation infrastructure to reduce losses.
Energy Theft and Load Shedding	Implement stricter monitoring and enforcement measures to combat energy theft and introduce advanced metering infrastructure for better load management.
Mismatch Between Installed Capacity and Peak Supply	Improve demand forecasting techniques and generation scheduling to align energy production with actual demand.
Dependency on Cooling Loads and High Peak Demand	Promote energy-efficient building practices, retrofitting, and awareness campaigns to reduce reliance on air conditioning and manage demand side energy use.

## Energy Governance: The Interlinkage of the Crisis



### Dr. Khalid Waleed

Dr. Waleed is a Research Fellow at the Sustainable Development Policy Institute (SDPI) in Islamabad. He holds a PhD in Economics from the University of Gujrat. With over a decade of experience in Pakistan's Energy Sector, his expertise encompasses Energy Markets, Energy Transition, Sustainable Future Resources, Carbon Markets, and Long-Term Macroeconomic Sustainability. He has authored a book and numerous research papers

In his talk, Dr. Khalid Waleed discussed the complex energy crisis affecting our economy and environment. Using clear facts and figures, he highlighted the importance of long-term policies and sustainable practices to reduce carbon emissions and improve Pakistan's energy sector.

### Unsustainable Energy Practices

He informed that Pakistan is the fifth most climate-vulnerable country, having lost billions of dollars and thousands of lives due to climate-related disasters. Specifically, the 2022 floods affected 30 million people and caused a \$30 billion loss to Pakistan's financial situation. He mentioned that Pakistan's total primary energy consumption is 88.4 million tons of oil equivalent, with 41.4% coming from firewood, 21% from natural gas, and 19.3% from oil, highlighting the need for a shift towards renewable energy investments to achieve a sustainable future.

“

*A shift toward renewable energy is required for sustainable future*

”

While discussing the projections which indicate that by 2030, primary energy consumption will exceed 100 million tons of oil equivalent, Dr. Waleed pointed out that despite these vulnerabilities, Pakistan continues to invest in unsustainable energy practices like fossil fuels, which contradicts its stance on climate vulnerability and efforts to secure climate finance.

### Need for Integrated Policy Planning

He also pointed out the inefficiencies and imbalances in sectoral energy consumption. The transportation sector consumes 72% of oil, while 43% of households rely on natural gas. In his opinion, the industrial sector, which should be a priority, lags behind in energy consumption.

“

*Pakistan's industry sector lags behind in energy consumption*

”

The speaker discussed the impact of macroeconomic factors on energy costs, using the example of the Sahiwal coal power plant. The capacity charges for this plant have increased significantly due to factors like the exchange rate volatility, and other macroeconomic indicators. He underscored the importance of aligning economic growth with energy sector planning to avoid

such cost escalations and ensure long-term affordability and sustainability in Pakistan's energy sector.

In conclusion, the speaker stressed the need for integrated economic planning, where industrial decisions lead the way, and emphasised the importance of renewable energy investments.

“  
*He stressed the need for integrated energy planning prioritising industry*  
 ”

Issues	Recommendations
Climate Vulnerability	Leverage international climate finance to invest in renewable energy projects.
Unsustainable Energy Practices	Transition from fossil fuels to renewable sources like solar, wind, and hydropower.
Sectoral Energy Imbalances	Prioritise energy allocation to the industrial sector to drive economic growth.
Macroeconomic Pressures	Align energy planning with macroeconomic stability to mitigate cost escalations.

## The Climate Cost of Crisis



### Dr. Naveed Arshad

Dr. Arshad is an Associate Professor and Director of the National Center in Big Data and Cloud Computing (NCBC) at Lahore University of Management Sciences. He also co-directs the (LUMS) Energy Institute and founded the Energy Informatics Group (EIG). His research spans energy and climate informatics, demand forecasting, and renewable energy integration. He has consulted for numerous national and international agencies, including USAID and the World Bank Group, and holds an MS and PhD in Computer Science from the University of Colorado at Boulder

In his talk, Dr. Naveed Arshad emphasised the need for innovative, out-of-the-box solutions to tackle Pakistan's energy challenges. He highlighted the potential of electrifying transportation, adopting renewable technologies, and leveraging data-driven insights for evidence-based policymaking.

### Out of Box Solutions

Dr. Arshad pointed out the persistent focus on discussing problems within the power sector rather than seeking out solutions. He emphasised the need for out-of-the-box thinking and innovative approaches, referencing the work done at the National Center in Big Data and Cloud

Computing including data custodianship, collection, and analysis in driving forward Pakistan's energy initiatives.

“

*Improving grid efficiency, reducing unutilized capacity, and adopting renewable energy sources are crucial for solving energy crisis*

”

According to the speaker, the circular debt of power sector stands at \$8.2 billion. And improving grid efficiency, reducing unutilized capacity, and adopting renewable energy sources are crucial steps towards solving this problem. By focusing on these areas, Pakistan could enhance its energy security, reduce emissions, and attract significant climate finance, ultimately leading to better air quality and economic growth.

### E-Transport

He said that the transportation sector is a major contributor to air pollution in Pakistan, particularly through emissions like PM2.5 and PM10. He discussed the potential for significant improvements through the electrification of transportation. According to his calculations, transitioning to electric vehicles could greatly reduce Pakistan's dependency on oil imports and

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*According to speaker, transitioning to electric vehicles could greatly reduce Pakistan's dependency on oil imports*

”

result in substantial cost savings. Moreover, the efficiency gains from electric vehicles compared to traditional fuel vehicles could lead to major economic benefits.

### Evidence Based Policy Making

He also talked about the crucial need for evidence-based policymaking and sector modernisation, advocating for the adoption of renewable technologies. The interconnectedness of various stakeholders including NTDC, distribution companies and government entities, would be a practical approach to address the power sector's challenges.

“  
*The interconnectedness of various stakeholders including NTDC, distribution companies and government entities is necessary*  
 ”

The speaker emphasised that Pakistan is a land of tremendous opportunities, particularly in the energy sector. He highlighted the potential for electrification, renewable energy, and innovative technologies to transform the country’s energy landscape. He concluded by thanking the audience, encouraging them to seize these opportunities and contribute to Pakistan’s sustainable future.

Issues	Recommendations
Persistent Focus on Problems Over Solutions	Encourage innovative, out-of-the-box thinking by fostering collaboration between research institutions and policymakers.
High Circular Debt in the Power Sector	Improve grid efficiency, reduce unutilized capacity, and increase the adoption of renewable energy sources.
Transportation Sector's Contribution to Pollution	Promote electrification of the transportation sector to reduce emissions and dependency on oil imports
Lack of Evidence-Based Policymaking	Leverage data-driven insights and collaboration among stakeholders like NTDC, distribution companies, and government.
Lack of EVs Infrastructure	Investment on EVs infrastructure for environment friendly energy practices

## The Climate Cost of Crisis



### Dr. Abid Qayyum Suleri

Dr. Suleri is the Executive Director of Sustainable Development Policy Institute (SDPI). He is a leading expert on sustainable development, political economy of public policy, food security, and climate change. He is currently a member of the International Advisory Committee of COP29 (an advisory body to the COP 29 Presidency), the Board of Directors of Benazir Income Support Programme (BISP), and the Board of Governors of National School of Public Policy (NSPP). He holds a PhD in Food Security from the University of Greenwich, UK

The speaker emphasised the interconnected nature of the energy and climate crises, highlighting the importance of accessibility and clean energy.

### Balancing Energy Needs

He discussed the implications of the upcoming carbon border adjustment mechanisms and the need for Pakistan to adapt its energy policies to maintain export competitiveness. The speaker pointed out the challenges of balancing energy needs with environmental sustainability, stressing the importance of switching to cleaner energy sources to meet future energy mix targets. He also noted the policy conundrum faced by decision-makers in achieving these goals and the impact of global policies on Pakistan's energy and climate strategy.

“  
*The speaker stressed the importance of switching to cleaner energy sources to meet future energy mix targets*  
”

### Sustainable Energy Goals

In the context of the COP29 negotiations, the focus has been on finance and energy. Dr. Suleri informed that 38% of the discussion revolved around energy transitions and shifting away from fossil fuels. He mentioned the experiences of countries like South Africa and Indonesia, which have negotiated deals for financial compensation and technological support to transition from coal power to green energy. This underscores the complexity and necessity of financial backing and technological advancement in achieving sustainable energy goals.

“  
*Dr. Suleri informed that in COP29 38% of the discussion revolved around energy transitions and shifting away from fossil fuels*  
”

### Climate Change and Energy Crisis

The speaker apprised that Pakistan is one of the least polluters globally, with emissions contributing less than 1%. Despite this, the country is highly vulnerable to climate impacts. He stressed the importance of understanding the broader picture of energy crises and climate impacts,

advocating for tangible and doable project proposals to secure financial relief and support from multilateral partners.

Dr. Suleri warned against expecting blank checks and highlighted the need for robust, actionable plans to address the intertwined challenges of climate change and energy crises.

In his opinion, climate negotiations are a complex process with no simple "good cop, bad cop" scenarios. Instead, these discussions often involve agreeing to disagree in an amicable manner and achieving consensus itself is a significant milestone.

“  
*Climate negotiations are a complex process with no simple "good cop, bad cop" scenarios*  
 ”

In conclusion, he mentioned the slow but crucial progress made in forums like COP 29 and the potential for practical, tangible results through continued dialogue and cooperation among nations.

Issues	Recommendations
Energy Needs not aligned with Environmental Sustainability	Adopt policies prioritising clean energy sources, increasing investment in renewable energy infrastructure, and implementing energy efficiency measures.
Carbon Border Adjustment Mechanisms	Pakistan should align its energy policies with global standards and explore technological innovations to remain competitive in the export market.
Less Financial Support for Energy Transitions	Seek financial compensation and technological support from international partners, focusing on the transition from coal to green energy.
Vulnerability of Pakistan to Climate Impacts	Develop actionable climate adaptation plans and engage in multilateral forums to secure financial relief for climate-resilient projects.

## Energy Crisis: In the Backdrop of Devolution of Powers between Centre and Provinces



### Mr. Ahmad Nazir Warraich

Mr. Warraich brings together a unique combination of experience of public sector, civil society, academia and the private sector. He is a former civil servant who after resignation has been continuously working in the legal field: as a practicing lawyer, a law teacher, a legal consultant and researcher amongst other things. He brings substantial practical and academic knowledge and experience to his current position as Dean of the Executive Development Institute (EDI) at the National School of Public Policy (NSPP), Lahore. He is a recipient of two prestige scholarships; Britannia Chevening Scholarship Award as well as the Hubert Humphrey Fellowship (Fullbright) Award. He has been educated in Pakistan, England, USA as well as doing short courses from France, IMF-WB Headquarter, Washington, DC and University of California Los Angeles. His career also includes heading various legal departments. In addition, he has many publications to his credit. In his tenure as Dean, he managed to make the Executive Development Institute a leading national level public sector institute in its area of work

In his talk, Mr. Ahmad Nazir Warraich discussed the political dynamics of Pakistan's federal structure and its potential impact on the energy crisis. To set the backdrop, he explained the division of powers, both legislative and administrative, between the centre and provinces as given in the constitution of Pakistan. He explained that the smooth functioning of any issue that transcends the federal or provincial jurisdiction requires mutual cooperation. He said that in a thriving and robust democracy different political parties may be in power in centre and provinces, and this may cause some divergence of views and consequent delay in policy formulation and implementation. In this regard, he highlighted the importance of cooperative federalism. He said that in order to understand how this is operationalised, we need to look at the division of powers between centre and provinces.

“  
*The smooth functioning of issues that transcend federal or provincial jurisdiction requires mutual cooperation*  
”

### Division of Powers between Centre and Provinces

The speaker discussed the division of legislative and administrative functions between the centre and the provinces. In this regard, he mentioned the Federal Legislative List in the Schedule IV of the Constitution. This Schedule is further divided into two parts. Part I contains 59 Entries and part II contains 18 Entries. Subjects related to Energy are mentioned in both parts e.g. Nuclear Energy is a federal subject through Part I while electricity and natural gas are mentioned in Part II. He explained that under the Constitution there is a Council of Common Interest. The role of the Council of Common Interest (CCI) under Articles 153 and 154 is important to solve any dispute between the federating units. In addition, “The Council shall formulate and regulate policies in

“

*The speaker stressed more effective use of the forum of CCI for friction less decision making*

”

relation to matters in Part II of Federal Legislative List”. The Prime Minister and all Chief Ministers are members of CCI and three members from the federal government are to be nominated by the Prime Minister. Under the law, the Prime Minister is required to call CCI’s meeting on any province’s request and if the federal government is dissatisfied with the decision of CCI on any matter it can take it to a joint session of the parliament whose decision in this behalf would be final. This shows that the Constitution envisages that problems can arise in the areas of mutual interest of the centre and provinces, such as energy related issues. Therefore, it has provided this forum for their resolution. But in certain cases, friction still remains and can arise in future as well.

Elaborating it, the speaker said that due to this sometimes contesting nature of Pakistani federalism at times, the interests of the federation and provinces can clash, including on issues such as energy. These challenges therefore have the potential to affect the national energy landscape and economic stability. Despite the 18th Amendment and the devolution of powers, there remain areas where a cooperative approach is necessary for smooth policy implementation.

“

*Due to the sometimes contesting nature of Pakistani Federalism, the interests of federation and provinces at times, clash*

”

The speaker said that one example of this was discussed by Mr. Liaqat Nehra (GM Accounts, SNGPL) with regard to some challenges based on divergent interpretations of constitutional provisions regarding the implementation of Weighted Average Cost of Gas (WACOG), which highlight the need for cooperative federalism.

“

*Despite 18<sup>th</sup> amendment, there still remain areas where cooperative approach is necessary*

”

In conclusion, he stressed that adopting a collaborative federal strategy, as opposed to an adversarial one, could result in more favorable policy outcomes and provide more efficient solutions to Pakistan's energy challenges.

Issues	Recommendations
<b>Conflicting Interests in Federal Structure</b>	Promotion of cooperative federalism to ensure smooth functioning and resolution of jurisdictional issues.
<b>Differing Positions of Federating units on an Issue</b>	Strengthen the role of the Council of Common Interest (CCI) for effective dispute resolution and policy formulation.
<b>Lack of Regular Meetings of the Council of Common Interests (CCI)</b>	Holding of regular meetings of the Council of Common Interests.

## Energy Crisis: In the Backdrop of Devolution of Powers between Centre and Provinces



### Mr. Amjad Hafeez

Mr. Hafeez is a civil servant with over twenty years of professional experience. He has held key roles in various ministries, including Water and Power, Foreign Affairs, and Industries and Production. Currently, he leads the Special Monitoring Unit of the Chief Minister of Punjab, focusing on policy reforms and strategic initiatives. Amjad holds an MPhil in Sustainability Studies from University of Cambridge, UK and a Bachelor's in Electrical Engineering from University of Engineering & Technology, Lahore

In his talk, Mr Amjad Hafeez discussed the evolution of Pakistan's electricity policy from focusing on availability to integrating affordability and sustainability. He also highlighted the challenges of operational inefficiencies and stressed the importance of efficient and sustainable energy practices.

### Real-Time Demand and Supply Management

The speakers underscored the need for electricity supply and demand to be balanced in real time. This is critical because deviations can cause equipment damage, reduce system efficiency, and lead to complaints from end consumers about issues like low voltage. Ensuring stable grid frequency at 50 hertz is essential, as any significant variation can cause brownouts or blackouts. Mr Hafeez highlighted that maintaining grid stability, managing peak demand, and addressing seasonal variations remain key operational challenges.

“

*The speaker underscored the need of electricity supply and demand to be balanced in real-time*

”

### Balanced Electricity Policy

He said that historically, our electricity policy has focused on ensuring availability, which was first addressed in the 1994 IPP policy. Later, affordability and sustainability, including financial and green energy aspects, were integrated into the policy framework. The most recent policy pillars include availability, affordability, and sustainability. It is crucial to maintain a balance across these pillars to achieve sustainable development, reduce costs, and transition towards a more efficient and green energy system.

“

*Availability, Affordability, and Sustainability are the most recent pillars of energy policy framework*

”

Mr. Hafeez informed that the installed electricity generation capacity in Pakistan is around 42,628 megawatts, with 39,666 megawatts integrated into the NTDC system and 2,962 megawatts in the

K-Electric system. The public sector holds around 16,000 megawatts, while the private sector, primarily through Independent Power Producers (IPPs), contributes about 25,700 megawatts, making up nearly 60% of the installed capacity.

The speaker added that Load shedding is distributed across the country to manage the demand-supply balance, but inefficient appliances and industrial demand pose challenges. Despite significant installed capacity, seasonal variations and operational inefficiencies reduce the actual dependable capacity.

*“ Inefficient appliances and industrial demand pose challenges for demand-supply balance ”*

In conclusion, he said that the electricity tariff system reflects federalism principles, accounting for technical and distribution losses, with efforts ongoing to improve recovery and reduce losses through measures like smart metering.

Issues	Recommendations
Operational Inefficiencies	Implement efficient energy practices, such as smart metering and upgrading grid infrastructure, to improve system reliability.
Non-Balancing of Electricity Supply and Demand	Develop real time monitoring and demand side management systems to ensure grid stability and reduce peak demand impacts.
Dependable vs. Installed Capacity	Address seasonal variations by diversifying energy sources and optimizing the use of existing installed capacity.
Inefficient Appliances and Industrial Demand	Promote energy efficient appliances and incentivize industrial consumers to adopt energy saving technologies.

## Circular Debt & IPPs: Financial and Legal Lens



### Mr. Abid Latif Lodhi

Mr. Lodhi has over 34 years of professional experience in the energy sector. He has held key leadership roles including Chief Executive Officer of Central Power Purchasing Authority (CPPA), Chief Financial Officer of Lahore Electric Supply Company (LESCO) and Senior Advisor Energy Sector at World Bank. Currently, he is the Director of Power Market Operation at USAID PSIA. He holds a Management Accountant Qualification (FCMA) and a Bachelor's in Commerce from the University of the Punjab, Lahore

In his talk, Mr. Abid Lodhi discussed the importance of balancing electricity supply and demand in real-time to ensure standard protocols and stable operations. While discussing the economic energy equation to ensure affordability, sustainability and security, he addressed the impact of these policies on the economy and underscored the need for efficient energy practices.

### Real-Time Demand and Supply

In his talk, Mr. Abid Lodhi emphasised the critical importance of real-time matching of electricity supply and demand to prevent shortages or surpluses within the power system and the need for integrated investment strategies to ensure that both transmission and distribution networks can meet demand. He stressed the necessity of an affordable and secure supply, coupled with sustainable and environmentally friendly practices aligned with the national electricity policy.

“  
*The speaker emphasised the critical importance of real-time matching of electricity demand and supply*  
”

### Regional Imbalance of Electricity Generation and Demand

In his talk, Mr. Lodhi detailed Pakistan's electricity generation capacity at 44,052 MW, with peak demands of 29,000 MW in summer and 12,000 MW in winter. He noted transmission constraints as challenges to efficient energy supply. According to his data, the southern region's summer demand is 7,627 MW, while its generation capacity is 13,414 MW. Conversely, the central region faces a peak summer demand of 17,182 MW against a capacity of around 16,411 MW. This imbalance and the absence of rotational stability affect smooth electricity transmission. According to his opinion, resolving transmission constraints could save Pakistan 20 billion rupees.

“  
*According to speaker, resolving transmission constraints could save Pakistan 20 billion rupees*  
”

## Lack of Integrated Approach

He also mentioned that prior to 2024, a lack of integrated planning led to generation projects by federal and provincial governments without considering load and generation factors. Regional/provincial priorities were not aligned with renewable potential, and entities neglected the importance of the transmission network. He underscored the role of NEPRA and DISCOs in transmission and dispatch, stating that from FY17 to FY24, the impact of losses was 276 billion rupees, while the impact of under-recovery was 315 billion rupees.

*Prior to 2024, there was a lack of integrated energy planning*

In his session, Mr Abid Lodhi emphasised the need for integrated planning, evidence-based policymaking and investment in the power sector to address transmission constraints and ensure a reliable energy supply.

Issues	Recommendations
Imbalance in Electricity Generation and Regional Demand	Develop integrated investment strategies for new projects. Analysis of regional power demand before the execution of the project.
Transmission Constraints Leading to Financial Losses	Invest in upgrading and expanding transmission infrastructure to improve efficiency.
Lack of Integrated Planning in Energy Generation Projects	Establish a centralised planning framework aligning federal and provincial priorities with renewable potential and transmission network requirements.
Economic Losses from Transmission and Dispatch Inefficiencies	Strengthen NEPRA and DISCOs' roles in enforcing regulations, reducing losses, and ensuring better recovery mechanisms through policy reform.

## Circular Debt & IPPs: Financial and Legal Lens



### Mr. Waleed Khalid

Mr. Khalid is an Advocate of the High Court and a Barrister-At-Law, currently a Partner at Cornelius, Lane & Mufti. He specialises in constitutional and commercial litigation, alternate dispute resolution, corporate, commercial, banking and tax laws, among others. He holds an LL.B. (Hons.) degree from King's College, London, and a Post Graduate Diploma in Professional Legal Skills from BPP Law School, London. He is also a member of the Honourable Society of Lincoln's Inn

In his talk, Mr. Waleed Khalid addressed the significant issues of circular debt and Independent Power Producers (IPPs) within Pakistan's power sector. He discussed the evolution of policies from 1994 to 2015 that shaped the development of IPPs and how these policies impacted the overall power sector.

The speaker delved into the complexities of Independent Power Producers (IPPs) and their contractual frameworks within Pakistan's power sector. He highlighted the role of regulatory bodies like NEPRA in approving tariffs and the significance of sovereign guarantees provided by the government.

### IPP Contracts and Capacity Payments

Mr. Khalid discussed the intricate network of contracts associated with IPPs, including implementation agreements, power purchase agreements, and guarantees. He also touched upon the challenges of financing, operation, and maintenance in the context of IPPs, and shed light on the intricacies of the tariff-making process for Independent Power Producers (IPPs) in Pakistan, which involves public hearings, written approvals, and notifications by the government.

The speaker highlighted the critical role of capacity payments, which cover the fixed costs required to keep the power plants operational, even if no electricity is generated. The speaker also emphasised the importance

“  
*He highlighted the critical role of capacity payments, to keep the power plants operational*  
”

of sovereign guarantees provided by the government to ensure investment security, and the challenges associated with circular debt and financing for IPPs.

### Challenges for IPPs

“  
*The Speaker shared the experiences of persistent issues of delayed payments and the need for sovereign guarantees*  
”

Mr. Khalid highlighted the challenges faced by Independent Power Producers (IPPs) in Pakistan, particularly regarding circular debt and the reliability of contractual agreements. He shared the persistent issues of delayed payments experiences from the late 90s to recent

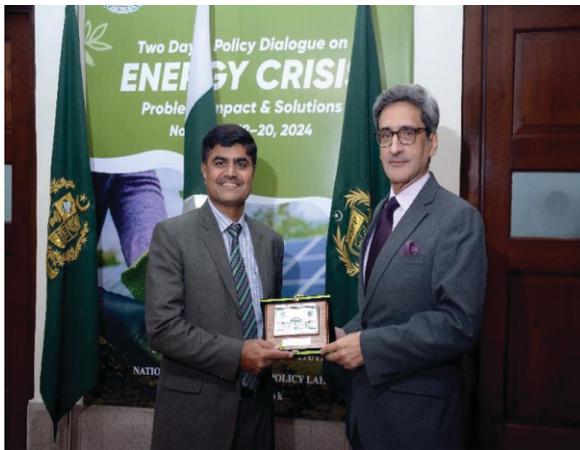
years and the need for sovereign guarantees to ensure trust and assurance in the power sector, noting that the government's inability to fulfill financial obligations has led to significant challenges for IPPs and foreign investors.

In conclusion, the speaker emphasised the persistent challenges of circular debt and the complexities of dealing with Independent Power Producers (IPPs) in Pakistan. Mr. Khalid stressed the importance of trust and reliability in contractual agreements to ensure the stability and growth of the power sector.

“  
*He stressed the importance of trust and reliability in contractual agreements*  
 ”

Issues	Recommendations
Circular Debt in the Power Sector	Develop a comprehensive debt management strategy to streamline payments and prevent accumulation of circular debt.
Complex Contractual Frameworks for IPPs	Simplify and standardise contractual agreements to enhance transparency and reduce disputes.
Challenges in Financing for IPPs	Provide consistent sovereign guarantees and explore alternative financing models to attract and retain investment.
Delays in Payments to IPPs	Establish an automated and timely payment system to build trust and ensure reliability in contractual commitments.
Tariff-Setting Complexities	Enhance NEPRA’s regulatory processes by adopting technology for efficient tariff approval and engaging stakeholders effectively.

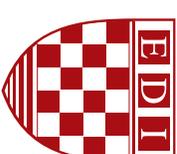
## Pictures Gallery







**EXECUTIVE DEVELOPMENT INSTITUTE**  
**NATIONAL SCHOOL OF PUBLIC POLICY**  
**Two Days Policy Dialogue on**  
**“Energy Crisis: Problem, Impact & Solutions”**  
**19<sup>th</sup> -20<sup>th</sup> November 2024**



**1st Row:** Mr. Muhammad Irfan, Mr. Nadeem Adnan, Mr. Qaiser Iqbal, Mr. Ahmad Nazir, Warratich, Mr. Qaisar Mehmood, Mr. Hussain Anwar, Mr. Zulfiqar Ali  
L to R Protocol Officer EDI, Reproduction Officer EDI, Additional Director EDI, Dean EDI, Deputy Director EDI, Res. Associate EDI, Deputy Director EDI

**2nd Row:** Engr. Muhammad Idrees, Ms. Bushra Imran, Mr. Danish Raza, Mr. Arshad Hussain Malik, Prof. Dr. Islam Ullah Khan, Dr. Sumreen Khalili,  
Ms. Hina Khalid, Mr. Amir Muhammad Khan, Niazi, Mr. Naseem Haider, Mr. Jawad Shahid, Mr. Moin Ali, Dr. Jawad Tariq, Awan, Dr. Abdul Mansoor, Mr. Majid Hussain, Dr. Yasir Mahmood, Mr. Nadeem Bokhari,  
Mr. Maryam Najam, Hafiz Muhammad Mukhtar, Mr. Ikhtaq Ahmed

**4th Row:** Mr. Abdul Wasey Khan, Mr. Muhammad Noman Ahasan, Mr. Salman Zakaria, Mr. Muhammad Imran Khan, Cheema, Mr. Hidayat ulah Khan, Mr. Muhammad Shelza



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