

Seminar Report

National Seminar on Energy Security Policy Thinking Beyond The Norm



Seminar Report

Energy Security Policy: Thinking beyond the Norm

**National Seminar conducted by
Centre for Peace, Security and Developmental Studies
(CPSD)**

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Executive Summary

The National Seminar on Energy Security Policy: Thinking beyond the Norm was held on 3rd December 2018 in Mövenpick Hotel Karachi. The Centre for Peace, Security and Developmental Studies (CPSD) organized the Seminar with the objective of sketching out major challenges to the energy security of Pakistan in the backdrop of growing electricity cost and frequent power outages. The Seminar defined secure and reliable access to energy sources at affordable prices as a key element of Pakistan's economic and national security. It provided a platform to experts of the energy industry for contributing their knowledge for a comprehensive energy security policy.

The Seminar was a major milestone towards completion of CPSD project on Energy Security Action Plan – a document that could contribute to energy security policy, ensuring national security and sustainable economic development. This project was aimed at evaluating and highlighting the gaps that contribute to energy shortage and to propose viable solutions to tackle the ongoing energy crisis.

To ensure a broad yet balanced approach, the presentations in the Seminar were by eminent analysts from all key sectors of the industry including well-reputed economists, financial experts, scientists, and heads and chairpersons of public organizations like Water and Power Development Authority (WAPDA), Oil and Gas Regulatory Authority (OGRA), Alternative Energy Development Board (AEDB) and Pakistan Atomic Energy Commission (PAEC), as well as private firms like ENGRO Corporation, GE Pakistan, and Pakistan Refinery Limited (PRL). They presented paper on varied themes ranging from infrastructure development in the oil and gas sector to the future of alternative energy in Pakistan.

The audience of the Seminar represented a broad spectrum of energy professionals, business community, diplomatic corps, government officials, researchers, academics, and students. The interaction between the speakers and the audience during Question and Answer sessions provided a stimulant for discussion on pertinent issues.

The proceedings were divided in three technical sessions, comprising presentations by two speakers and one chair, followed by an interactive session. The sessions were divided in accordance with the different sources of energy security, details of which are provided as follow:

Technical Session 1: Water and Power

Technical Session 2: Oil and Gas

Technical Session 3: Hybrid, Alternative, and Renewable Energy

Findings

- Energy Security is a primary element of national security of any country, without which a country can neither achieve economic prosperity nor political sovereignty. A major threat to Pakistan's sovereignty comes from the ongoing energy crisis.
- Pakistan's energy supply mix has a sizeable share of the most expensive source of energy: oil and gas. Together they constitute close to 80% of total energy supply. The share of hydel, indigenous coal, and alternative sources is very low, despite high power generation potential of these resources.
- About 85% of oil demands in the country are met through imports from the Middle East. With addition of coal and LNG in the import bill, our national economy is clearly burdened. Despite high success rate of discoveries and large reserves of hydrocarbon and coal, the government has not provided much support for the exploration of indigenous energy reserves.
- The limited explored natural gas reserves in Pakistan are close to depletion yet no new major discovery has been made in the last 60 years. Three main hurdles to natural gas exploration are pricing, policy, and security. While former refers to need of incentives for investment in the natural gas exploration and elimination of freight pool, the latter is related to the law and order situation in the country and the legal complexities caused by 18th amendments.
- As per recent estimates by US Energy Information Administration (EIA), Pakistan has shale gas reserves of around 586 TCF and shale oil reserves of 227 billion barrels, of which technically recoverable are close to 100-105 TCF and 9.1 billion barrels, respectively. The potential is largely unexplored, as the government has not yet announced any policy for investment in exploration of shale oil and gas.
- There are multiple hydropower projects whose feasibility studies and spade work has been completed but have not yet been made operational. Six major hydel projects with potential of over 11000 MW capacity have been approved but have not been initiated due to lack of political will.
- Pakistan has the seventh largest coal reserve in Thar, which can be used to generate 100,000 MW of electricity for over 200 years. Some projects are underway and the country is expected to see a relief from energy shortage in the coming years.
- The power generation potential of alternative and renewable energy resources is very high in Pakistan while the cost is very low, yet its share in the energy supply mix is below 5%.
- While there is a notable rise in the country's power generation installed capacity, the transmission capacity is insufficient to evacuate the generated power. This power evacuation bottleneck is a major factor behind the demand and supply gap.
- Circular debt is a key threat to Pakistan's energy and economic security. Some major reasons behind circular debt are subsidized tariff, inefficiency of government-owned generation and distribution companies, poor maintenance of power plants, controversial deals with IPPs, non-recovery of electricity bills, and poor human resource management and governance. Theft and Unaccounted for

Gas (UFG) losses are two key issues in relation to Circular Debt which will be precented even further with the increasing price.

- The export business is increasingly getting disrupted due to high electricity cost and frequent and unannounced power outages. There is an annual average of 6-8 hours per day outage in the country, costing about 5.8 billion USD to the national economy per year and leading to over 400,000 job losses per annum.
- The policies devised in the energy sector are short-term and crisis-driven, because of ad-hoc response to energy shortage. There is no regard to the long-term economic and environmental consequential losses by these project initiatives.
- While Pakistan has no dearth of energy resources, there is a clear absence of a long-term comprehensive policy and effective governance to exploit these indigenous reserves. The plethora of institutions and ministries for legislation and implementation in the energy sector have contributed to lack of transparency, fragmented decision making, and corruption.

Recommendations

- The most important prerequisite for development and successful implementation of energy security policy is the establishment of National Energy Authority, responsible for devising an integrated energy security policy. The National Energy Authority must comprise the best of Pakistan's industry professionals from the state, private and public sectors.
- Among the many tasks of the National Energy Authority, an important one is to develop an integrated database system storing updated data of energy supply and power generation as well as audit reports and other financial information, provided by public and private institutions in the energy industry. This will lay the foundation of a cohesive and data-driven energy security plan.
- There should be a single energy ministry directly reporting to National Energy Authority to ensure implementation of the energy security plan.
- The high-priority and low-cost solution to the energy crisis in Pakistan is through reduction of administrative and technical losses.
- For energy security of Pakistan, it is imperative to develop a balanced energy mix with an increased share of hydroelectric, local coal, and renewable sources like wind, solar, and nuclear energy.
- Instead of relying on oil, gas, and coal imported products, the government should invest in exploration of indigenous reserves, particularly shale gas and oil. The share of Thar Coal and renewables (i.e. wind, solar, nuclear, hydroelectrical, biomass etc.) have to be increased in the supply mix as they offer more cost-effective solutions to the energy problem.
- The refinery capacity needs to be improved through upgradation of the existing refineries and initiation of new refinery projects as a long-term energy security strategy.

- The government should resolve socio-political and economic hurdles delaying or ending the approved energy projects, including but not limited to the major hydropower projects like Kala Bagh and Dasu and inter-regional energy trade projects like Iran Pakistan Pipeline.
- The pricing and regulation system in the energy sector ought to be revised with a unified body regulating all energy prices, instead of having multiple regulators. Natural Gas prices are to be revised to discourage the wastage.
- To reduce cost for the end consumer, structural changes are required under energy authority. For that, some key remedies are introduction of competing-fuels in transport sector, recovery of electricity bills, and more emphasis on low-cost local resources.
- To deal with the issue of circular debt it is recommended to operate power plants at their optimum capacity to increase output and improve the efficiency of power transmission and distribution system and to ensure efficient use of energy by consumers.
- While signing power purchase contracts with IPPs, government should hire legal and energy experts so that no payments are made for power that is not being purchased. The current IPP agreements should also be renegotiated in accordance with the national economic interests.

Concept Note

Access to energy resources drives global competition and conflict. Since 1973, half of the interstate wars have been linked to energy resources. Oil has not only fuelled wars between states but has also led to intra-state conflict. Recently, non-state actors have also financially sustained themselves by trading oil in the black market.

The new emerging dynamics of the energy politics has also put South Asia on the spotlight. Due to the alignment of forces against China in the Pacific Ocean, China initiated the One Belt One Road (OBOR) Project. China Pakistan Economic Corridor (CPEC) is the flagship project of the OBOR, which in addition to connecting China with the Indian Ocean, intends to plug the energy shortage of Pakistan. Concomitantly, it will also raise challenges as international forces will continue to wage hybrid warfare against the Pakistani state as they fear that Pakistan will become an energy-rich state due to the benefits accrued from CPEC.

Pakistan will not be isolated from foreign markets and events since its allies and regional rivals have vital strategic energy needs of their own. The geo-strategic and geo-economics rivalry will fuel oil wars and energy politics. Pakistan will need to engage with the world through proactive diplomacy. There will be competition over shipping lanes and oil pipelines which might exacerbate energy resource scarcity in Pakistan. Energy resources are the key to socioeconomic progress of any country. Pakistan is struggling to meet its energy needs. Despite a slight improvement in the energy mix, the surge in oil and gas prices has stifled economic growth. The import of coal and gas to diversify the energy mix has further increased the import bill widening the current account deficit.

Adding to the woes of the economy is the power crisis which is due to power evacuation bottlenecks, governance and managerial issues, electricity theft and non-recovery of bills from consumers. All of these issues lead to a rising cost of electricity. The consumer end tariff has also not kept pace with the rising cost of electricity resulting in heavy fiscal subsidies which ultimately produce circular debt. Pakistan has tremendous potential in renewable energy resources such as solar, wind, bio-energy, and hydel power which have been inadequately exploited.

Increased investment along the energy supply chain is necessary to meet growing energy requirements. Both the energy producers' commitment and the consumers' habits need to be changed to encourage conservation, efficiency, and a fuel mix comprising indigenous resources. This mandates a significant role for the Government in maintaining an efficient energy sector with policies' improvement and to keep them consistent and sustainable. Therefore, the Seminar on Energy Security Policy: Thinking beyond the Norm was conducted with the aim to evaluate and highlight the gaps that contribute to financial losses in the energy sector and to propose viable solutions to tackle the energy crisis.

Record of Proceedings

Inaugural Session

The session comprised welcome remarks by President CPSD, Lt. Gen Agha M. Umer Farooq (Retd), followed by the keynote speech of renowned physicist Dr. Samar Mubarakmand and the address of Chief Guest of the Seminar, former Federal Minister and Governor State Bank of Pakistan, Dr. Shamshad Akhtar. The topics covered by speakers during this session were wide-ranging, providing a broad spectrum of challenges and prospects for the energy and power sector in Pakistan. The session provided direction for the three technical sessions to be followed by it.

Welcome Remarks: Lt. Gen Agha M. Umer Farooq (Retd), HI (M)

President CPSD inaugurated the session by welcoming participants and speakers of the Seminar. He explained the prime idea behind initiating this project on Energy Security Policy. He further linked the rationale behind the seminar with the objectives and vision of CPSD as a non-partisan think tank. He began his speech from recognition of a general governance flaw in Pakistan, which plague the energy and other key sectors in Pakistan. He noted that the problem lies with our inability to accept and own responsibility for the mistakes Pakistanis committed in the last 40 years.



Talking specifically on the sector, he identified that energy crisis is closely linked to geopolitical and geo-economic dimension of global politics. The President CPSD emphasized that Pakistan is not just a consumer of energy products but also provides a communication zone between energy-rich and energy-starved regions of the world. Hence, it has an important role to play in the energy geopolitics and geo-economics. He explained that the Seminar provided an overview of energy issues in Pakistan, with speakers from both traditional and non-traditional sectors of the industry. In addition to the Oil and Gas sector, the Seminar has covered the alternative, hybrid, and renewable solutions to the energy crisis. He explained that Pakistan's self-sufficiency in renewable energy resources is an element of national power and provides an opportunity to boost our geographical relevance, be an active global geo-economic player, and satisfy energy demands in the domestic and regional market.

Lt. Gen. Farooq (Retd) anticipated that the recommendations provided in the three sessions of the Seminar, focusing on different sectors in the energy industry, will contribute to the development of a policy report, which he named as an "Energy Action Plan." He paid regards to the energy experts from OGRA, WAPDA, AEDB, and other organizations to give their input on the future energy policy, so that a comprehensive action plan can be made. He said that the policy report will be presented to the government of Pakistan. He ended his speech with a positive note that the young generation attending the Seminar will greatly benefit from the expert opinion of leaders having rich experience in the energy sector.

Keynote Speech: Dr. Samar Mubarakmand, HI

Dr. Samar Mubarakmand gave an extensive keynote speech on the topic of “Energy Security Policy: Prospects for Pakistan.” He commenced his presentation by outlining the richness of Pakistan in indigenous energy resources and held that it is ironic that Pakistanis are facing an energy crisis for over 15 years. Dr. Mubarakmand chalked out the dynamics of the energy mix in Pakistan. He deliberated on the need for a balanced energy mix with an increased share of hydroelectric, coal, and renewable sources like wind, solar, and nuclear energy. He provided a critical technical evaluation of the projects being undertaken or are planned in Pakistan. The keynote speaker also touched upon some major reasons behind circular debt as power losses due to long transmission lines, electricity theft, delayed payments to IPPs, strictly scheduled payments to power plants established under CPEC, and faulty power purchase contracts with IPPs by NEPRA. He wrapped up his speech by presenting a future strategy defining a roadmap for power generation using the country’s vast natural resources. His policy recommendations for the future strategy are as follow:



- Prohibit the burning of fossil fuel to generate power
- Utilize Thar coal reserves for power generation and production of diesel, fertilizers, chemicals, and synthetic fiber from coal gas generated by the process of underground coal gasification
- Increase hydel generation to its full potential of 50,000 MW
- Encourage power generation from natural gas in the private sector
- Utilize the expertise of China to exploit Pakistan’s vast potential of shale oil and gas
- Ensure all future fossil fuel based plants in the country are efficient, have low fuel consumption and use indigenous coal, coal bed methane, shale oil, and gas
- While drafting future power purchase contracts, make certain that no payments are made for power that is not being purchased. This will reduce circular debt significantly in the future

Chief Guest: Dr. Shamshad Akhtar

Dr. Shamshad Akhtar’s presentation was on the important topic of “Leverage Energy Transition and Sustainable Energy,” emphasizing on safeguarding the accessibility, affordability, and sustainability of energy in Pakistan in light of the seventh Sustainable Development Goal (SDG7). She outlined the relationship among Peace and Security, Sustainable Development and Energy, highlighting that security and sustainable development are mutually reinforcing, where both are interlinked to accessibility, affordability, and sustainability of energy supplies, its balanced mix and low carbon content.



Providing a diagnostic overview of the energy crisis in Pakistan, Dr. Akhtar drew attention to the most disturbing trends in the energy sector:

- Heavy reliance on oil and gas for energy supply
- No major investments in developing hydel power generation plants
- Less than 5% share of renewable and alternative energy sources in the energy supply mix
- Overreliance on limited gas reserves instead of making more discoveries through exploration
- Import of LNG at higher costs, which cannot provide a long-term solution to the problem of energy crisis
- Lack of integration in energy policymaking and implementation

She stated that while there is some improvement in energy accessibility after CPEC, there still are important concerns with regard to the energy affordability and sustainability including but not limited to:

- Cost of energy contracts
- Dependence on oil imports
- Environmental feasibility of coal project
- The financial burden of CPEC

She summed up her speech by advocating regional cooperation in the energy sector, improvement in the energy mix in accordance with SDG7, and minimizing financial risks through improved and integrated regulation.

Thematic Session One: Water and Power

The first thematic session “Water and Power” was chaired by President and Chief Executive Officer of ENGRO Corporation, Mr. Ghais Khan. The session covered presentations of two key professionals: Chairman WAPDA Lt. Gen. Muzammil Hussain (Retd), and Senior Partner at A. F. Ferguson & Co. Syed Shabbar Zaidi, delivering addresses on important topics of hydroelectric power generation and financial management of energy industry respectively.

Speaker 1: Lt. Gen. Muzammil Hussain (Retd), HI (M)

The topic covered by Lt. Gen. Muzammil Hussain (Retd) was “Hydroelectric Power Generation in Pakistan – the Role of WAPDA.” He commenced by arguing that Pakistan is not a poor country in terms of energy resources but is a poorly-managed country. He highlighted the contradiction in the data of Water and Power sector available from different sources and recommended setting up a database system in Pakistan so that policymakers are on the same page with regard to the situation in any sector. The Chairman WAPDA provided a global picture of the availability of water, outlining that the average available water per annum in the world is more than 6000 m³/capita, which comes down to 1,577 m³/capita in South Asia and 908 m³/capita in Pakistan, making us amongst the 15th most water-scarce country in the world. Comparing the carry-over capacity of Pakistan with other countries, he showed that Pakistan has the worst situation as it can survive only for 30 days if there is absence of fresh water supply. Hence, the country needs more hydel projects for the next 15-20 years and must complete the ongoing projects to meet the need of the country.



Elaborating on unnecessary delays in the hydroelectric projects, the presenter outlined the efforts of WAPDA for restarting the stalled projects and to initiate new ones, adding 2187 megawatt electricity to the national grid. Lt. Gen Hussain presented a 2050 vision for construction of dams. With an optimistic vision, Chairman WAPDA forecasted that the successful implementation of this plan will provide 20 million acre-feet of agricultural land in Sindh and Balochistan and will increase hydel generation up to 40 % of total demand by 2030 and more than 50% by 2050. Providing a way forward, Lt. Gen Hussain made following recommendations:

- Improvement of water storage system through construction of new water reservoirs
- Changing the energy mix in favor of the renewables and hydel power
- A conservation mechanism
- Innovative financial strategies
- Increase in PSDP funding allocation to the water sector
- Institutional robustness, research and capacity building for timely informed decision making
- An interface joining policy maker, technology experts, and entrepreneurs to overcome the energy crisis in unison

Speaker 2: Mr. Syed Shabbar Zaidi

The second speaker of the session, Syed Shabbar Zaidi focused on the financial issues in the energy sector. According to him, the key issues afflicting Pakistan include rising unemployment rates and lack of investment in the energy sector. He held that the last major investment on the hydel power was 58 years ago for Mangala and Tarbela dams. Since then, Pakistani policymakers are essentially procrastinating and have insufficient funds for long-term investment. Similar is the situation in the oil and gas sector where our indigenous gas reserves have most been used up and there has been no effective exploration of oil and gas reserves since 1952. Local coal reserves alone cannot fulfill the growing energy demand. Hence, the country is mainly relying on the import of oil and LNG as a short-term strategy to deal with the issue. The volatility and surge in oil prices in the global market is one major issue in the financial management of the energy sector in Pakistan.



Mr. Zaidi highlighted the gap between the cost of energy produced in Pakistan and the price at which it is sold to consumers. He comprehensively spoke on the government subsidies to reduce energy prices, criticizing that this results in circular debt, which is a major economic burden for the national economy. He provided that government subsidies cost around 1500 billion, which equates to 25% revenues of the government of Pakistan. He provided several examples where Pakistan faced financial hurdles in initiating or completing projects due to lack of investment and concluded that the question of affordability of energy resources needs to be resolved through a comprehensive independent economic study.

Chair: Mr. Ghias Khan

The chair of the session Mr. Ghias Khan wrapped up the session with his presentation on “Pakistan Power Sector: Shift of Focus from Availability to Consumer Cost.” He initiated his speech by identification of a major issue in the energy sector of Pakistan – relying on short-term remedies instead of planning long-term strategies. He opined that the recent energy projects under CPEC, the IPP agreements signed in the 1990s, and the LNG imports in the last government were all outcome of short-term planning. Mr. Khan briefly explained the problem of increasing fiscal deficit. In his opinion, to control the devaluation of the currency, the government needs to increase the cost of production but it will result in declining competitiveness of our exports. Hence the issue is cyclic and one problem leads to another.



Mr. Khan sketched a roadmap for dealing with the issue of energy crisis, supporting the current measures taken by the government as short-term solutions but underlining the need to have a long

and medium-term strategy based on thermal and coal energy resources. He particularly stressed the enormous energy potential of Thar Coal Project and recommended relying on indigenous resources for economic security in the energy sector. Commenting on renewable energy, Mr. Khan pointed out that despite the low cost of renewable energy, they have no base load. Hence, he recommended that Pakistan needs to generate power from both thermal power plants and renewable resources. He also supported the net-metering system in the country as well as loans by financial institutions to support the use of renewable energy by domestic users. He concluded his presentation by advocating the privatization of the power sector but explained that this should be approached by proper pre-planning.

Thematic Session Two: Oil and Gas

Oil and Gas sector is the main contributor to the current energy supply mix in Pakistan. Hence, the second thematic session covered important issues in this sector such as financial governance, infrastructure development, and price regulation in the oil and gas industry. The session was chaired by Ms. Uzma Adil Khan, Chairperson OGRA and the speakers of the session included Mr. Asad Ali Shah, Chairman Board of Director Pakistan Refinery Limited and Syed Zawar Haidar, CEO Oil Companies Advisory Council.

Speaker 1: Mr. Asad Ali Shah

Mr. Asad Ali Shah began his speech by linking the issue of energy security with the famous 1970s' slogan of *Roti, Kapra, aur Makan*, explaining that all three necessities are impossible to conceive in the present era without energy security. Moving forward to his topic of "Financial Governance in the Oil and Gas Sector," Mr. Asad pointed out the complex institutional structure of regulation, involving multiple regulatory bodies and ambiguity on the share of authority between federal and provincial government after the 18th amendment.



Talking on the economic devaluation faced by the current government, Mr. Asad was of the opinion that all past governments had to take IMF bailouts immediately after coming to power. He held that the economic indicators like the current account deficit of 18 billion dollars force the government of Pakistan to go to IMF and this will eventually burden our economy even further. He pointed out that one major factor contributing to the rise in current account deficit in recent years is the mounting import bill, a large percentage of which is allocated to import of petroleum products. Most of our energy requirements are met through imported oil and gas, while the share of indigenous coal, hydro, and renewable resources is minimal. The government needs to focus on the exploration of indigenous resources, keeping in view the high success rate of oil and gas discoveries in Pakistan.

In comparison, Pakistan is unable to increase its exports by strengthening local investors. One important factor is the high electricity prices in the country, which affects the cost of doing business in Pakistan, thus decreasing our export potential. Mr. Asad criticized the energy policy of previous governments for not paying attention to the financial cost of energy projects. Consequently, as the power generation capacity is greater than demand, the government has to bear the cost of surplus generation capacity. Mr. Asad also shed light on other key issues in the power sector such as

transmission and distribution losses, Unaccounted For Gas (UFG) losses, circular debt, low refining capacity, and lack of conducive policies. He advocated the formation of one energy ministry for integrated policymaking, human resource development, and privatization in the energy industry.

Speaker 2: Mr. Syed Zavar Haidar

In line with his professional experience of several years in the downstream sector, Mr. Haidar spoke on the topic of “Infrastructure Development in the Downstream Oil Sector.” He began by identifying three important infrastructural challenges in the sector:



- A large percentage of Pakistan’s energy supply is through imported petroleum products
- The refining capacity at the local level is insufficient to fulfill our demand
- Based on projected GDP growth of 5%, various studies have estimated the demand of petroleum products in the country to be around 50 MT/Annum or 1 million bpd by 2030, which is twice the present consumption

To deal with these issues, Mr. Zavar recommended rationalizing the competing fuels in motor vehicles because Pakistan requires a policy, where we are going to position diesel, petrol, CNG, and LPG alongside each other. The product positioning is necessary keeping in view their past and future growth, available infrastructure, and its impact on foreign exchange. Furthermore, mass transit public system in intra-city and inter-city is necessary to reduce the consumption of motor gasoline. To improve storage capacity, port infrastructure in Pakistan needs to be improved. He suggested using vessels of large size and more storage capacity for saving freights. To improve transportation of petroleum products, there is an urgent need of cross country pipelines. He also recommended optimizing oil piers capacity, reducing queuing/waiting of the vessels, and ensuring supply chain continuity through additional tankage at the ports was recommended by the speaker.

Chair: Ms. Uzma Adil Khan

Ms. Uzma Adil Khan commenced her speech with an introduction to the objectives and functions of OGRA as a regulatory body. She explained the mechanism for determining the oil and gas prices and the role of OGRA in it. While explaining the scope of the organization, Ms. Uzma clarified that the regulatory authority of OGRA is currently limited to midstream and downstream sector, and the government has a separate system for the regulation of the upstream sector. She criticized this lack of integration on ground, creating complexities and thus she propped up the idea of one regulatory authority for the entire Oil and Gas industry.



She also provided a brief outline of how a singular regulatory authority could function: The Council of Common Interest (CCI) should give a policy guideline on one regulatory authority and all provinces of Pakistan should make allowances for the new policy guideline. A strong advocate of the federation, Ms. Uzma strongly supported singular policy for all provinces, claiming that prioritizing provincial interests is one factor contributing to the lack of consistency in the energy policy.

Thematic Session Three: Hybrid, Alternative, and Renewable Energy

In line with the Seminar objective of thinking beyond the norm, the third technical session of the Seminar was focused on hybrid, alternative, and renewable energy resources. The session was chaired by CEO Alternative Energy Development Board (AEDB), Amjad Ali Awan who shed light on the role of renewable energy towards energy security of Pakistan. Details of the solar and wind energy potential were provided by President and CEO of GE Pakistan, Mr. Sarim Shaikh and specifics of Pakistan nuclear energy sector were explained by Chairman Pakistan Atomic Energy Commission (PAEC), Mr. Muhammad Naeem. The discussion in the session contributed important policy recommendations for innovation in the energy industry, through increasing the share of renewable and alternative resources in the future energy mix.

Speaker 1: Mr. Sarim Shaikh

In his presentation, Mr. Sarim Shaikh identified three elements of energy security:

- **Economic security:** About 60% of oil, 20% of natural gas, and almost 100% of thermal coal for Pakistan energy supply are imported.
- **Affordability:** Electricity prices in Pakistan are about 20% more expensive than other countries in the region like Bangladesh, India, and China.
- **Sustainability:** Pakistan is a water-stressed country with 900 m³/capita per annum and is ranked 8th in terms of risks of climate change.



Based on this overview of the energy insecurity in Pakistan, he proposed the solution to be a policy regulatory framework where regulator decides the prices and hands it over in an exchange between the regulator, the producers, and the consumers.

Mr. Shaikh provided details of the ongoing global trends in the energy sector, namely:

- Decarbonization
- Decentralization
- Digitization
- Electrification

Due to these trends, the future of the energy sector in Pakistan is very different. In the future, the role of government is limited to orchestrating the market where people take actions themselves. There is a need for an increase in a number of local distribution networks and micro-grid system for self-generation, so many small players can support the economy. While talking on the need of decentralization, he recommended going for disintermediation that allows private generation to reach consumers through wheeling and traded exchanges. He also suggested that for decarbonization, Pakistan needs to focus on searching for competitive renewables sources as well as hybrid powerplants. Finally, Pakistan should continue to digitalize with smarter integration and asset performance management to improve the power generation.

Speaker 2: Mr. Muhammad Naeem

The second speaker of the session provided insights of the “Nuclear Power in the Long-Term Energy Future of Pakistan”. He commenced his speech by criticizing the current energy policy. He critically remarked that despite having large potential for power generation through alternative and renewable energy in Pakistan, the power sector in the country is relying heavily on oil and gas resources. Elaborating the benefits of nuclear energy as a reliable, low-cost, and environmental-friendly option for electricity generation in



Pakistan, Mr. Naeem claimed that it is better in many terms from other alternative resources.

Pakistan started its nuclear power production in 1972. During the early stages, it faced resistance from international players. Nevertheless, KANUPP (Karachi Nuclear Power Plant) was powered through indigenous fuel. Chashma Nuclear Power Plants (CHASNUPP) took 3 decades to contribute to the national grid. Currently, Pakistan is developing two new units for KANUPP namely K2 and K3 projects. By 2030, it is estimated that Pakistan will produce 8800 MW of electricity, and by the year 2050, electricity production is going to be 40,000 MW. However, overcoming energy shortage is not that simple. Mr. Naeem advised that in addition to the initiation of new nuclear power plants, a comprehensive policy paying attention to all other sources of energy as well as the development of human resource is pre-requisite for the long-term energy security of Pakistan.

Chair: Mr. Amjad Ali Awan

The Chair of the session, Mr Amjad Ali Awan, drew attention to the potential in Pakistan. Yet he did not overlook the mistakes committed by Pakistanis in the last 70 years, leading us to the current energy crisis. According to him, Energy Security is “all about the achievement of a safe status by a country in which you are existing and can meet future energy demand without putting pressure on the growing economy in a particular timeframe of 20 to 30 years.” Hence, energy security requires developing indigenous energy economy.



Mr. Awan stated that Pakistan’s energy import bill is close to 48.42 billion dollar which is 80% of the total import bill. In this context, he identified three factors defining the current energy security situation:

- Uncontrolled price fluctuation of energy products in the international market
- Volatility in Dollar-Rupee exchange rate
- Increasing energy demand with increased reliance on petroleum products

On one hand, Pakistan is fast depleting its strategic resources and on the other hand, it is highly dependent on energy imports. To come out from this situation, it is important to phase out the import in the favour of unexplored indigenous resources, particularly the renewable energy resources. Mr. Awan closed the session with recognition of three strategies to ensure energy security of any state:

- Set reasonable targets for renewable energy in the country, in terms of percentage share of overall energy mix.
- Learn the systematic variation to integrate renewable resources with the conventional resources.
- Policy must be irreversible, with all stakeholders on board.

Closing Session

Overview of Energy Security: Mr. Sohail Wajahat Siddiqui (SI)

Mr. Sohail Wajahat Siddiqui closed the session with a comprehensive overview of the current challenges to the energy security of Pakistan and the way forward. He began his remarks by praising all speakers for outlining key ingredients of an effective energy security policy and proclaimed to present a recipe defining the right mix of each identified ingredient. He held that Pakistan is using firefighting approach to deal with major issues in the energy sector. There should be consistency and continuity in the energy policy. The policymaking process should be more cohesive, involving all relevant state and government institutions. He proposed establishing National Energy Authority and a single energy ministry, so to systematize authority, establish transparency, and avoid conflict of interests.



While Pakistan's power generation capacity has increased in the last decade, it is lacking mainly in the power distribution and transmission sector, facing challenges with respect to metering, theft, low-voltage supply, and circular debt. Energy and policing are the two key elements of security of any country; to destroy a country the enemy just needs to destroy its law and order structure and its energy resources. The government must incentivize and prioritize the human resource development for the energy sector, ensuring they are rightly remunerated and are appointed on merit.

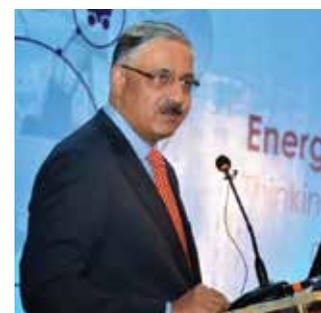
Pakistan is among the very few countries charted as lacking sovereignty and this shows that as a nation Pakistan has failed in securing its national interests. He coined the term "HAAMSEY" referring to a human-centric approach, describing it as the main game changer. The world has shifted to a knowledge-based economic system and Pakistan must do the same. The country has moved from comfort to fear zone and it must to move forward to the learning zone through dealing with challenges and problems and acquiring new skills. Mr. Siddiqui talked at length on the issue of circular debt, highlighting its obscurity and identifying the factors contributing to it. He also highlighted that the energy crisis in Pakistan is not because of lack of resources but is caused by poor governance.

Chief Guest: Joint Chiefs of Staff Committee Gen. Zubair Mahmood Hayat, NI (M)

Chief Guest of the closing session, Gen Hayat, pointed out that the contemporary notion of security is multi-dimensional and complex. Elucidating on the theory of energy security, he explored its three key dimensions:

- the concept of energy security as an element of national security,
- the relationship of energy security and geo-strategy and,
- the relationship of energy security and geo-economics.

He also provided an analysis of energy security dynamics of Pakistan and uncovered multiple challenges such as lack of integrated energy planning capacity and capability, imbalanced energy mix with heavy reliance on energy imports, the supply-demand gap, need for improved sustainability and affordability in the power sector, absence of energy conservation culture, deficiency of human capital in the energy sector, and issues of corruption and commissions. In reference to the need of developing a more balanced energy mix, he recommended increasing the share of nuclear energy as well as other



alternative energy resources in Pakistan. Furthermore, to meet the growing demand of Pakistan's energy industry, he advocated a multi-pronged approach comprising an all-encompassing energy eco-system.

Vote of Thanks/Closing Speech: Mr. Abdullah Dadabhoy

Mr Abdullah Dadabhoy, Chairman Dadabhoy Foundation and CPSD, thanked all the respected speakers of the Seminar for their thought-provoking and detailed presentations on the crucial topic of energy security. He pointed out that the issues highlighted by the eminent scholars and experts, particularly the failure in building a single dam in past 40 years, demonstrate the lack of planning, bad governance, corruption, and discounting the national interests.



He was hopeful that the incumbent government, with the help of civil society and intellectual community, will take measures to ensure national security, of which energy security is an essential element. CPSD has planned to carry out research and conduct brainstorming sessions on all subjects of national and international importance. With this aim, we are working to plan a detailed strategy catering to all problems of energy security and are looking forward to presenting the policy recommendations to the government of Pakistan and other state institutions. Mr. Dadabhoy concluded the Seminar with the expectation that the government will make better use of the Energy Security Policy report and will implement the policy recommendations outlined in it.

Annexes

Seminar Schedule

Energy Security Policy: Thinking Beyond the Norm

03 December 2018

Registration 0930 hrs

Inaugural Session (0945 – 1050 hrs)

Welcome Remarks: Lt. Gen Agha M. Umer Farooq (Retd), President CPSD

Keynote Speaker: Dr. Samar Mubarakmand (NI), Renowned Nuclear Scientist

Chief Guest: Dr. Shamshad Akhtar, Former Federal Minister and Governor State Bank of Pakistan.

Session 1: Water and Power (1100 – 1220 hrs)

Chair: Mr. Ghias Khan, CEO and President ENGRO Corp.

Keynote Speaker: Lt. General Muzammil Hussain (Retd), HI (M), Chairman WAPDA

Speaker: Mr. Syed Shabbar Zaidi, Former Provincial Minister for Finance

Lunch (1220 – 1300 hrs)

Session 2: Oil and Gas Sector (1300 – 1425 hrs)

Chair: Ms. Uzma Adil Khan, Chairperson OGRA

Keynote Speaker: Mr. Asad Ali Shah, Chairman Board of Directors PRL

Speaker: Mr. Syed Zavar Haidar, CEO Oil Companies Advisory Council

Session 3: Hybrid, Renewable and Alternative Energy (14:30 – 15:25 hrs)

Chair: Mr. Amjad Ali Awan, CEO Alternative Energy Development Board

Keynote speaker: Mr. Sarim Sheikh, President and CEO GE Pakistan

Speaker: Mr. Muhammad Naeem (HI), Chairman Pakistan Atomic Energy Commission

Tea/Coffee Break (1525 – 1540 hrs)

Closing Session (15:40 – 17:00 hrs)

Overview on Energy Spectrum: Mr. Sohail Wajahat Siddiqi (SI), Former Federal Minister and CEO Siemens West Asia and Pakistan

Chief Guest: Chairman Joint Chiefs of Staff Committee, Gen. Zubair Mahmood Hayat, NI (M)

Vote of Thanks: Mr. Abdullah Dadabhoy, Chairman Dadabhoy Foundation/CPSD

Picture Gallery





Event Management Team

CPSD would like to acknowledge and compliment the following for their effort, dedication, and tireless contribution to make the event a great success.

01. Roger Dawood Bayat, Group Executive Director, Dadabhoy Foundation
02. Afsheen Khan, Personal Secretary to the Chairman, Dadabhoy Foundation
03. Maheen Rehman Syed, Manager Coordinator, DIHE
04. Shumaila Minhaz, Coordinator, Planning & Development, DIHE
05. Bakhtawar Mahmood, General Manager, DBTV
06. Umer Khan, Executive Director, CPSD
07. Saffi Khan, Editor-in-chief, CPSD
08. Ghulam Raza, Research Associate, CPSD
09. Ahmed Mughni, Visiting Researcher, CPSD
10. Shanzae Asif, Research Fellow, CPSD
11. Sadaf Malik, Office Coordinator, CPSD
12. Danish Kaleem, IT Associate, CPSD
13. Jawad Akbar, Junior IT Associate, CPSD
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