

Imbalance of Energy Mix in Pakistan and its Consequences

Outline:

① Introduction:

The imbalanced energy mix of the country is proving a nail in the coffin by exacerbating the external account crisis, affecting the economic activities and, ^{ultimately,} leading to the social unrest. Hence, indigenisation of energy resources and channelling investment towards renewable energy resources should be the utmost priority of the voting party. **Policy Makers**

② The Importance of Balanced Energy Mix

③ Historical Appraisal of the Energy Policy of Country, Pakistan

③ Reason behind Imbalanced Energy Mix

- i) Lack of political will to modernize means of energy resources
- ii) Political instability and imbalance of institutional power influence the rational decisions in the best interest of masses
- iii) Economic constraints block the exploration of sustainable energy resources
- iv) Security threats hampers investment by the international investors
- v) Lack of awareness in the commons and in the specials

④ Multi-directional Consequences of Imbalanced Energy Mix

- i) A history of inconsistent power supply and gas supplies

- ii) A lion share of the budget goes into the import of hydrocarbons
- iii) protracted balance-of-payment crisis of the country
- iv) Import restrictions led to the closure of businesses
- iv) Lack of economic activities devoid skilful youth of employment opportunities
- vi) Brain drain of intelligentsia is a huge loss in the long-term
- vii) perpetual whirlpool of circular debt owing to dependency on already installed system

⑤ End to this Quagmire is possible by Adopting New Energy Policy. i.e.,

- i) Indigenisation of non-renewable energy resources through partnerships and investments
- ii) Conducive environment to the foreign investors by giving them all sort of securities
- iii) Channelling the saved dollars, from the less import of hydrocarbons, towards alternative resources
- iv) Targeted and phase-wise subsidies for installing solar systems projects
- v) On-time completion of energy under CPC, projects
- vi) Awareness campaigns propagating economic, environmental and social benefits of the alternative sources of energy

⑥ Conclusion

"The starting point for energy security today, as it has always been, is the diversification of supplies and resources," said Daniel Yergin, energy analyst and vice chairman of S and P Global. By building on these words of Daniel, it is a proven fact that energy security can be achieved through a balanced mix of energy resources. The economic growth, development and prosperity in the Global North, the developed part of the world, is due to the balanced mix of energy resources ensuring consistency and reliability in the power supply. However, when it comes to the developing part of the world, especially Pakistan, it is facing inconsistency in the power supply, hampering its economic affairs. In the latter's case, this has become a formidable threat, due to skewed energy policies. The imbalanced energy mix of the country is proving a nail in the coffin by exacerbating the external account deficit, affecting the economic activities and ultimately leading to social unrest. Hence, indigenisation of energy resources and channelling investment towards renewable energy resources should be the utmost priority of the ruling party.

Before moving to the discussion on the energy mix of the country, Pakistan, it is necessary to understand the importance of balanced energy mix. The idea of balanced approach calls for the amalgamation of renewable and non-renewable energy resources. This disposition is important in a sense that balanced use of variety of energy resources ensures protection against price volatility in one energy market, disruptions in

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supply chain and environmental sustainability. As per the IEA (International Energy Agency), the countries ~~of~~ ^{including} Finland and United Kingdom are having fulfilling more than half of their energy needs by utilising alternative forms of energy resources. Resultantly, their educational, medical and economic affairs run smoothly. Hence, a balanced approach in the production of energy plays vital role in the affairs of countries.

However, the importance of balanced mix of energy resources has not been realised to the full potential in Pakistan. Apparently, this problem originates its roots from the inception of the country, in 1947. During the early days of independence, the country was facing dire scarcity of resources. According to James Wijnbrandt, in his book A Brief History of Pakistan, the country didn't even have stationary for administrative purposes. Thus, it was too difficult to focus on modern ways and investment in the developing projects. Moreover, the history of the country is marked with political instability in the form of military martial laws in between. Fast forward to 90s, in 1994 an endeavour was made to privatise the production and distribution of power, via non-renewable energy resources. Similarly, 2013 second decade of 21st century also saw a struggle towards renewable resources of energy. In short, due to lack of stability, expertise and technology has compelled the successive governments to rely on skewed energy mix.

Despite the unparalleled importance of diverse energy resources, the country is still relying on the import of hydrocarbon. This dependency on traditional means of energy resources warrants an investigation into the reasons behind the imbalanced mix of energy resources.

The first major reason for not going towards the alternative form of energy resources, apart from traditional resources, is the lack of political will and motivation. Every ruling party, after coming into government, does blame game and never take bold steps to modernize the means of energy production. For instance, in 2013, the then ruling party promised to overcome the growing energy demands by installing the renewable energy resources with the help of China Pakistan Economic Corridor, as per economy survey of Pakistan 2012-2013. That energy policy aimed to fulfill the shortfall of around 8000MW through the indigenisation of energy resources and renewable energy resources. However, these projects, as always, ^{have been} are the victim of delays and bureaucratic hurdles. Hence, incoming ruling party never takes long-term yet sustainable measures to fulfill the energy demands via balanced mix of energy resources.

An overview of the developed countries and some of the developing countries, especially China and India, prevails establishes the vitality of political stability and equality ^{of power} in the institutions for the economic growth of the country. As per World Economic Forum, India would be the 3rd largest economy by the end of year 2030. The only reason behind

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This consistency, in its stable political environment. However, when it comes to the country of Pakistan, the political parties and the establishment has rendered ^{electoral} stability, a syzphean dream. Furthermore, the country has never been an economically powerful country. Hence, the intitutional imbalance and the crinconsistent policies, due to political intability has left no room for the a thought out of the box.

Apart from political intability, economic crunch, and protracted external account deficit and budget deficit have quelled a policy for power generation through alternative means.

For instance, as per the State Bank of Pakistan, foreign reserves of the country stands at around USD 8 billion. With this meagre amount in the foreign reserves, the country can not import foreign technology to be installed for solar, wind and nuclear energy. Hence, the country has to rely on already installed power plants for the energy to be produced from coal, oil and gas. Further, as per the economic survey of Pakistan, approx 60% of electricity is produced from the imported hydrocarbons. Based on the above reasons, it is now clear that country, owing to economic constraints have to rely on traditional means which is always vulnerable to supply and price shocks.

An investor is always keen to know the security dynamics of any country before investment in projects. Unfortunately post 9/11, the Islamic Republic of Pakistan is grappling with the militants and insurgents. As per the Pakistan

Institute for Conflict and Security, (IFCS), since 2021, there is a rise of over 61pc terrorist attacks in the country. Therefore, let alone new projects, existing projects are the victim of delays and hiatus. Due to the unpredictable security situation, even by signing Memorandum of Arrangement Understandings, (MOUs) they are not materialised. This threat of new terrorist attacks is hampering and the investment, and discouraging the investors to invest in the solar, hydro and wind projects.

Awareness and Education plays a vital role in the acceptance of new technology. In Pakistan around 60pc of population lives in rural areas, as per the census 2023. Due to this humongous figure, it is apparent that the already ^{low} literacy rate of the country, acceptance of new means would, unfortunately, face resistance. As per the Asian Development Bank report, on the rate of acceptance of new technology, Pakistan is having the lowest rate of acceptance in the of technology in South Asia. Therefore, people, instead of resorting to solar energy, depend on the electricity coming from national grid. Similarly, it is very unfortunate, that apart from general public, ruling parties have never thought of long-term policy for shifting towards renewable energy resources. Due to this lack of awareness of the advantages of alternative form of energy in the form of sustainability, least emissions and least dependency of imported hydrocarbon, have never been realised to the full potential.

Undoubtedly, the lack of political will, political instability, security threats and

Economic constraints are hindering an endeavour towards balanced mix of energy resources. This unbalanced mix of energy is hounding the citizenry of the country owing to its multi-directional consequences.

Power outages in the form of electricity blackout in the peak summer days and gas loadshedding in the colder & winter days have been the consistent problem plaguing the economic and social affairs of the country. According to economic survey of Pakistan the shortage of power supply was over 8000 MW in the year 2018, while in its latest survey of 2022-23, the shortage of power supply is over 10,000 MW.

Some of the reasons widely discussed are electricity theft, transmission and distribution losses and outdated machinery. Hence, the domestic and commercial sectors have been experiencing loadshedding of more than 8 hours in the peak summer days. Except the central area in the provinces and in the federal, peripheries are all disgruntled due to lack of power and gas supplies when there is a need extensive need. This, in turn, not only impact the living of common people, but also the businesses are shut down, and, ultimately, economic activity disrupts. Hence, the perpetual problem of loadshedding have been a problem for many years, now.

Moreover, dependency on the non-renewable resources of energy production have been costing the country harshly. As per the report of Economic Survey of Pakistan 2022-23, energy mix of the country includes, 58.8% thermal, 25.3%

Hydel, and 8.6pc nuclear power and 6.8pc by renewable sources of energy. By connecting this report with another report by Hydrocarbon Institute of Pakistan, demand for coal is 19 million metric tonnes, ^{and} locally production is 4 million; while, the rest is imported. Hydel contributes 25pc, to national grid, out of total demand. While, the rest is imported, and the list goes on. Based on these states, it is undeniable, that ^{the} country has to allocate, for the import of hydrocarbons, a major chunk of the budget. Resultantly, the country is left with meager amount to import or allow other companies to import raw materials.

Owing to the dependency on dollar based purchase of oil, coal and liquefied natural gas, the country is suffering from the balance-of payment crisis. Prices of imported oil fluctuate due to international events and the depreciation of national currency. The war in Ukraine, and the value of PKR at 280 per dollar ^{per 100 per 100} has made it ~~the~~ fueled the balance-of payment crisis of the country. The balance-of-payment crisis impacts the country internally and externally. Internally, the country has to raise the prices of commodities, and to stop the flow of dollars out of the country, by not allowing foreign businesses to export their earnings. On external front, the government has to curb the import of raw materials, spare-parts, as did by the last coalition government, and allowing only the import of essential commodities, especially hydrocarbons. This, in turn, creates supply and demand gap, and flex-

acerbates the inflation of the commodities. Hence, the crisis of the external account it has horrendous consequences for the economy of the country.

The balance-of-payment and budget deficits have crippling effects on the economic activities in the country. For instance, as per the Economic Survey of Pakistan 2022-23, in the FY-23, the then coalition government had imposed cuts on the import of raw materials and other equipments for production purposes. Resultantly, dozens of businesses either had to downsize the human resource, or had to close their operations for the time being. Automobile industry was deeply affected. It is just one example, dozens of other retail and manufacturing businesses ^{were} closed down due to poor operating conditions. In return, those who were working, and those were graduating had no employment opportunities at all. The purchasing power of common people have gone low due to unemployment and unprecedented inflation, over 25% as per State Bank of Pakistan. Lack of employment opportunities, thus, devoids the skilful and hard-working youth of the employment opportunities.

Unfortunately, in the pursuit of good living and better employment opportunities, the intelligentsia of the country is going abroad. As per the Pakistan Bureau of Statistics (PBS), in the year 2022 around 1.2 million workers went abroad. Sadly, among them, most of the chunk was comprised of the doctors, the nurses, the engineers, ^{and} the accountants, apart from blue collar workers.

Undeniably, this mass exodus of the intelligent people is due to the absence of opportunities and working environment, which they deserve. This is a huge loss for the country. In the short run, it may not have effects. However, in the long run, we may will have scarcity of technicians, doctors, engineers etc. And, the country's prospects of economic productivity would be gloomy. Hence, if timely measures are not taken, the country may be bracing for the catastrophe of brain drain.

Lastly, the conundrum of circular debt is eating up the starved exchequer of the country. Circular debt is actually a chain of liabilities, when paying debt to one entity/country, the debtor has to take loan from someone else. In Pakistan's case, the sole reason behind circular debt is the power sector of the country. According to Pakistan's Bureau of Statistics, ~~202~~ by the end of June of 2023 the circular debt of Pakistan stood at Rs. 2.31 trillion, up from Rs 2.25 trillion in previous fiscal year. This means, instead of decreasing, the circular debt of the country is increasing with each passing year. Poor infrastructure, loss of electricity and electricity theft are some of the reasons, apart from costly electricity production by the Independent power producers (IPPs). Owing to this whirlpool of circular debt, the country is sinking in it with each passing day. This has led to increased electricity bills, indirect taxes, which, in return, hitting the general public hard. The heap of this debt, not only aggravates supply-demand gap of power, but also impacts the economy badly.

It is no denying the fact that the country is slowly and gradually stepping towards balanced mix of energy resources. However, in order to expedite the process of transition to affordable yet sustainable power production, the following paragraphs would present a new policy for ensuring energy security.

The country of Pakistan is filled with treasures, which if used properly, would make the country one of the fastest growing economies. Unfortunately, approx 60% of the power generation happens through the imported hydrocarbons. Not because the country lacks local coal, gas or oil reserves, but because of the mismanagement and imprudent decisions of the successive governments. According to HDIP (Hydrocarbon Development Institute of Pakistan), the country's coal reserves are estimated to be 7775 million metric tonnes. Demand for coal is 19 million metric tonnes (approx); while, its production is 4 million metric tonnes. Rest is imported. Similarly, hydel power generating capacity is 60,000 MW; while, contributing only 25% of it. According to world bank, in 60s energy mix was, 65% from hydel and 35% from thermal. However, at present, it is operating, otherwise. Therefore, the country needs to go for partnerships and bring foreign investment, not for paying debt, but for installing local plants for extracting and generating power resources.

The second major step would be, which the country is already working on through Special Investment Facilitation Council (SIFC), to offer conducive environment to the investors/inventors. The country has been victim of bureaucratic hurdles, red-tapism and

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complex procedures for getting permits for operation by the foreign investors. It should not be happening anymore. The country needs to provide ^{and} all sort of securities and facilities to the investors for investing in ^{its} energy sector. For instance, one window operation should be in place, no more curbs on imports of raw material. Secondly, focus should be on investment in the renewable energy resources. As per the latest economic survey, contribution of alternative resources is only 15 to 20 PC. By 2030, the country should be able to convert this figure into 60-80 PC. Hence, facilitation of investors should be the second most priority for ensuring balanced mix of energy resources.

Furthermore, when the investors would be investing in the alternative reformed forms of energy resources, and in the indigenisation of local resources then it would be least dependent on the import of hydrocarbons. Imported oil, coal and liquefied natural Gas is always vulnerable to price shocks. Hence, the dollar saved from the import of hydrocarbon would be channelled towards the installing of renewable energy resources. China Pakistan Economic Corridor, a flagship project of BRI (Belt and Road Initiative), is a courageous endeavour in this direction. Some of the energy projects have been completed like port Qasim power project, Sindh power project etc. However, these projects should be completed on-time. Then, the country's local traditional resources would be generating electricity. While, the country would be then transitioning towards alternative forms of energy resources. This will make the country self-sufficient and generate electricity.

Production would be exported to the neighbouring countries. Then, the country needs to, first, fulfill the above mentioned steps and then movement towards balanced mix of energy resources.

Moreover, the country needs to subsidise the solar panels and related equipment. As per the economic survey of Pakistan, 60pc population of the country lives in rural areas, and 40pc in the urban areas. Furthermore, 75pc of the whole population has the access to electricity provided by the government. Instead of relying on the state's electricity, it is the responsibility of the domestic sector to make themselves electricity self-sufficient via installing solar panels. As most of the households can't afford the whole package. Therefore, the government needs to initiate a program to offer discounted package of solar panels to the deserving households. This will, in return, not only reduce burden on the government, but also will offer freedom to the domestic sector of having own electricity. Also, it will allow the govt to provide consistent power to the commercial sector and industries for efficient operation. Therefore, for experiencing multiple benefits, the country needs to think out of the box by giving targeted and phase-wise subsidies.

Sadly, as it was conceived that China CPEC (China Pakistan Economic Corridor) would be a game changer, has not been yet realised. The phase-wise completion of variety of projects has always been succumbed to delays. For instance, it was planned that energy projects would be completed in phase I (from 2015-2020). However,

due to unpredictable situation like the Covid-19, and the internal security anegma, put the projects on impare. The country of Pakistan, especially its security forces, needs to quell the negative forces, who want to see Pakistan crumbling. In the past, several Chinese workers and engineers have been abducted. This unstable security dynamics not only discourages Chinese investors, but also sends negative signals to other foreign investors. Therefore, the need of the hour is the provision of all facilities to business, and for timely completion of energy projects and movement towards balanced mix of energy resources.

The last but not the least, the country needs to ensure that its people are well-aware of the multiple benefits of alternative means of energy production. According to a report by Asian Development Bank, Pakistan has the lowest acceptance rate of technology all over the South Asia. Based on this report, one can conceive of reasons behind least contribution of renewable energy resources. For this purpose, the government needs to add a separate textbook at school, college and university levels. Once, the people of Pakistan acknowledges the potential benefits of solar energy, especially, they will by themselves take measures to install the solar panels. And, the government will have sufficient funds to invest in wind energy, hydel energy and nuclear energy. If people commitment becomes true, a time will come, when the country will be a role model for other countries. It will be appreciated and foreign investors would have an impetus to invest

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in the ~~de~~ other infrastructural and developmental projects. Thus, there is a dire need to educate people of the country, for the long-term benefits.

To conclude the whole discussion, it is a high ^{time} that the country knows the harrowing consequences of dependency on traditional means of energy resources. Since independence, the country is grappling with political instability, self-centred and myopic political endeavours, and economic constraints. These blockades have hampered and put on ~~at~~ standstill the security of the country from all dimensions. Resultantly, it is suffering from the ills of power outages, growing demand and declining supply of power, lack of resources and facilities to facilitate a paradigm shift away from the dependency on thermal energy. Deepening economic crisis, closure of businesses, the rising inflation and social unrest is becoming a norm, with each passing year. Thus, new policy is required that facilitates the inventors, encourages production of energy renewable energy resources, and putting the country on the path of sustainable development. Otherwise, a time may come when the coffers of national exchequer would be ^{have} empty nothing to pay for imported hydrocarbons. Balanced mix of energy resources is the need of the hour.

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