

Imbalance Of Energy Mix In Pakistan And Its Consequences

1. Introduction

Thesis Statement:

Pakistan's overreliance on fossil fuels in its energy mix creates a perfect storm of Energy Crises, Economic Volatility, Political uncertainty, and social inequality, necessitating an urgent shift towards renewable energy.

Inequality

2. Overreliance on Nonrenewable energy:

A perfect storm of energy crises.

Crisis

3. Causes of Energy Crises in Pakistan

- Limited energy resources fosters energy crises.
- Inefficient energy distribution system leads to substantial power losses.
- Political uncertainty impacting energy politics and investments.
- Circular debts affects financial health of energy sector.

e) Increasing demand of energy due to a growing population. ✓

4. Consequences of Energy Crises

a) Energy shortages hinder industrial productivity, affecting economic growth. ✓

b) Industries cutting back due to energy constraints lead to job losses. ✓

c) Power losses due to old transmission lines resulting heavy amounts

Higher of electricity bills.

d) Foreign investments stopped as our political instability impacting our energy politics.

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e) Electricity shutdowns are increasing due to extensive demand of electricity.

5. Way forward to address energy crises in Pakistan.

a) Diversification of energy resources. ✓

b) Energy conservation programs. ✓

c) Investment in research and techniques. ✓

d) Addressing circular debt issues. ✓

e) Population control measurements. ✓

f) Promotion of public private partnerships. ✓

6. Conclusion.

Imagine a land choked by fumes, its economy gasping for fuel, and its people yearning for a flicker of hope. This is Pakistan, teetering on a tightrope of fossil fuels, one misstep away from plunging into darkness. Its imbalanced energy mix, a ticking time bomb, threatens not just the environment, but the very fabric of this society. Prepare to delve into this precarious dance where every watt holds the power to either illuminate or ignite. Buckle up for the journey ahead is both perilous and transformative. Currently Pakistan is facing severe challenges and issues like political instability, constitutional crises, security threats, unprecedented economic crises etc but one of the major and serious crises faced by Pakistan is energy crises. Pakistan only relies on fossil fuels on its energy mix and not using any type renewable energy to generate cheaper electricity. It creates a perfect storm of energy crises, economic volatility, political uncertainty, and social inequality. Pakistan should have to make an urgent shift to renewable energy like Hydel power plants, Coal power plants, Wind power plants to make electricity cheaper and to

save country's economy as well as money. Pakistan does not have a good amount of oil reserves, so we have to import the crude oil and petroleum to meet our 80% ^{Per-cent} of oil requirements. The natural gas reserves of Pakistan are limited, however the coal reserves are large but undeveloped. Pakistan's energy distribution is not so good as our 80% of transmission lines are damaged or expired, resulting in a huge amount of power loss. Political instability is one of the major reasons of energy crises and the old agreements with international and domestic IPPs should be reag-
revised ^{Revisited} changed. An increasing demand of electricity is also because of our growing population. The consequence of the causes mentioned above are, Energy shortages hinder industrial productivity, affecting economic growth. Many people lost their jobs because industries are cutting back due to energy constraints. ~~Investments from foreign~~ foreign investments are stopped as our political instability impacting our energy policies. People of Pakistan ~~are~~ face electricity shutdown because of extensive demand of electricity. To address energy crises in Pakistan we need to divert the

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the energy resources, we need to host programs like energy conservation programs, we have to invest in research and techniques to generate cheaper energy, we have to address circular debt issues, we should take care of population control measurements and to promote public private partnership.

Pakistan have very limited energy resources which cause severe energy crises. One ^{major} reason why Pakistan have very limited energy resources, Pakistan generates 60% energy from Hydrocarbons or fossil fuels. 12000 MW of electricity generated from diesel, 7000 MW of electricity is generated from LNG, and 6500 MW of electricity is generated from coal. Hydrocarbons for the production of electricity are imported and the prices of Hydrocarbons in international market are increased by 100% after the war in Ukraine and sanctions on Russia. It also boosted energy crises in Country.

Pakistan's inefficient energy distribution system lead to substantial power losses. Meter tampering and electricity theft is one of the major serious reasons of power losses. In electricity theft Pakistan is in the top of the list in South Asia, which

is ~~17%~~ → Common practice of electricity theft is Kunda system, temper the meter reading. Karachi is on the top in electricity theft. Also, No electricity theft reported in country to counter this problem. In Urban areas, electricity theft done by mostly builders and Industrialists, while in rural areas it is done by agriculturists.

Pakistan's energy landscape dances on a tight rope stretched between political turbulence and sustainable solutions. Changing winds of power can stall or reverse crucial energy policies, leaving investors hesitant and long term plans in limbo. This uncertainty casts a long shadow, discouraging investments in renewable energy, hindering progress towards a cleaner future, and potentially widening the gap between energy rich and energy deprived community. Only by seeking cross party consensus, prioritizing transparencies, and building strong institutions can Pakistan navigate this storm and illuminate the path towards a stable and sustainable future energy for all.

The issue of circular debt in the power sector has largely remained uncontrolled in Pakistan. There have been efforts by successive governments to reduce the circular debt

however the issue remains. From Rs 450 billion in fiscal year 2013, the circular debt was reported at Rs 2.3 trillion as of 31 December 2020. The net annual circular debt flow for the year 2019-20 remained at Rs 538 billion while it projected at Rs 2.58 trillion by 30 June 2021. The circular debt balance is equivalent to 5.6% of the country's GDP and represents 6.8% of Pakistan's GDP, and that is the reason circular debts affect financial health of energy sector.

As Pakistan's population is growing very rapidly, the demand of energy increased. Let's move forward to the figures, The current population of Pakistan is 240,485,658, a 1.98% increase from 2022. The Population of Pakistan in 2022 was 235,824,862, a 1.91% increase from 2021. The increment in Pakistan's Population is approximately 4% in last two years. As population increased the demand in energy increasing but country don't have enough funds or in a state to counter this problem and generate electricity more. In results we are facing major short falls and load shedding in urban as well as rural areas.

The industrial sector has also been severely damaged by energy crisis. The

manufacturing process of several major and small scale industries have been shifted by ~~it~~. Due to the continuous energy constraints, the supply of gas and electricity to the industry was shut off. ~~It has~~ Electricity short fall has the negative impact on Pakistan's economic growth. In summer 2023, the short fall was well above 7000 MW. In 2022, the short fall was more than 10,000 MW. From 2007 till the end of 2016 the short fall varies from 5000 MW to 8000 MW.

Industries are cutting back due to energy shortages and it is impacting on our economy, our trade, and also on our foreign investments. Our most of the industries are closed, and of the major reason of their cutting back is of electricity shortages and expensive electricity. Toyota is the example that shut down the industry in Pakistan, No doubt we were only assembling in that industry but this closure brings drastic change in the life of workers who worked in ~~or~~ in ^{those} ~~that~~ industries because they all lost their jobs and they do government didn't took the responsibility of their families at it effects our labourers and our machine men.

Another reason of power loss is also due to the outdated transmission lines. Majority have got expired either before 2000 or 2010. Resulting the line loss in Pakistan is highest in South Asia which is 17%. Line loss in China is 3%, In India it is 9%, In Bangladesh it is approximately 9% and in Afghanistan it is 12%. Because of the 17% of line loss, If we purchase 100 MW, 17 MW being lost and the cost is to be paid by the state and the customers.

Instability of political system impacting our energy politics resulting foreign investments stopped. Foreign investors, once drawn by promises of growth, now hesitate on precipice of uncertainty. Energy policies susceptible to sudden shifts in power, become a treacherous tightrope walk for corporations, deterring them from committing precious resources. The path to a brighter energy future demands from ground a stable political climate where long term visions, not short term power plays, guide the way towards attracting the investments that will illuminate Pakistan's energy horizons.

Electricity shut downs are increasing because of the demand of electricity increases. We don't have

enough energy sources to generate a huge amount of electricity. Another reason of expensive electricity is the agreements we have signed with international and domestic IPPs. These IPPs were installed in 1986, 1991, 1994, 2002, 2014, it means more increase in demand, more IPPs installed. Unprecedented increase in the capacity payment which is currently more than 2.3 trillion PKR. All the IPPs payment are paid in dollars and even the local IPPs are getting paid in dollars that results into decline of dollar reserves.

Talking about way forward to address energy crises in Pakistan, firstly and the most important step is we have to diversify the energy resources. As we generate more than 60% of electricity is from imported hydrocarbons, we should have to move forward to the renewable energy like hydel projects, solar project, wind projects and local coal projects. We should renegotiate the agreements of IPPs. By 2030, we produced 15000 MW from Hydel projects like Diamer basha dam, Dasu, Momand, Karot, Sukhi Kinari, Dasal Khwar etc. We should use local coal of that. As one coal project of 1320 MW and 4 projects of 320 MW have been completed. Wind turbine can

produce 4500 MW and solar projects ~~and~~ ^{can} produce 2000 MW, By 2030 all projects will be finalized. Energy conservation programs should be host by country to teach us how we could save electricity. We should invest on new techniques to make energy, we have to address circular debt issues, we have to organize such programs like population control as a policy that will control our growing population. We have to promote our public private partnerships.

To conclude, Pakistan should not over rely on fossil fuels to in its energy mix. It will create a perfect storm of energy crises. Rather country should use renewable energy to cater bad economy, expensive agreements with IPPs, and energy shutdown. This enhancement will also boost country's economy also it boost tourism.