

# ENERGY Crisis: Causes, Solutions and Consequences.

## OUTLINE

### 1. Introduction

Thesis Statement:

"It is evident that Pakistan is facing acute energy crisis because of multiple causes. However, pragmatic solutions ~~has~~ must be taken to eradicate the devastating consequences of energy crisis"

### 2. Current situation of the energy crisis of Pakistan.

### 3. Causes of energy crisis of Pakistan.

3a) Over-reliance on hydrocarbons (HC).

⇒ generation of energy from hydrocarbons.

⇒ 588,000 from coal oil, 66% gas imports.

3b) Huge transmission and distribution losses.

⇒ Approximately 33% losses.

3c) Outdated infrastructure of energy sector

⇒ Tarbela dam and Mangla dam

3d) Inadequate efficiency of refineries.

⇒ 36% capacity of refineries and remaining losses during process.

3e) Culture of energy theft in Pakistan.

⇒ 600B loss due to energy theft. (Fd energy Minister)

3f) Inappropriate agreements with IPPs.

⇒ Omer Ayub Khan ⇒ Former Minister of energy

#### 4. Destructive consequences of energy crisis of Pakistan

4a) Energy crisis has severely damages the industrial sector

⇒ 200 industries has been closed since three years

4b) Mounting prices of electricity bills.  
⇒ 3<sup>rd</sup> most expensive energy generated in the world" (Ex-PM)

4c) Energy sector increases the burdens on circular dept.  
⇒ projected to reach 3 Trillions.

4d) Energy crisis has dangerously impacted the agriculture.  
⇒ low production.

4e) Vulnerable energy conditions has created social unrest in the society.  
⇒ Protests against energy prices in the month of August.

4f) Energy crisis hampers Pakistan's economic growth.  
⇒ Ex-Prime Minister Nawaz Sharif.

5. Pragmatic solutions to cater the energy crisis

5a) Shift from non-renewable energy resources to renewable energy resources -

5b) Use of ~~the~~ modern technology to minimize the transmission and energy losses -

5c) To improve the efficiency of the refineries to utilize the maximum ~~etc.~~ crude oil

5d) Construction of new dams and improvement in existing infrastructure

5e) Implementation of new policies to reduce the energy theft -

5f) To revise agreements with IPPs ~~for~~ and tariff determination -

## 6 Conclusion -

A country's ~~ex~~ energy sector is responsible for its social growth and economic development. Unfortunately, Pakistan is facing severe energy crisis over the last two decades. However, there are numerous reasons behind this vulnerable condition of energy sector of Pakistan, among them the main reasons are over-reliance on hydrocarbons, such as, coal, oil and natural gas and huge transmission and distribution losses. Similarly, outdated infrastructure exacerbates the energy crisis in the country.

All these causes comes with devastating consequences like, energy crisis has severely damages the industrial sector. Moreover, it mounts the prices of electricity bills and increases the burden's on circular dept. In the same way, it has dangerously impacted the agriculture. However,

all hope is not lost. The vulnerable energy conditions can be overcome by taking serious steps, like, shift from non-renewable resources to renewable resources. Moreover, use of modern technology and by improving the efficiency of refineries. Thus, it is evident that Pakistan is facing acute energy crisis because of multiple reasons. However, by taking pragmatic solutions it can be ~~in~~ eliminated.

Energy crisis is the shortage of energy resources in a particular country. Sadly, Pakistan is grappling with an acute energy crisis. According to Energy Transition Index, Pakistan ranks 108<sup>th</sup> out of 120 countries in the world economic forum<sup>2022</sup>. The current situation of energy sector of Pakistan is quite grim and is facing the shortfall of approximately 6000MW, with ~~in~~ severe

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loadshedding.

To begin with, the over-reliance on hydrocarbons is the main cause of the energy crisis in Pakistan. Hydrocarbons are non-renewable energy resources such as, coal, oil and gas. However, Pakistan generates energy from hydrocarbons. This can be proved by following states as, "Pakistan imports 500,000 barrels on daily basis for the generation of electricity". Thus, the energy crisis in Pakistan is a result of over-reliance on the use of hydrocarbons.

Huge transmission and distribution loss is another cause of energy crisis in Pakistan. The electricity is transmitted from source to the consumers through the different kinds of transmission lines. However, during this process the electricity is lost severely. This can be proved by comparison with other countries, as



the loss of electricity in India and Bangladesh is almost half as compare to Pakistan, whose distribution & transmission loss is 33%. Hence, the energy crisis is because of the loss of transmission and distribution of energy.

Moreover, the outdated infrastructure exacerbates the energy crisis in Pakistan. The aging infrastructure, with most power plants and transmission lines installed decades ago, lacking modernization and upgrades. Mangla and Tarbela, two Pakistan's largest dams are older than 50 years and their capacity is reduced due to seepage and sedimentation. Resultantly, aging infrastructure is responsible for the energy crisis in the country.

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Attock refinery, Karachi refinery, Hub refinery, etc. Pakistan is not the major producer of hydrocarbons, it has to import most of them. The produced and imported oil, if not refined then it is sent to these refineries whose capacity is nearly 36% overall and remaining losses during the process. It means, lack of efficiency in refineries enhances the energy crisis.

Furthermore, the energy theft culture in Pakistan enlarges the energy crisis in the country. Pakistan's energy generation is low and situation becomes more serious when the produced electricity is being theft. The "Kunda system" culture in rural areas of Pakistan is responsible for energy theft. Moreover, the elites of the country also repeats the process for running industries. However, energy crisis increases through theft of electricity.

Federal Minister of energy Owais Ahmed Laghari revealed that electricity theft causes annual loss of RS600 billion. Hence, it is clear that, energy theft enhances energy crisis.

Last but not least, inappropriate agreements with independent power producers (IPPs) aggravates the energy crisis of Pakistan. These agreements often criticized for their unfavorable terms, have resulted in inflated tariffs, guaranteed return, regardless of actual power generation. This has led to an annual loss of Rs.100-150 billion. According to Express Tribune, Omar Ayub Khan - Former Minister of energy said that, "The IPPs agreements were flawed, and we are paying the price of it". Thus, energy scarcity increases because of the flawed agreements with IPPs.

These factors indeed have grave consequences for Pakistan. First, the

energy crisis has severely damages the industrial sector. Due to, high loadshedding the production was seriously disturbed. Furthermore, the increase in unit price makes the situation worse. This results in the rise in prices of products and consequently, their consumption decreases.

"Almost 200 industries has been closed since three years. Thus, energy crisis has seriously impacted the industries of the country.

Besides this, mounting prices of electricity bills is the worst consequence of energy dilemma. The electricity in Pakistan is mostly generated from hydrocarbons which are imported at high prices. Furthermore, the flawed agreements with IPPs regarding payment, makes the situation even catastrophic. Because of this, a surge in the electricity bills has been noticed in the

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recent years. The Ex-Prime Minister said ~~that~~ that, "Pakistan generates 3rd most expensive energy<sup>in</sup> the world". Hence, rise in the electricity bills is because of energy crisis-

Similarly, energy sector increases the burden on circular dept. The imported fuels holds a major percentage in the countries energy mix. This import has put pressure on scarce foreign exchange reserves.

According to the ministry of energy, as of 2022, "Pakistan's circular dept in the energy sector stands at approximately Rs. 2.3 Trillion". And as of now, it is projected to reach 3 Trillion.

Therefore, circular dept is impacted by energy at most.

Moreover, energy crisis has dangerously impacted the agriculture sector. Pakistan is an agrarian country and highly depends upon agricultural economy. Furthermore,

60% of the population of Pakistan is associated with agriculture. The constant loadshedding in most of the country has decreased the production of farmers because these farmers are highly dependent on tube wells. As a result, energy crisis severely impacted agriculture.

Furthermore, vulnerable energy conditions has created social unrest in the society. The persistent electricity shortages, loadshedding and high energy tariffs have significantly impacted daily life, commerce and industry. Unaffordable energy has increased poverty and inequality.

A situation was created in the month of August, when thousand of people protests against energy prices. This social unrest is the result of energy crisis in Pakistan.

Finally, energy crisis hampers Pakistan's economic growth and

prosperity. The economy of country depends upon its local industry, social conditions, agriculture and exports. However, serious energy condition has impacted on all these points which results in economic chaos. This can be justified by the saying of Ex-Prime Minister Nawaz Sharif, he said, "The energy crisis is the major obstacle to Pakistan's economic growth and prosperity". Hence, energy crisis impacts economic growth.

Apart from all these consequences, the energy crisis can be eliminated by taking serious steps. The country must shift from <sup>non-</sup>renewable energy resources to renewable energy resources. The renewable energy resources are water, wind and solar energy. Almighty has blessed Pakistan with abundance of these resources. Pakistan has the second



Largest coal deposits in the world. Sammer Mubarak Khan said that, "Pakistan can produce 50,000 MW electricity from that coal for the coming two years". According to the World Bank Report, "Pakistan can create above 50,000 MW through water". It means by shifting on renewable energy sources Pakistan can reduce energy crisis.

In the similar way, Pakistan should use modern technology to minimize the transmission and energy losses. A huge amount of energy is lost through its transmission process because of outdated transmission lines. Pakistan should learn from Scandinavian countries as their transmission and distribution loss is only 5 to 10%. Meanwhile, transmission and distribution losses can be reduced through modern technology.

Furthermore, by improving the efficiency of the refineries to utilize the maximum amount of crude oil. The refineries of Pakistan has the minimum refine capability in the region as compare to the neighbouring nations. Pakistan must utilize its refineries for maximum energy production. This can be achieved through advanced technologies such as hydrocracking, hydrotreating and solvent desphalting which enable the production of cleaner energy. Thus, by improving the efficiency of refineries energy scarcity can be ~~un~~ curtailed.

Apart from this, energy crisis can be eliminated by construction of new dams and improvement in existing infrastructure. The two major dams of Pakistan are Tarbela dam and Mangla dams, are in vulnerable condition and are over aged dams. These dams

requires massive improvements and reconstruction to minimize seepage and water losses. Moreover, construction of new dams is a need of time to meet water needs and produce environmental friendly energy. Hence, by constructing new dams and improvement of the existing dams, Pakistan can eradicate energy crisis.

Moreover, implementing new policies to reduce the energy theft can resolve energy issue of Pakistan. Energy production is less than the requirement but the situation becomes worse when less required energy is stealth by the elites and feudals of the country. However, this can be reduced by implementation of strict policies, such as, smart metering, regular audits, penalty enforcement and establishing Energy Management

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system. Resultantly, by enforcing these steps energy theft can be minimized which, ultimately results in the reduction of energy crisis.

Finally, energy crisis can be reduced by revising agreements with IPPs and tariff determination. The IPPs are solely responsible for increasing the burden on energy sector. Moreover, the agreements with IPPs are ridiculous and are against the ~~best~~ interest of the country. Therefore, government should revise these agreements with IPPs with immediate effect. Thus, energy crisis can be eliminated by reviewing agreements with IPPs.

In a nutshell, it is an undeniable fact that Pakistan is facing immense energy crisis that has serious consequences. However, by analyzing the actual causes and implementing serious steps this

menace can be curtailed. The causes of the miserable condition of energy sector are, outdated infrastructure of energy sector, inadequate efficiency of refineries, the culture of energy theft and inappropriate agreements with IPPs. However, these cause have devastating impacts, such as, the energy sector increases the burden on circular debt, it dangerously impacted the agriculture of Pakistan. Moreover, ~~the~~ miserable energy conditions has created social unrest in the society and impedes the economic growth of Pakistan. Despite the pressing nature of the issue, opportunities remains to mitigate the energy crisis through proactive measures, like, by improving the efficiency of refineries and through constructing new dams, energy crisis can be curtailed. Furthermore, to reduce energy theft new policies

must be implemented and finally, by revising agreements with IPPs energy crisis can be calmed. However, through collective resolve, innovative solutions, and strategic investments, Pakistan can overcome its energy crisis to ensure a brighter and more sustainable future for generations to come.