



## **DRAWING PARALLELS BETWEEN ENERGY SECURITY AND REGIONAL INTEGRATION: A CASE STUDY OF SOUTH ASIA**

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### **Abstract**

*Energy security is a critical component of economic development. Economic growth and burgeoning populations have put South Asia's energy security in a perilous state. Provided a growing imbalance between energy demand and supply from indigenous sources, no South Asian country can meet its energy requirements domestically. In addition, regional countries are still dependent on non-renewable energy resources like oil, gas, and coal, fostering oil and gas imports and related issues. This study argues that despite security challenges and conflicts in the region, there are striking similarities in oil and gas demand, consumption and trade issues of South Asian countries. Therefore, greater cooperation within the regional energy oil and gas sector could be an effective way to ensure energy security and deal with the challenges of Regional Integration, through improved connectivity at regional and inter-regional levels. This paper tends to inquire about the common energy security challenges faced by the three largest South Asian states i-e India, Pakistan, and Bangladesh. What measures would strengthen the energy security of the region and how the energy sector might boost regional integration? For this purpose, it would look at the South Asian energy security issues in two parts. First, the prevailing conditions of the energy*



*sector in all three countries will be analyzed to draw similarities in policies and challenges. The second part will discuss, common challenges, and find the prospects of cooperation among regional states to foster regional integration and cross-regional cooperation through the institutionalized mechanism.*

**Keywords:** Energy Security, Oil, Natural gas, coal, South Asia.

### **Introduction**

Energy Security has become the most important phenomenon in the economic development of any country. Its pervasive role in expediting the social and economic development of a state is unquestionable. Energy resources are the most important and inevitable component of any economic activity and development targets a nation sets for itself. And Energy security is the ultimate goal of any state envisioning a smooth functioning of the economy by providing an uninterrupted energy supply to domestic consumers and commercial activities in the country. This includes the industrial sector, transportation, domestic use for heating cooking, and other usage. Rapid population growth and fast economic growth have caused relentless pressure on energy demands. A strong correlation between economic indicators and energy consumption has already been proved by many empirical studies (Warr & Ayres, 2010). Therefore, a smooth supply of energy to consumers and its consumption levels are considered a sign of sustainable development. However, rapid industrialization in many parts of the world and the emergence of numerous regional economic powers have created myriad challenges for the energy sector all over the world. This situation is quite acute in the developing world.

A recent hike in energy resources in the international market has caused a lot of challenges like inflation, uncertain supply of energy resources, and ultimately political instability. This is especially true for those who are dependent on imported energy. South Asia region with almost 24% of the total world population is at the highest risk of energy security (Worldmeter, 2022). India, Pakistan, and Bangladesh the three most populated countries in the region are facing identical issues in this regard. All three states are mostly dependent on non-renewable energy resources like coal, oil, and gas. Despite, growing environmental concerns related to burning fossil fuels, fluctuating oil prices in international markets, and efforts for renewable energy, it is hard for them to get rid of their dependence on petroleum products in near future. Thus, uncertainty in the international oil market, security issues with gas pipelines, and many other issues create multitudes of energy security challenges. This paper inquires about the common energy security challenges and explores how energy security might help in boosting regional cooperation. While analyzing the current situation



of energy resources consumption, production, and demand in all three states argues that there is a lot of similarity in the existing energy security issues of the South Asia region. Therefore, it provides good prospects for all regional states to promote joint efforts for the resolution of this critical issue. This will not only help in combating this challenge but also create interdependence among all regional states and ultimately to economic integration. An increased interdependence leads to reducing the conflict. This is a comparative study of the three largest countries in the South Asia region. By looking at the current energy mix of all states, their demand and supply pattern, local production, and import dependency, similarities would be drawn among all three countries. This will help in exploring the ways of enhancing cooperation and interdependence. Moreover, the causative relation between cooperation and conflict will be discussed in the context of South Asian energy security to find out the possibilities this sector provides for conflict resolution and regional integration. Both qualitative and quantitative data will be used in this regard. Quantitative data will be in form of statistics related to energy resources production-consumption, demand, and supply. This will help in drawing parallels between South Asian countries' energy security challenges. This will help in identifying areas for cooperation.

### **Conceptualizing Energy Security**

Energy security is a broad term that includes many dimensions of energy-related sectors. Although there is no clear single definition available for the terminology. Broadly speaking it talks about the uninterrupted supply of energy resources to a country's economy at an affordable price (IEA, 2014). It also involves the discussion of every single resource and risk related to it. A more comprehensive discussion on energy security introduces the concept of 4As, availability, accessibility, affordability, and acceptability (Asia Pacific Research Institute, 2007). Availability deals with the domestically available energy resources, their exploration, and development levels. Most South Asian countries are facing the challenge of availability, as their available domestic resources are insufficient as compared to the demand. The next A is accessibility. This might be discussed in two ways. Access of the people to the energy resources and in case of imported energy resources accessibility to the markets. Most South Asian countries have not been able to ensure full accessibility of their resources to their population. This aspect is important in measuring the social development level of a country. Affordability is another very important aspect of energy security. It correlates with accessibility. As the accessible resources are affordable for the general population or not. Usually, it is observed that import-dependent countries occasionally raise the prices of electricity and gas for the public, which often causes high inflation rates and it becomes difficult for the public to fully utilize these accessible and available energy resources. Therefore, keeping the price under control ensures the



affordability of energy resources for the people. Availability and accessibility are social and natural aspects of energy security. While Affordability and Acceptability are economic environmental dimensions of energy security. Last A is related to acceptability. It is more concerned with whom energy imports should be made. Which sources of energy would be environment friendly and will not cause much impact on people's health. Given all these A's the energy security issues of three major south Asian nations will be dealt with.

Energy security is a broad concept. As explained in the conceptualization of energy security, it involves a smooth and uninterrupted supply of energy resources for the smooth running of the economy. It is a fact that there is a clear imbalance exist in population and natural resource endowment in Asia. This is especially true for the South Asia region where a quarter of the world population resides but their natural resources especially oil the most widely used resource for energy are not sufficiently available (Lucas, 2014). A study conducted by Asian Development Bank shows that South Asia which is the most populated region of Asia possesses only 0.5 % of the world's total oil reserves and 0.8 % of the World's gas reserves (Sarker et al., 2020). The current population of South Asia is around 24.89 % of the world's total population (World meter, 2020). All South Asian nations have come ahead to ensure their specific requirements in energy security. While analyzing India's energy sector challenges Anant Sudarshan looks at India's energy sector from two perspectives, one relates energy to growth concerns and the second to poverty concerns of the states. The first one is related to ensuring a constant supply of energy resources for running economic activity. And second is the imprint of that economic activity on poverty reduction in the country (Noronha & Sudarshan, 2009).

India's energy trade options are also linked to strategic decision-making. Although the whole South Asia region is facing an energy crisis, India Pakistan, and Bangladesh are included in the top ten most populated countries of the world, with joint borders and similar energy security scenarios. Yet their mutual conflicts are a great obstacle in joining their efforts for the energy security of the whole region (Ebinger, 2011). Pakistan's energy security challenges stem from multiple dimensions. It spread from the availability of resources, their affordability, and accessibility. These three scenarios cover all internal and external dimensions of Pakistan's energy sector (Abdullah et al., 2020). Pakistan's economic development is very much related to sustained energy supply. The country has faced numerous issues in the purchase of imported oil and gas due to geographical issues as well as economic crises. The government of Pakistan is trying to develop a sustained policy in the energy sector (Kumar, 2010). Due to the increased demand for energy resources in Pakistan, the government is facing constant pressure for ensuring a smooth supply. However, the country's huge dependence on imported oil and a higher share of oil-based electricity in Pakistan has put a lot of pressure on the already suffering economy. In



this scenario, a shift from fossil fuels and gradual improvement in the renewable sector has become very important. Unfortunately, Pakistan has not been able to evolve a comprehensive policy for the development of the renewable sector (Aized et al., 2018). Other developing nations are facing similar problems. Bangladesh the third largest nation in terms of population in South Asia presents a similar scenario. Its economy is also dependent on imported gas and coal. This creates a burden on import bills. The transition from non-renewable to renewable has not seen any comprehensive strategy and planning in Bangladesh. The increase in solar panels in the country is believed to be associated with the country's food security (Masud et al., 2020). In such a scenario, where all neighboring states are facing similar issues related to energy security, it becomes very important to enhance cooperation at the regional level for the common good of the people of the region. A joint initiative to enhance cooperation in the energy sector will be helpful in two ways. It will reduce the chances of conflict on the one hand and joint efforts will help in devising a regional energy security policy in the region (Hesary et al., 2019).

The next part of the study will look deep into the energy sector-related issues and challenges to find a joint path for cooperation for the energy security of the whole region.

### **Drawing Parallels between India, Pakistan, and Bangladesh Energy Sectors:**

#### **India: The Economic Giant of South Asia**

India is no doubt the economic giant of the South Asia region. With over 1.38 billion people, it is not only the most populated country in the region but also the biggest economy in South Asia (World Bank, 2020). India has come a long way ahead from an agricultural economy to an industrial and service sector economy. This transition during the last few decades has caused an unprecedented use of energy resources in India. Its energy sector is diverse. It comprises mostly non-renewable resources like coal oil and gas as well as renewable resources like solar energy, wind energy, and biomass. The share of non-renewable resources is still around 80 % in India's energy sector (Energy Information Administration, 2021). Despite showing some promising progress in the energy sector such a huge reliance on non-renewable sources has caused a lot of environmental concern. Among non-renewables coal, oil and gas dominate the energy mix in India. The share of coal in Indian energy consumption is 45.8 %, the share of crude oil is 29.5 % and the share of natural gas is around 6.7% according to 2019 data (British Petroleum, 2019). This energy imbalance between renewable and non-renewables in India's energy sector has created a lot of problems. High growth in economy and population simultaneously creates



a lot of pressure on insufficient domestic resources. Therefore India is highly dependent on imported energy resources (Khashimwo, 2020).

Despite having huge coal reserves, their under usage and India is importing coal. This also has caused a lot of concerns for energy security in India. India possesses 344.02 billion tonnes of coal reserves but its usage is only 729 million tonnes a year (Aggarwal, 2021).

Similarly, the share of oil in the Indian economy is very significant. As India does not have sufficient oil reserves, it is heavily dependent on imported oil. Almost 86% of India's required crude oil is imported (Auto Economic Times, 2022). The fluctuation in oil prices internationally has caused so much concern for the energy security of the country. The continuous hike in oil prices recently has caused rising inflation in the country. The government either will bear the shock itself or transfer the burden of high oil prices to the people. If the government decides to give subsidies to the people, its current account deficit will rise. Therefore it has become a matter of concern in India to reduce the import bills and amicably manage the oil imports.

Another very important issue in Indian energy security is related to external challenges. Although there are a lot of efforts going on for joint economic development of the region and ultimate regional integration through the Belt & Road initiative, the tension in China-India relations has hampered cooperation in the field of energy. In addition, India's energy mix is mostly dependent on imported energy resources. This puts Indian energy security in quite a vulnerable position (Alvani et al., 2021).

### **Pakistan: A Struggling Economy**

Pakistan the second-largest nation in South Asia has long been struggling with its economic conditions. The use of energy resources has increased manifold during the last few decades in Pakistan. Improved transportation facilities, increased usage of home appliances and rising use of energy in the industrial sector has brought Pakistan's energy sector under pressure. But unfortunately, Pakistan has not moved in a positive way to improve its energy mix. Like India, Pakistan is very much dependent on fossil fuels.

According to official data, Pakistan's electricity generation is highly dependent on thermal resources like oil and coal. It comprises almost 58.4% of the total energy mix. Hydroelectricity is placed in the second position with 30 % (Finance Division, 2021). Pakistan has not been able to foster sustainable growth due to its heavy reliance on imported energy resources and borrowing from financial institutions and friendly nations. This has increased the current account deficit in the country. Uncertain political conditions,

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bureaucratic hurdles, and lack of long-term policy initiatives have also created a lot of obstacles to bringing foreign direct investment into the country. Consequently, there is no back step in the country's import bill. The share of imported oil in Pakistan's oil sector is around 80%. Among other non-renewables gas plays an important role in Pakistan's economy. Pakistan is blessed with huge natural gas reserves. They are mostly located in Balochistan and Sindh. The prevailing security situation in these parts of the country often puts the security of gas pipelines at high risk. Despite having quite a huge gas reserve, they are sufficient in meeting the gas requirements of a population comprising 220 million people. Pakistan, therefore, relies heavily on imported gas and LNG. Pakistan has signed multiple gas import agreements with regional countries. Among them, Iran and Turkmenistan are important gas suppliers to Pakistan. Another significant challenge related to the import of gas from other sources. Pakistan Iran gas trade has often been hit by sanctions on Iran. Similarly, Pakistan has long desired to expand its energy trade with Central Asian countries. TAPI (Turkmenistan, Afghanistan, Pakistan, and India gas pipeline projects have been prey to security turmoil in Afghanistan. Afghanistan's situation is not only an obstacle in this project but a severe challenge to the energy security and regional integration of this part of the world. Pakistan is also developing its ties with Russia for the import of gas. Both countries have signed MOUs for the joint ventures which are aimed at building an 1100 km long pipeline from Pakistan's southern province of Sindh to northern Punjab with a cost of billion 2.5 \$ (Pipeline Technology Journal, 2021). LNG has become another important phenomenon in Pakistan's energy mix. Pakistan mostly imports LNG from Qatar. Pakistan started importing LNG back in 2015 without complete storage facilities and another necessary arrangement. This has raised many questions on the efficient implementation of such mega projects. Pakistan's effort to build a storage facility with a Russian firm ROSTEC could not be materialized due to the US sanction on Russia (Khan, 2022). Since that no serious effort has been made in this regard. Instead, the LNG import issue has become so politicized between Pakistani political parties that any further serious action seems difficult in this regard.

Such political issues have hindered the development of Pakistan's energy sector. The development of gas reserves in Sui Baluchistan, and the construction of mega hydropower facilities like the Kalabagh dam have invited hue and cry (Kumar, 2010). This has created an extreme division among Pakistan's political elite. Pakistan faces severe internal and external challenges in its energy sector. To meet the energy crisis, the focus must be diverted to renewable energy resources as well. Unfortunately, Pakistan has not been successful in exploring this sector properly, due to poor policy making and implementation issues. Punjab and Sind present a huge market for solar energy. Wind energy can be obtained in some areas of Sindh. However, the renewable energy policy could not be



finalized in the last few years. Government subsidies are very less and the banking sector is not providing limited loans with heavy markups (Bhutta, 2013).

The involvement of international financial institutions in the country's economic planning and their pressure to remove subsidies has created high inflation rates. A large number of the population in the country's rural areas lack the availability of electricity. Rampant load shedding in rural and urban centers has created havoc in economic activity in Pakistan. The continuous hike in petroleum prices have not only added an extra burden on the local population but the agriculture and industrial sector have been hardly hit by this. On the other hand, the depreciation of the local currency against the dollar and rising international prices of Oil are constantly increasing the import bill of the country.

### **Bangladesh: Asian Tiger**

Bangladesh the third most populated nation in south Asia has shown some promising performance in ensuring its energy security. While realizing the strategic importance of the energy sector, it has prioritized the sustainable development of energy resources during the last few decades. Consequently, Bangladesh's economy has performed very well and is included among the fastest-growing Asian economies. Bangladesh's natural resource endowment has been quite poor in comparison with Pakistan and India. Domestically available petroleum resources are very low. Oil and Natural Gas are dominant energy resources in the production of electricity in Bangladesh as well. Unlike India and Pakistan, Bangladesh uses 62.9% of natural gas in its energy sector while the share of oil which is a more expensive source is only 3.3 %, Diesel 10 %, and coal comprises only 3 % of Bangladesh's energy mix (Energy Pedia, 2022). Bangladesh has a heavy reliance on gas. To meet the gas shortage, the Bangladeshi government has chosen imported LNG, instead of domestic exploration. During the last decade or two, not much attention has been paid to the deep-sea drilling for petroleum reserves. It is evident that deep-sea exploration and drilling are quite expensive, Bangladeshi government has tried to avoid taking such risk, and instead diverted the resources into the import of LNG. Bangladesh possesses some high quality but a low reserve of coal. Bangladeshi government planned to produce 10.000 MW (Jahangir, 2021) of electricity with coal by 2030. But there are huge environmental concerns. Therefore Bangladesh is using imported coal which has raised the cost of electricity generation in the country. Therefore the government is taking new initiatives to shift its focus on renewable energy generation. The consumption of imported coal not only increases the import bill but put an extra burden on the consumer in the shape of high electricity prices.



The situation of renewable energy is not much promising in Bangladesh. One of the main hurdles in the development of the solar sector is the availability of land and its high cost. The Bangladesh government has been barred from using agricultural land for the installation of solar panels. The main purpose behind this is to ensure food security. However, solar energy might be used for achieving food security. A more innovative approach is required to meet this issue. As far as wind energy production is concerned, Bangladesh does not provide a promising scenario in this regard. In short, like neighboring India and Pakistan, Bangladesh is also dependent on imported fossil fuels. An import-dependent energy sector is always vulnerable to supply chain management. The Bangladeshi government has undertaken quite an impressive step to ensure a smooth supply of gas (the dominant resource of Bangladesh's energy mix) and coal. They have built land-based regasification plants. Bangladesh has achieved a higher growth rate in the recent decade due to better maintenance of the supply chain. Bangladesh has demonstrated good progress in its electricity generation capacity during the last few years, but its infrastructure for electricity transmission and distribution needs further improvement. Despite these shortcomings, the Bangladeshi government has shown some good progress in providing electricity to the majority of its population. The future of its energy security depends on how the Bangladeshi government reduces the dependence on imported gas. Because imported energy resources are always vulnerable to fluctuating prices. The second important vulnerability is related to the uninterrupted supply of LNG in the presence of insecure choke points in the Indian Ocean.

Last but not least a gradual transition from non-renewable to renewable energy sources is what is the need of the hour. One of the biggest challenges faced by the currently booming economies is that they are heavily dependent on petroleum products like oil, gas, and coal. Most of these nations including India, Pakistan, and Bangladesh do not have sufficient resources for oil gas, and coal. This has a two-pronged effect on their economies. The rise in import bills results in high inflation. Secondly, the impact of burning these fossil fuels on the environment. The whole south Asia region has experienced a record increase in temperature in recent years. It resulting the melting of glaciers, torrential rains and floods, environmental degradation, health issues, and many other related problems. Moreover, the current international conflicts in oil and gas producing regions like the Middle East and Russia Ukraine war have a severe impact on the price stability of petroleum products around the world. In this scenario, the result is faced by the local consumer in the shape of high prices of daily commodities, increased tax rates, and inflation in the economy. All three South Asian states are part of many regional organizations Like SAARC (South Asian Association for Regional Cooperation), SCO (Shanghai Cooperation Organization, and ECO (Economic Cooperation Organization). These institutions can provide a suitable platform for enhancing cooperation at regional levels. Moreover, in the neighborhood of



energy-deficient South Asia, the Central Asia region exists which has energy resources in surplus and they are also a member of these organizations. Joint efforts using this institutional platform to formulate a regional energy policy would be beneficial for both Central Asia and South Asia. Regional states must adopt a policy to prioritize trade with the regional states to promote inter-regional cost-effective trade. Such policies, if adopted in one sector of the economy will be having a spillover effect and promote cooperation in other sectors of the economy, ultimately achieving regional integration.

### **Conclusion**

South Asia region presents an interesting case to study the energy security issues of a quarter population of the world. The above discussion of the energy sectors of India, Pakistan, and Bangladesh presents some striking similarities and patterns in their energy sector's conditions and prevailing challenges. All three nations are facing increasing challenges in the energy sector due to the fast-growing population, innovation in technology, increased transportation, and many other factors. Rapidly growing demands for electricity for the domestic and commercial sectors have caused a lot of strain on countries' domestic resources. All three countries do not have sufficient domestically available energy resources and they are heavily dependent on imported energy. Secondly, a major source of energy in all three countries is fossil fuels. India and Pakistan are heavily dependent on imported oil, while Bangladesh is overwhelmingly dependent on imported natural gas for electricity generation. Fluctuation in oil prices in the international market has caused a lot of pressure on regional economies for reducing subsidies and raising prices. In this scenario, inflation cause great social and economic unrest. This makes the availability and affordability of energy resources difficult in these countries. Accessibility has an external dimension as well. Access to foreign markets for the import of oil and gas often involves price and security issues. All three major south Asian countries are still way behind in developing their renewable energy sectors. In such a similar energy sector scenario, India, Pakistan, and Bangladesh have bright prospects of cooperation in the energy sector. They must initiate a regional trade policy with the neighboring regions that have energy resources in surplus. Central Asian states have vast oil and gas resources. Energy trade with them would be quite beneficial for the whole region. Joint ventures can play an important role in this regard. All can initiate joint oil and gas pipeline projects. These efforts must be institutionalized to produce better outcomes. Although there are some major security risks like the Afghan issue and regional conflicts between India and Pakistan might create trouble. But the utilization of regional institutions like the Shanghai Cooperation Organization (SCO) and Economic Cooperation Organization (ECO) might play a positive role. Under this institutional framework, all regional states should formulate a joint policy for more renewable energy sources. There is an abundance of hydroelectric



sources and solar energy if utilized properly might be producing energy in surplus. They can learn from each other's experiences. Cooperation in the energy sector can lead to increased interdependence and consequently reduction of conflict in the region. Thus is it evident that the energy security of the whole South Asian region is interconnected and provides a huge prospect for enhancing regional cooperation and ultimately regional integration in South Asia. It concludes that by improving the prospects of cooperation and efforts for integration at different levels by adopting the policies of resource sharing, prioritizing trade with regional states will help bring regional states together for achieving energy security and regional integration.



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