



China Pakistan Economic Corridor Investment in Power Project and Emerging Narratives in Pakistan: A Political Economic Perspective

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Abstract:

Pakistan has been suffering from an energy deficit for over a decade, accounting for approximately 2% of the country's GDP. One of the major CPEC investments is in the energy sector, which accounts for 60% of the total investment and amounts to approximately US\$35 billion in Pakistan's electric power sector, with the goal of increasing Pakistan's power production capacity. These projects are producing surpluses in power as according to the Pakistan Economic Survey 2019-20, the installed electricity generation capacity reached 37,402 MW in 2020, whereas Pakistan's total demand is nearly 25,000 MW. The surplus is due to 17 energy projects installed in various cities, which added 13000 MW to the National Grid Station. However, the CPEC investment in the /senergy sector has become a contentious issue, with many criticizing the project's political and economic management. How political economy influences state's decision making, undermining economic sector performance despite a lot of efficient projections. This paper will evaluate the influence of CPEC investments in power projects on Pakistan's power crises and will conclude with a political and economic perspective on the subject issue.

Keywords: CPEC, electricity generation, energy sector, Gwadar Port, power projects, sustainable renewable energy goals

INTRODUCTION

The China-Pakistan Economic Corridor is a key strategic and economic project that aims to enhance economic cooperation and stakes between Pakistan and China. The project, which began in 2014 and is expected to be completed by 2030, is designed to connect Pakistan's Gwadar port to China's Northwest region via a network of roads and railways. It will also include the development of economic zones and investments in Pakistan's power sector. This will not only benefit Pakistan's economy, but the benefits will be shared equally by the entire region, including landlocked Central Asian states. The initial investment in CPEC was valued at \$47 billion, which was gradually expanded to \$62 billion, a large portion of which is allocated to Pakistan's power sector.

The largest component of Chinese investment in Pakistan is power generation projects as well as distribution system investment, as Pakistan has been enduring from an acute shortage of electricity

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for the last one and a half decade. Under the CPEC, a total of 21 projects in Pakistan's power sector are planned, adding approximately 22,000 MW to the country's electrical basket(Development). Nine power plants have already been commissioned, and the rest are in various stages of construction and will be commissioned soon. The National Electric Power Regulatory Authority of Pakistan had previously granted all of the projects permits to generate power(A'Block, 2020). The Pakistani government has given electricity projects a high priority for completion, with 14 projects totaling 10414 MW of generation capacity being prioritized for construction. Currently, 21 power projects with a total capacity of around 13000 MW are in different phases of development(S. Hussain, 2021). Such a focus on power projects in CPEC demonstrates the government of Pakistan's determination to add 12 to 13000 MW to Pakistan's power basket in order to reduce power crises and provide accessible and affordable energy. Such a mega investment projects are gauged by its economic production as well. With the addition of power supply to the Pakistan's power basket, generation capacity has increased to 35,972 MW in 2020, a 7.5 percent increase over the previous year, while demand has remained constant at 25000 MW in 2020(S. Hussain, 2021). The surplus is primarily due to additional capacity added by CPEC projects that have already been completed.

Despite this, load shedding has continued in both rural and urban areas of Pakistan during the peak summer season. This prompts the question that if Pakistan's demand for electricity is 25000 MW, and installed capacity, including CPEC power projects, is now up to 37, 402 MW, why is the crisis still ongoing? Another source of concern and observation among international researchers about CPEC and power projects is that they are strongly biased toward coal-fired projects(Lin & Raza, 2020). Concerns have been raised about whether CPEC is an unfair deal for the general public. As a result, the question is whether CPEC power projects will provide some relief in the form of more efficient power generation, and whether government policies and governance structures are capable of achieving the desired results in the power sector. Keeping this in mind, the main argument and hypothesis of this research study are as follows: There is a positive co-relation between energy cooperation of CPEC power project and Pakistan's sustainable renewable energy goals to give further impetus to the power sector.

REVIEW OF LITERATURE

Since its commencement, there has been a substantial amount of literature on CPEC. Several aspects of CPEC projects have been discussed, with the economic aspect of CPEC energy projects receiving the most attention, such as "Impact of CPEC Energy Projects on Socio-economic Development of Pakistan," which focused on how these projects will affect Pakistan's socio-economic development and concluded that CPEC energy projects are contributing positively in all related sectors such as infrastructure, industrial parks, and career opportunities(Muzammil Khurshid, 2018).

Yet another research study "The impact of CPEC on Pakistan's Electric Power Crisis" highlighted that CPEC will become an easing agent for Pakistan's power sector(Iqbal, Chu, & Hali, 2019). The study raised concerns about the inefficiency of the power system's energy planning and distribution. A study by Ishrat Hussain, which discusses different sectoral policies, including the power sector, CPEC power projects, and their projected impact on the growth of the power sector, has given the economic approval of the CPEC projects(I. Hussain). The CPEC power projects have been highlighted as having the potential to bridge Pakistan's power deficit if they are implemented. Similarly, Zahid Khan's study highlighted the challenges and threats to the CPEC project as a whole.

He has emphasized issues such as road conflict, security concerns, and extremism, which can jeopardize project completion(Z. Khan, 2019).

Umbreen Javed's study was conducted to understand the political and economic dimensions of the project. She has discussed the political, economic, and socio-cultural areas that require adjustment in order for the project to be fully implemented(Javaid & Chawla, 2019). She has maintained that, despite security concerns, CPEC is investing in the energy sector and has taken into account CPEC's many power ventures that are adding units to the power sector. She has strongly advised that *"a wise understanding of the project with an eagle eye is required to save Pakistan's economy with the support of an all-weather friend"* (Javaid & Chawla, 2019). Furthermore, we can find some additional research on the evaluation of CPEC projects. However, a research gap was discovered in terms of analysis of the rival's criticism, narratives, and political economy aspect of specifically electrical sector investment in CPEC projects.

METHODOLOGY

This paper uses a descriptive approach with a Political Economy analysis for the specific purpose of inquiry. This approach demonstrates the circumstances that lead to the development of such projects, as well as the competition among various interest groups and the role of institutions. As a result, Political Economy integrates and intertwines the political and economic factors in a society. It aids in comprehending government actions and reforms aimed at a specific sector while taking into account competing interests. These factors may be considered by policymakers when developing policies. The data was gathered through the author's interviews conducted with officials from the power sector, the official website of the Planning Commission, relevant books, newspapers, and international reports on CPEC.

PRIVATE INVESTMENT IN POWER SECTOR OF PAKISTAN

In the backdrop of the power sector's precarious state, power sector reform has been the Government of Pakistan's top priority since the 1990s in order to promote economic growth. The Pakistani government had to devise a strategy to restore the power sector's efficiency. In 1998, a restructuring plan for the power sector was initiated, and Pakistan Electric Power Company was established. Previously, Pakistan had two vertically integrated utilities; the Water and Power Regulatory Authority and the Karachi Electric Supply Corporation. WAPDA was in charge of power distribution throughout the country, with the exception of Karachi, where the KESC managed to meet the requirements. WAPDA was initially divided into corporate entities, including four generation companies, ten distribution companies, and one transmission company.

The primary objective of these reforms was to encourage the private sector to invest in order to bail out the sector; IPPs were part of the power sector's liberalization and privatization. These power companies are not public utilities, but they sell their electricity generation to public utilities for transmission to end users. During Pakistan's first power policy, in 1994, fifteen IPPs began commercial operations, accounting for 30% of total power generation in Pakistan. However, by 1997, there were contractual issues with IPPs, and production was halted(Hassan, 2021). Sectoral reforms are always dependent on other structural reforms as well as the role of institutions, particularly the judiciary. The contracts signed by Benazir Bhutto's government in 1993 were

intended to ensure long-term supply of electricity through IPPs. In terms and conditions, IPPs were deemed to be more favourable than WAPDA.

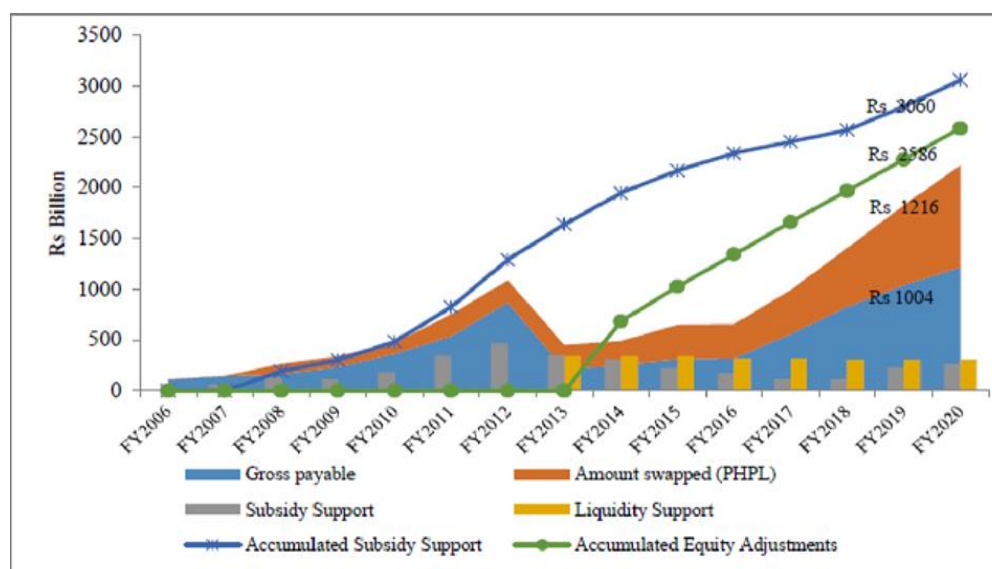
When the Nawaz Sharif government took over in 1997, there was a change in policy; consumer tariffs were high, and there was no room in IPP contracts to accommodate power price reductions by IPPs because IPP prices were high in comparison to the international market (Siddiqui & Kemal, 1998). They were responsible for 17% of total electricity generation. The government launched an investigation into these contracts in 1998, citing corruption in the transactions. The government attempted to reduce IPP payments, creating a perception of contract cancellation. This has led to a lack of trust among international investors in Pakistan's energy sector. In 1998, the government served notices of termination based on corruption, further reducing the country's electricity generation capacity. This government decision seriously compromised not only future investment in the country, but also the continuation of existing IPPs, as they faced economic risk due to changes in exchange rates and market risk, as they sold power only to a single buyer, WAPDA, and they were given government guarantees to compensate the IPPs (Siddiqui & Kemal, 1998). However, this is unsupportable reasoning because the exchange risk was covered by the tariff and the risk of a single buyer was offset by the take or pay mechanism. This decision also created trust issues for the state, as international investor contracts were not acknowledged, and such allegations of corruption do seem to be typically difficult to prove in court when the IPPs sought injunctive relief. Failure by Pakistan to honour such guarantees puts IPPs at risk of bankruptcy and defaults to lending institutions and shareholders (Power Policy, 2009).

There is no denying that rising consumer prices posed political and economic challenges for Pakistan, but the way the issue was handled created a disappointing environment; many committees formed to negotiate with IPPs were not fully authorized to make decisions. As a result, the issues of privatization amid poorly constructed terms and conditions became a legacy to Pakistan's current power sector crises. Based on contractual issues with the government, IPP production in the power sector remained stagnant until 2006-07. This was a critical power shortage period in the country, with long hours of load shedding. Later on, IPPs faced shortage of working capital and were forced to produce below capacity. On the other hand, demand outstripped supply, and by 2010, the supply-demand gap had grown to 5,500 MW, indicating a critical need for power sector investment to increase production capacity. To address the supply-demand gap, the government adopted the strategy of rental power plants (RPPs) in the 2009 power policy as a short-term measure to increase electricity production (News, 2012). This included ethically questionable procurement practices as well as allegations of corruption. As a result of the high cost of electricity, the Supreme Court questioned the procurement process as well as the efficiency of Rental Power Plants, and all rental plants were ordered to close on March 30, 2011." According to the Supreme Court, the rules and regulations were violated in these projects, resulting in billions of dollars in losses to the national exchequer" (S. Khan, 2012). The ruling also held the "finance ministry, WAPDA, PEPCO, and GENCOs" liable for "causing huge losses to the public exchequer, amounting to billions of rupees, by making 7 percent to 14 percent down payments to, and purchasing electricity at higher rates, from RPPs." So, despite the fact that it could be an efficient and quick way to boost production because rental power plants normally take 4 to 6 months to install and could meet the energy shortfall, the Rental Power Policy proved a failure due to low production inefficiencies and high costs. The National Electric Power Regulatory Authority

(NEPRA), which is in charge of determining all electricity tariffs, discussed non-transparency and potential illegalities in the commissioning of rental power plants, stating that "the contracts, under which these were (Rental Power Plants) either commissioned or in the process of commissioning, were rescinded by the Order of the Honorable Supreme Court of Pakistan on the charge that these contracts were non transparent and illegal. The Supreme Court ruled that all functionaries, including RPP Sponsors, who derived financial benefit from RPP contracts are prima facie involved in corruption and corrupt practices, and thus are liable for both civil and criminal action("Determination of the Authority in the matter of Utilization of Existing Available Generation Capacity — Policy for Short Term Independent Power Producers (STIPPs)," 2015).

As a result, this attempt to bring a short-term solution for power generation to bridge the gap between supply and demand failed due to corruption, and its commissioning was prohibited by NEPRA. Following the failure of the 2009 power policy of bringing more power through rental plants, the government was forced to provide massive subsidies to settle with defaulting public companies, which ultimately added to the circular debt. Subsidies do not directly contribute to circular debt, but they are a separate drag on government finances at the end of the day. The issue of circular debt has become a monster for the Pakistani economy, adding more crises to the already troubled power sector, which has been in trouble since 2006. The origins of the conundrum can be traced back to 2006, when "electricity prices were not allowed to rise in line with the steep rise in international oil prices for obvious political reasons." In 2010, the problem becomes more complicated, and power outages reach an alarming level. Increased oil prices, combined with the government's inability to address the root causes of circular debt, resulted in Pakistan's oil refineries operating at only 45 percent of their capacity at the end of 2010(Malik, 2012). The inefficiency of DISCO also became a major issue in Pakistan's power sector crises, with line losses of more than 20%, poor governance, institutional weakness, and a lack of financial viability adding to this circular debt (Malik, 2012). The vicious cycle of circular debt is depicted in the figure below for clarity

Graph. 1 Circular Debt Growth Since 2006 to 2020



Since 2013, the circular debt situation was getting worst and debt stood at Rs. 1.22 trillion. Considering the current state of circular debt, according to the NEPRA State of Industry Report 2020, "the accumulation of circular debt is a serious issue confronting the power sector and the country as a whole." It not only affects the liquidity of fuel suppliers, generation, transmission, and distribution companies, but it also raises the cost of electricity for end-users... As of June 30, 2020, a total of Rs. 2,150,424 million had accumulated as a result of circular debt in the power sector." Since 2013, the circular debt situation has deteriorated, and approximately 2.6 trillion has been injected into the power sector as equity adjustment to clear debt, in addition to 3.1 trillion injected as subsidy cost since 2007 (State of Industry Report, 2020). The above figure shows that the accumulated subsidy increased sharply from 2012 onwards, reaching Rs. 3.1 trillion in later years, along with the subsidy support paid in 2012-2013 and continuing until 2020 (Malik, 2020).

Though a subsidy indicates a government's welfare protection system as an indicator of adjustments, subsidy is bad economics most of the time and puts pressure on tax payers and the public exchequer. If the cost of generation exceeds the receivables and is not met by the companies, the issue structure of the power system, particularly the management of the power sector, is at stake. Even with household subsidies, beneficiaries continue to be large consumers because the system has been unable to deal with them administratively. Subsidies, while quick, easy, and politically expedient to implement, are also quick to take root and difficult to remove (Kojima, Bacon, & Trimble, 2014). At the same time, it provides more opportunities for rent seekers and administrative malpractice, as well as more room for inefficiency on both the demand and supply sides, as non-economic consumption rises when real electricity costs are not paid. It also discourages private investment through a competitive process. As a result, the political economy of power sector reforms is a major impediment to eliminating such subsidies in the power sector. It can primarily be used as a political tool to flatter voters. It had a very negative impact on the overall economy; Pakistan is experiencing balance-of-payment problems, high business costs, and the spillover effects extend to other sectors affected by the presence of the energy subsidy, such as the textile industry. The aforementioned scenario pushed Pakistan to attract more private investment, primarily in alternative energy sources via CPEC projects, which may be cost-effective units in the electricity basket.

CPEC POWER PROJECTS AND NARRATIVES

In 2013, the recently elected Government in Pakistan recognized a critical need for investment in the context of the aforementioned power crises. Pakistan requested Chinese investment in the power sector, which was accepted by China's President, Xi Jinping, and announced as the China-Pakistan Economic Corridor (CPEC). We should remember that this was a time when no other international investor was willing to invest in Pakistan due to the threat of terrorism, security, and economic instability. In the face of all these security concerns, Chinese CPEC investment began in Pakistan in 2015; as reported in the media, many Chinese workers were killed directly while working on the CPEC project (F. Khan, 2017). An international investor's decision to invest resources in a country hit by terrorism and receive bullets on their labors is always difficult, as was the case on Gwadar Road, where "unidentified gunmen on motorcycles opened indiscriminate fire on a group of labourers working at a road in Gwadar area, killing eight of them on the spot" (K. Ali, 2017). As a result, it was a panacea for Pakistan at the time that China was investing in very risky conditions in Pakistan's power sector. Furthermore, prior to CPEC, electricity generation was cost

prohibitive due to outdated technology and high furnace oil and natural gas consumption. Domestic natural gas reserves were also rapidly depleting as a result of extensive use in power generation. Certain misconceptions have been created by critics of the CPEC power projects, primarily in terms of their debt burden on the Pakistani economy, their cost in terms of consumer affordability, and the agreement's commitment to use coal for power generation. Above all, a false impression is being spread among stakeholders about corruption in these projects and their inability to provide relief to Pakistan's common people.

The perception is based on uncertainty and incomplete information. CPEC Power Projects are not stand-alone projects; they are part of CPEC's overall development strategy. The European Foundation for South Asian Studies (EFSAS) published an article titled "CPEC An Unfair Deal for Common Pakistanis" that falls into this category of incorrect assumptions(EFSAS, 2018). According to the report, "around \$ 30 billion in energy infrastructure will be built by private consortia, and up to 15,000 MW of energy generating capacity will be brought in to help alleviate Pakistan's chronic energy shortage." Because the majority of the energy project contracts were won by Chinese firms, which have taken over the engineering, procurement, and construction of them, the necessary power equipment will be imported from China, for which Pakistan will be charged. According to the Pakistani Bureau of Statistics, "...the import of power generation machinery stood at US\$1.4 billion in the first five months of this fiscal year." CPEC also includes a number of initiatives in Pakistan that are not only economic, but also cultural and civic in nature"(H. D. Butt, 2021). Officials from the Ministry of Planning have refuted such claims, claiming that they are based on incorrect information because the financing includes grants as well as Foreign Direct Investment (FDI), which Pakistan desperately needs at the time. Because the CPEC energy projects are being carried out by independent power producers, the responsibility for financing energy projects is being managed by these companies through Chinese banks such as China Development Bank and China Exim Bank against their own balance sheets, so any debt would be incurred by Chinese investors rather than the Pakistani government(H. D. Butt, 2021).

Furthermore, Zhao Lijian, a spokesperson for the Chinese Foreign Ministry, clarified that "the Pakistani government does not have to pay any debt, let alone does this cause any debt burden for this Pakistani side"... We are confident that China-Pakistan energy cooperation will continue to make greater contributions to Pakistan's development and livelihood improvement(Butt, 2021). As a result, technically, this is the correct position because the loans are commercial loans and the Pakistani government only has a contingent liability if the power purchaser fails to repay the loan. Given this, the loans and their interest rates are not a significant drag on Pakistan's debt position. The projects that are carried out with Chinese financial assistance in the form of loans, concessional loans with interest rates much lower than commercial interest rates. As a result, calling CPEC a debt trap for Pakistan is highly misleading. According to a government official in Pakistan, China's share of Pakistan's total debt is only 10 to 11 percent, with the remaining 90 percent coming from International Financial Institutions and other Western sources. Furthermore, some projects, such as development work in Gwadar port, are grant-based, which means the government of Pakistan bears no responsibility for repayment(Ahmed, 2019). Chinese banks are providing direct financing to CPEC power project companies. Because these are not loans taken out by the government of Pakistan, they do not add to Pakistan's debt burden. However, there is an understanding that if projects are unable to repay the loans, the Pakistan government will ensure payments. No investor

will invest in power sector projects unless the sovereign guarantees are provided. The provision is included in Pakistan's Power Policy 2020 (Policy for Power Generation Projects Year 2002 & Policy for Power Generation 2015).

The majority of CPEC power projects are being carried out through the IPPs mechanism, in which case the government has arranged for guarantees for these projects, which are supported by the International Monetary Funds. It has permitted Pakistan to raise the sovereign guarantee ceiling to Rs366 billion until September 2020 in order to finance a number of China-Pakistan Economic Corridor (CPEC) energy projects as well as mounting circular debt. Otherwise, the government's inability to implement the energy project could be a major hurdle (Haider, 2019). Pakistan has been able to alleviate power shortages due to the CPEC energy projects. Electricity is being supplied to the manufacturing sector as a result of increased power generation, and exports are expected to increase by 14 percent as a result (Ahmed, 2019). In terms of tariff parameters set by NEPRA, there is no distinction between CPEC and non-CPEC power projects. The security cost for these projects is specifically included in the tariff and kept as a pass-through item, which was approved by the Economic Coordination Committee, and NEPRA was directed to include it in the tariff determination, but this is not significant. Furthermore, such security-related costs are allowed in tariffs of non-CPEC projects located in specific areas as per NEPRA determination of August 93, 2017 for CPEC-Power projects, "ECC of the Cabinet may approve and allow issuance of a policy directive to NEPRA to allow 1 percent of the Capital Cost net of the aforementioned US\$ 150,000/- amount on account of security to be distributed annually starting from the construction period until the term of the Power Purchase Agreement" (Decision of the Authority in the matter of Induction of Security Cost for the CPEC Projects in the Power Tariff to Ensure Security Sustainability, 2017).

The fact remains that power consumer tariffs have risen in recent years, and according to NEPRA, power tariffs have been revised upward 22 times since 2019. High tariff criticisms are not limited to CPEC projects; they pertain to all IPPs. Because the main regulating factor behind electricity prices is not demand and supply but IPP debt, the government and NEPRA's continued adherence to long-term fixed tariff and take or pay mechanisms results in high power generation costs. The mechanism for the sale and purchase of electricity in an open market has yet to be fully developed. Instead, most power generation companies sell electricity to the Central Power Purchasing Agency (CPPA) under long-term contracts. Because these power projects are dedicated to a single buyer, they must be compensated even if the buyer does not use any of the power. Furthermore, power purchase agreements are for a long period of time (25-30 years), as no one would invest in a single buyer environment without long contracts. These constraints add to the high-power cost. Tariffs should be reduced for all IPPs. This is also accurate for CPEC projects. However, this does not imply that CPEC projects are more expensive than other IPPs.

However, rising production well beyond demand is posing a problem for the government's liable debt. According to the Economic Survey 2019-20, Pakistan's installed capacity of power is 35,972 (MW), while transmission lines can only carry 26,000 MW (*Economic Survey of Pakistan, 2019-20*). However, according to a researcher's investigation from a power sector regulatory official, there is a difference between installed and available capacity. Many government-owned plants have machinery that is 40-50 years old, and their actual output is now much lower than their installed capacity. As a result, the actual power available for supply is usually limited to the capacity of the

transmission line. In addition to the massive problem of circular debt, a lack of transmission capacity is a major economic issue for which no government policy has been devised in the last two decades, and despite the fact that three political governments have been able to complete their terms, no effort is visible to turn around the power sector in order to avoid system losses. Inefficient transmission lines account for 20% of system losses, which are ultimately passed on to consumers via tariff determination. In response to the recently increased tariff of Rs.1.95 per unit cost, the energy minister stated that the PML-N government had "laid landmines" for its successor, necessitating some unpopular decisions (Zaman, 2021). Whereas PML, the then-Minister of Finance, stated that the tariff increase is due to the country's ever-increasing circular debt, which is at its highest in history due to the government's failure to implement reforms. As a result, Pakistan's power sector is suffering as a result of the government's political and economic decisions in making agreements with all of the IPPs, as well as the government's decision not to pursue reform, despite the fact that generous agreements were signed with IPPs in the past to pay approximately 17% return on equity, which was dollar indexed. To elaborate on the excess capacity issue, high electricity tariffs would not have arisen if Pakistan's economy had continued to grow at the rate seen in previous years.

Furthermore, new capacity was intended to replace old inefficient oil-based plants that are still operating inefficiently. Even if none of the new IPPs were part of CPEC, the power sector situation would have remained the same because CPEC plants do not receive higher tariffs than non-CPEC plants. NEPRA officials respond to how exceeding capacity in relation to multiple tariffs increases in a year is justified. It was stated that the tariff determination is based on two factors; the Capacity Charge and the Fuel Charge. So, for the most part, the tariff for the next many years is normally fixed on capacity, but if there is any change in fuel charge, etc., that has to be adjusted as per the given procedure of tariff determination, so it is important to clarify that the time and again tariff rise is on the basis of the power company's fuel price adjustment as per international change (S. Hussain, 2021). However, the more optimal situation is one in which there is a smaller gap between capacity and demand, as it is a take or pay situation in any case. In terms of tariff affordability, total 17000 MW is produced under IPP arrangements and private investment, and NEPRA, which is responsible for tariff determination, has not determined any extraordinary tariff vis-à-vis CPEC power projects, nor has any surcharge been added to the consumer in terms of security of these projects over and above the tariff agreed upon by the companies (S. Hussain, 2021).

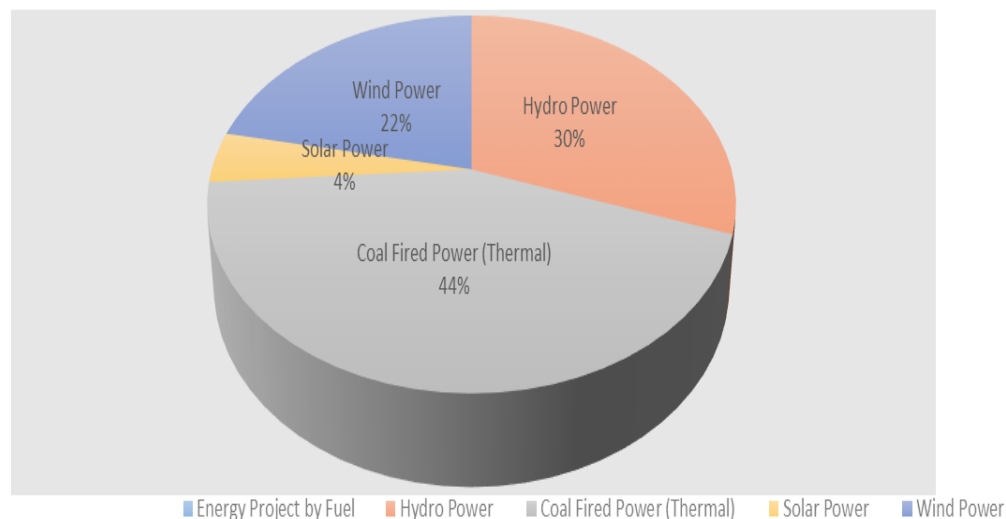
In the larger scheme of things, with rising international fuel costs and system losses adding to per unit costs, electricity from CPEC projects is not more expensive than electricity from other projects. The reason for this is that interest rates on Chinese loans are not generally higher than those on other commercial loans. Furthermore, new power plants under CPEC are replacing Pakistan's old depleted capacity inefficient power plants. However, more deliberation on the use of power generation technologies in CPEC investments is possible. It is more a matter of political and economic policy decisions, for example, hydropower generation has enormous potential, but thermal projects have been installed due to their short gestation period and immediate need for electricity. The politicization issue also comes into play; the burden of responsibility is being shifted from one political leader to the next rather than working on reforms.

According to the Prime Minister's advisor on the power sector, "the reform process was launched to abolish the Rs2.2 trillion circular debt and put an end to the Rs500 billions of losses that were adding up in the power sector every year... Reforms are required to eliminate losses, improve the system, and make the power sector self-sufficient" (Satti, 2021). As a result, affordability is primarily becoming a problem due to a lack of institutional role, as well as onerous taxes and levies on electricity consumers. Furthermore, rather than improving the efficiency of the electricity distribution sector, the government is disciplining consumers who are already paying their bills through its tariff policies.

Coal Fired Plants Investment

Another common misconception about CPEC investments in the power sector is that they are mostly in thermal power rather than renewable sources. It is cited in the argument in Columbia University's Series of Papers on the Belt and Road Initiatives that "Why Are CPEC Power Projects Heavily Skewed Toward Coal?" Because of a "pull" from Pakistan and a "push" from China, coal-fired power plants will account for the majority of the new generation capacity added by CPEC priority energy projects. Pakistan has long sought to develop its vast Thar Desert coal reserves for power generation in an effort to reduce electricity costs and conserve foreign exchange" (Downs, 2019). Though thermal (coal) power projects receive the majority of investment, there is also significant investment in renewable energy, particularly hydropower electricity generation, as illustrated in the following chart of the energy fuel mix in the CPEC power projects. Actually, when the coal-based CPEC power plants were launched, green energy plants, such as solar and wind, were much more expensive than coal plants. The chart below depicts the percentage share of the fuel division in CPEC.

Graph 2. CPEC Energy Projects with the Alternative Sources



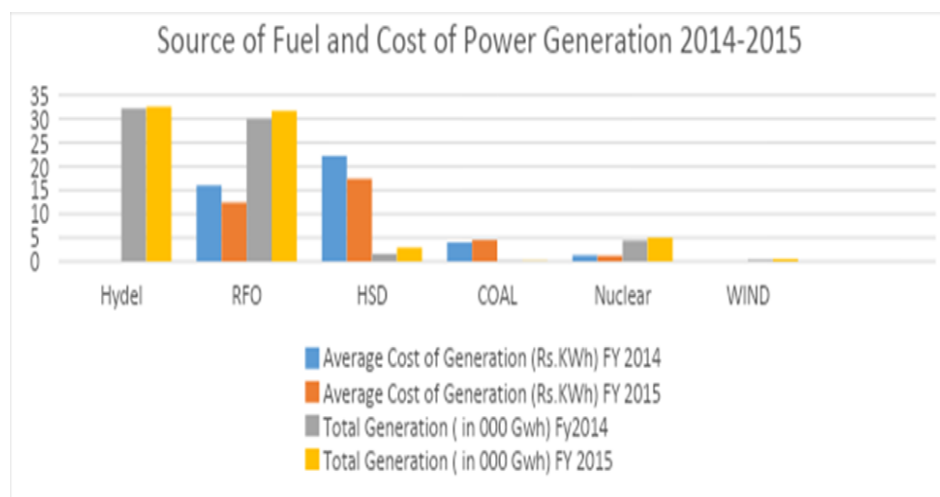
Source: Based on the information provided by the CPEC Secretariat, www.cpec.gov.pk/energy

Thermal power plants were encouraged as base load plants in CPEC power projects, a role that wind/solar plants could not fill. Furthermore, coal projects were preferred due to Pakistan's immediate electricity needs and the short construction period of thermal power projects. There is

also concern and criticism that the CPEC coal plants will have a negative impact on the environment. However, because these coal plants use cutting-edge filtration technology, the environmental impact is unlikely to be severe. The majority of these coal plants have been built along the coast or in the Thar desert. Coastal installation reduces the need for inland coal transportation, thereby lowering the environmental impact. It must be ensured that the plants installed in the Thar region only use Thar coal. One of the main reasons for installing coal-fired power plants is affordability; Pakistan imports fuel oil for power generation, putting fiscal pressure on the economy. Other sources of energy, such as gas reserves, are rapidly depleting in Pakistan. Despite having significant gas reserves, Pakistan is experiencing a severe natural gas shortage. Because there is little new exploration, high CNG consumption, mismanagement, and inefficient gas allocation, the old gas fields are depleting faster (Saleh, 2015). Solar and wind energy technologies are also being used to produce electricity. However, these are still several years away from meaningfully replacing thermal power generation. Coal generates economic power, and CPEC coal projects have been built in a short period of time, assisting in the reduction of load shedding.

The Sahiwal coal power plant (1300 MW) has been commissioned and is operating normally (Ali, 2021). Other major coal plants that are already supplying electricity to the national grid include the 1,320 MW Port Qasim Coal Fired Power Plant, the 1,320 MW HubCo Coal Fired Power Plant, and the 660 MW Engro Thar Coal Power Plant. Another 1,980 MW of capacity is being built as part of the Thal Nova and Thar Energy (HubCo) projects. Despite the fact that the price of furnace oil fell significantly in 2014-2015, IPPS were hesitant to generate more due to financial concerns. The situation deteriorated to the point where the companies desired to rely on state guarantees in the event that their dues were not paid. Thus, the government realized the need to reduce reliance on furnace oil and add more alternative sources (Iqbal et al., 2019). A comparison of the energy fuel source and its average cost of generation during 2014-2015, as shown in the figure below, shows that the cost of energy produced by coal and wind was too economical when there were liquidity crises due to mounting circular debt. Diversification in the energy mix and that too economically. The graph 3 depicts the share of power generation sources and their costs in 2014-2015.

Graph 3.

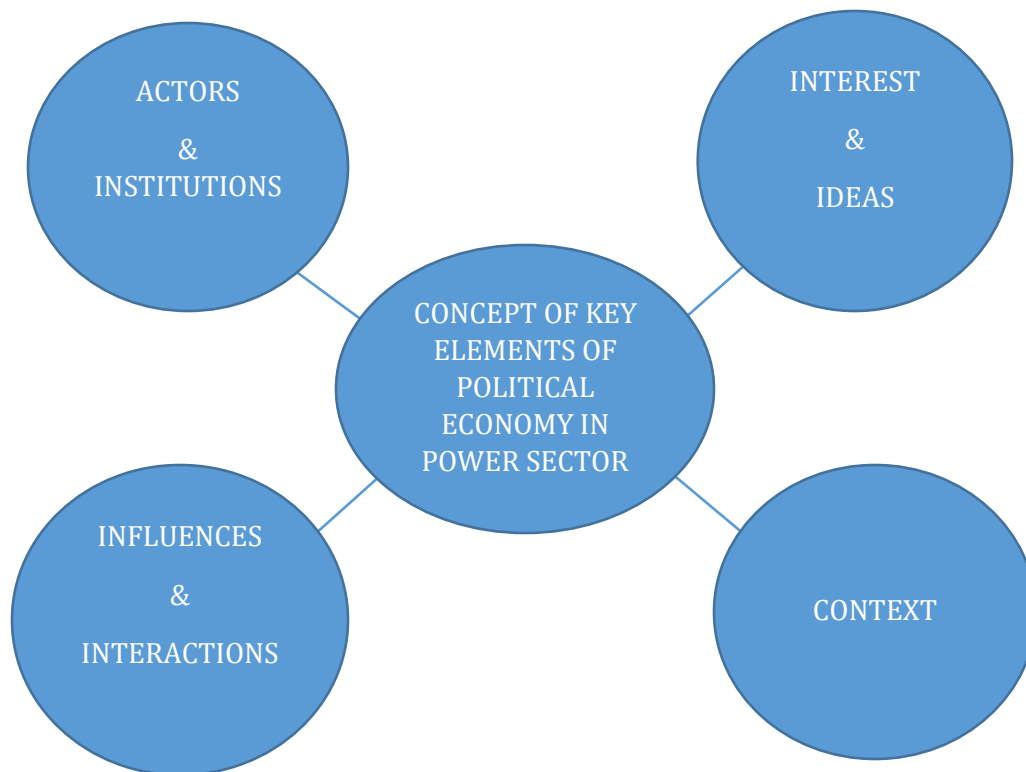


Source: Based on the data provided by NEPRA and Energy report of State Bank of Pakistan (SBP).

According to the NEPRA State of Industry Report, "during FY 2019-20, total 25,966.40 GWh electricity was generated using coal as compared to 16,725.46 GWh during FY 2018-19, showing an increase of 9,240.40 GWh... The gradual increase in coal-based electricity generation is beneficial in terms of lowering power generation costs; however, the capacity of cost-effective coal-based power plants is still underutilized" (*State of Industry Report, 2020*). As a result, we can find more than one reason for including coal in power generation in terms of financial support and cost affecting coal power generation in Pakistan. Recently, the environmental concerns of coal plants have been addressed by the use of cutting-edge technology that is less polluting. Nonetheless, because generation capacity has already been added, future CPEC investments should focus more on transmission. The nearly finished Mitarai-Lahore transmission line was funded by CPEC. More investment in the transmission sector is required. In the larger scheme of factors, electricity generated by CPEC projects is no more expensive than electricity generated by other projects. The reason for this is that interest rates on Chinese loans are not generally higher than those on other commercial loans.

CONCLUSION: POLITICAL ECONOMIC PERSPECTIVE

Many academic and professionals regard politics and economics as inextricably linked topics that cannot be understood separately. Political economy is related with the conditions of production and consumption in a state, as well as how institutions, (political and economic) actors, and aligned incentives shape decision making, which has the potential to politicize economic activity by undermining economic performance. The Political Economy of CPEC Power Projects is only examined from a national perspective, not from a regional or global perspective. On a sectoral level, political economy analysis looks at the elements influencing decisions, as illustrated below:



On the basis of the research, the author conceived of the basic elements of political economy in Sectoral Analysis of Actors and Institutions (Lee & Usman, 2018). Actors in the power sector include industry, IPPs, public sector entities, and transmission and distribution companies. State action is carried out through political parties, legislatures, regulatory bodies in the power sector, the judiciary, and domestic consumers. The actors' motivations, worldview ideologies, and mental models are also of interest. Thus, consideration of environmental security, affordable pricing, and technological choices can reflect the motivations of the actors. Ideologies have the power to profoundly shape attitudes toward various forms of ownership and control over energy assets. Power sector reforms never take political economics into account.

The power sector reform process began in the 1990s and was later focused primarily on technical reasons, with the government being pushed by lending agencies to implement reforms solely as a crisis response. The implementation of reform efforts is inextricably linked to a clash of private and public interests. Transitions in the power sector, such as replacing or introducing a new fuel source and technology, can undoubtedly result in winners and losers. Privatization of the power sector, unbundling of WAPDA, and corporatization should have resulted in consumer relief, but this has not occurred. Contracts between IPPs and the Government of Pakistan were such extreme decisions in the 1990s that they could not have been digested by the consumer, and as a result, we are now facing massive circular debt and high tariffs per unit in Pakistan. Since the 1960s, Pakistan's power sector projects have been politicized, with the Kalabagh Dam being a perfect illustration. Politics in the power sector have pushed Pakistan's energy sector to the point where power outages and load shedding have lasted more than 10-12 hours in major cities for more than two decades.

Since the 1980s, there have been a few small dams added to the energy sector, but no serious policy implementation has occurred in order to achieve energy self-sufficiency. The political economy intervened once more, causing the wrong turn, and the state began to invest in fossil fuels (Ramay, 2020). Pakistan's power policy, particularly since 1994, has given private investors in the power sector a fair chance. The Power Policy of 1994 gave the private sector the opportunity to make massive profits, and actors and institutions in the energy sector supported such stakes. Such interest and stakes create rent seeking for the political and economic institutional actors. Resultantly, the policy option for renewable was ignored. Later on, however, Alternative Energy Development Board was established in 2006 and as policy AEDB was asked to ensure 5 percent national generation through renewable energy technologies by the 2030 (*Alternative Energy Development Board*, 2021). However, there was no significant progress on alternative energy until 2015, when CPEC power projects began working with alternative technologies. The CPEC power projects must be viewed through an economic lens rather than through the lens of some vested interest. All related institutions, including IPPs, regulators, transmission and distribution companies, must maximize their own interests.

Since it entails massive procurement, capital-intensive machinery, job openings, and, ultimately, tariff determination, it creates opportunities for patronage and rent seeking, which ultimately burdens end consumers. In the event that the power market fails, the government must provide incentives to the entities. According to Min, every power system decision "generates political benefits and costs that are frequently as critical as the technical and economic factors that dominate project plans and official discourse" (Min, 2015). Though since high energy imports are not

sustainable for Pakistan's economy, and we frequently end up knocking on the doors of international financial institutions due to a perpetual current account deficit. The use of endogenous coal as a production source will reduce the reliance on foreign exchange and furnace oil. However, CPEC is one of the lifeline projects that, once the CPEC power projects are completed, Pakistan will be able to capitalize on it most effectively. However, by enacting such policies, the government is facilitating the transition of the power sector, which necessitates governments addressing political economy issues as well as potential conflict between different stakeholders and conflicts of interest. So far, the government has been unable to communicate with domestic stakeholders, particularly political parties, about CPEC, fueling distrust and anti-CPEC sentiments.

As a result, political parties raise debt and expensive energy issues in order to remain relevant on the issue. Lack of agreement among political parties on the CPEC at the national level, as well as a lack of clarity. As a result, political parties have begun to call into question certain aspects of CPEC in order to remain relevant. Domestic political point scoring has added to the confusion; which opponents have been using to substantiate their claims. This attitude has led to feelings of undermining the projects' potential. Conflicts over the distribution of power project resources are not uncommon; however, because Pakistan's institutional capacity has not been built through market-oriented reform, dealing with constraints and interests in the power sector has become a greater challenge. In such circumstances, China has begun to invest in Pakistan, taking risks against all odds. It will not only facilitate in the generation of adequate electricity in Pakistan, but it will also address the country's power deficit. The political and economic institutions must comprehend the interests of national and international players, particularly the opponents of the projects who are constructing propaganda against the power projects under CPEC. However, in order for CPEC power projects to contribute to reducing Pakistan's reliance on fuel imports, the distribution and transmission network must be upgraded, because it is quite old and not capable of carrying more pressure of transmission and distribution of extra units produced by CPEC projects. Unless the state plays a role in attracting investment in transmission and distribution network upgrades, pilferages and wastages will make power supply unsustainable, despite surplus power generation.

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