INTERNATIONAL THE NEWS

Energy independence

Muhammad Farid Alam |Political Economy|April 6, 2025

The conversion of coal-fired power plants represents a step towards enhancing energy affordability

Germany, a developed country, recently initiated a transition back to coal as part of its energy strategy, primarily due to concerns over energy security amid global supply disruptions in the wake of geopolitical tensions emanating due to the Russia-Ukraine conflict. While renewable energy sources are being developed, coal is deemed necessary for maintaining a stable baseload supply, ensuring that the electricity demand is met consistently, especially during periods of low renewable output. This reliance on coal highlights its role as a reliable source of energy, providing the necessary backup to support a transition towards a more sustainable energy system.

Another example is that of the Fukushima nuclear disaster in Japan which resulted in the country increasing its reliance on coal to replace nuclear energy. Japan has been slow to phase out coal due to its energy security needs. The Fukushima disaster occurred on March 11, 2011, when a massive earthquake and tsunami struck Japan, causing a meltdown at the Fukushima Daiichi Nuclear Power Plant. The quake and tsunami damage led to the failure of cooling systems in three reactors, resulting in explosions, radiation leak and contamination of nearby areas. It is considered to be the most significant nuclear incident since Chernobyl in 1986 as it triggered widespread evacuations and long-term environmental damage. It also prompted many countries to reconsider their nuclear energy policies.

On the other hand, India is on the verge of depleting its coal reserves, given the full-scale consumption for fuel generation over the recent decades. Still, as of 2024, India's coal utilisation for power generation remains significant. Projections indicate that coal will account for nearly 68 percent of India's electricity generation by 2026, a slight decrease from 74 percent in 2023 . Despite the country's commitment to achieving net-zero emissions by 2070, coal's role in the energy mix is expected to persist due to rising electricity demand, which saw an increase of about 7 percent in 2023 . Coal-fired power generation is projected to grow by 2.5 percent per annum from 2024 to 2026.

In Pakistan, a majority of coal-fired power plants using either sub-critical or super-critical technology. Currently, only two coal-based power plants employ super-critical technology representing a significant advancement in the efficiency and environmental performance of coal power generation. These include the Lucky Electric Power Company, which has a capacity of 660 MW and an efficiency rating of 39 percent, and the Sahiwal Coal Power Project, also known as Huaneng Shandong Ruyi, boasting a capacity of 1,320 MW and a 40 percent efficiency. The limited adoption of advanced technology highlights the need for improvements in the efficiency of the country's coal power generation capabilities.

A white paper published by NUST US-Pakistan Centre for Advanced Studies in Energy, titled, Transition from Imported to Local Coal to Attain Energy Security in Pakistan: Opportunities & Challenges, sheds light on Pakistan's

own coal reserves which can be utilised to address the energy challenges. Experts have long argued in favour of local coal over imported coal, highlighting the dire need for energy security and sustainability. The launch of this whitepaper regarding this transition, backed by factual data, has validated these discussion points.

Utilising local coal can not only ensure a stable and reliable baseload supply but also support the development of domestic industries and jobs creation in the coal mining regions.

The Thar filed has more than 175 billion tonnes of lignite reserves, the largest in the world. According to the whitepaper, these reserves are estimated to potentially generate 100,000 MW power for 200 years, providing a reliable and cost-effective energy source. Utilising this resource could greatly reduce the country's fuel import expenses while ensuring the stable baseload essential for the energy system. The energy price of electricity generated from indigenous coal is considerably lower, costing nearly half of that produced using imported coal. Prioritizing an optimal energy mix which integrates indigenous fuel sources in the country's best interest.

A number of Pakistan's coal-fired power plants rely heavily on imported coal with a collective installed capacity of 8,580 MW. Among these super critical power plants are designed to utilise 100 percent sub-bituminous coal with a 30 percent moisture level limit. Thar coal can provide 20 percent of the mix without violating global standards for running plant boilers. The point is that other plants are running entirely on local coal, those using imported coal can also make a partial transition to home-based coal.

The cost of Thar coal energy is expected to decrease as economies of scale are realised with the expansion of Thar coal blocks. As a result, it is highly likely that the price will be further reduced.

There have been reports about the conversion of the Jamshoro coal-fired power plant from imported to local coal. This transition is crucial for Pakistan's energy affordability and security. Karachi Electric's efforts for conversion to local coal to address the affordability of electricity for customers are noteworthy. The conversion, along with other advantages, is

anticipated to yield an overall economic benefit of more than $2 billion over the lifespan of the project. This transition is expected to enhance the country's economic landscape significantly by reducing energy costs and increasing energy security .

This shift aligns well with the government's strategy to reduce dependence on fuel imports, which has been a growing concern amid rising global energy prices. Utilising local coal not only ensures a stable and reliable baseload supply but also supports the development of domestic industries and job creation in coal mining regions, particularly in Thar, where abundant reserves remain largely untapped.

The conversion of the Jamshoro plant and possibly of other coal fired power plants represents a significant step towards enhancing energy affordability and independence in Pakistan. This has a potential aggregate saving worth $800 million on an annual basis reducing electricity prices by Rs 3 per unit.

Muhammad Farid Alam is the chief executive officer at AKD Securities Limited.

https://www.thenews.com.pk/tns/detail/1298275-energy-independence