

# Strategy for sustainable growth: Energy-efficient textile industry

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**Since 2000, there has been a significant outburst in the global energy consumption, paralleled by Pakistan's rising energy demands. Primary energy consumption in Pakistan has flown from 484 terawatt-hours (TWh) to 1071 TWh in 2021, a trend fuelled in part by the country's energy-intensive textile industry.**

The textile sector stands as a foundation of Pakistan's economy, accounting for over 61 percentage of its total exports, directly employing approximately 40 percentage of the nation's industrial workforce. With a GDP contribution of about 8.5 percentage, the textile industry's vitality cannot be overstated.

To meet the mounting energy demands, particularly in its industrial sectors, the need for sustainable solutions in Pakistan becomes imperative. The textile sector can strategize to utilize its resources optimally to achieve energy efficiency.

The prevalent initiatives such as the adoption of smart meters, optimization of thermal utilization, adherence to fuel economy standards, implementation of controls to minimize compressed air leaks, and enhancements in electrical motor maintenance have laid the groundwork for more viable options to explore the avenues to achieve energy efficiency in textile industry.

Pakistan's total energy consumption stands at 60.21 million TOE. However, with the adoption of clean and efficient technologies, the nation has the potential to save a substantial 10-12 million TOE of primary energy supply. This underscores the critical role that investing in energy efficiency can play, particularly for an economy like Pakistan that is heavily reliant on energy imports.

The National Energy Efficiency and Conservation Authority (NEECA) has set some targets, aiming to save approximately 3 million TOE of energy through a range of sector-wide interventions by 2025.

Moreover, enhancing energy productivity could yield remarkable economic dividends, with projections suggesting a potential 5 percentage increase in GDP over the next years. These initiatives not only address the pressing energy challenges faced by Pakistan, but also find the ways for sustainable economic growth and development. The textile industrial sector being the most energy intensive sector can be the befitting candidate for energy efficient measures.

The textile industry emerges as a major consumer of both gas and electricity, accounting for a notable 28 percentage of the overall electricity and 40 percentage of the natural gas consumption. Thus,

investment in energy efficiency measures within this sector becomes imperative to harvest substantial gains.

Particularly, the textile spinning and processing sub-sectors present significant opportunities, with the potential to conserve, 2404 GWh of energy and slash costs by over 6 billion PKR.

In textile sector, the main heads such as spinning; weaving and knitting; dyeing/finishing; garment stitching and printing fabric, etc., are energy intensive. The performance of main heads centres closely on rotor speed.

However, any disruptions in energy supply can cause delays in production, high power rate burden, affecting product quality and missed timelines, impeding efficiency and inflating energy costs within the manufacturing process.

Besides, despite its essential role, the overall energy consumption within Pakistan's textile industry remains largely undocumented, largely due to its reliance on off-grid captive generation. Addressing these energy challenges in the textile industry not only promises substantial cost savings but also promotes sustainability and resilience in Pakistan's manufacturing sector.

The energy efficiency in textile sector can be improved. The optimization of resource utilization through the implementation of energy-efficient technologies and practices holds tremendous potential for Pakistan's textile sector. By reducing operational expenses, decreasing greenhouse gas emissions, and enhancing export competitiveness, the sector can thrive in an increasingly competitive global market.

However, significant hurdles must be addressed, which include limited capital investment, low awareness about energy efficiency, high costs, outdated equipment, increased wastage and leakages, inadequate technical skills, and resistance to change. To overcome these challenges, international collaboration and networking opportunities must be pursued strongly.

Collaborations can raise an environment conducive to the adoption of energy efficiency measures, involving all key players and amplifying awareness and advocacy efforts. Moreover, ensuring an uninterrupted energy provision is essential to enable consistent production processes and minimize energy losses caused by frequent machine startups and shutdowns.

Furthermore, optimizing various sub-sectors by improving efficiency of compressors, heat transfer and recovery systems, lighting, motors, power factor correction panels, process control, steam systems, and variable frequency drives (VFDs) is critical to achieving tangible improvements in energy efficiency across the textile industry. Through intensive efforts and timely interventions, Pakistan's textile sector can embark on a sustainable trajectory of growth and innovation in the years to come.

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