

# INDIGENISATION IN ENERGY SECTOR OF PAKISTAN

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In an era characterized by relentless global energy demands, expansive imported fuels and the escalating specter of climate change, there is a need to plunge headlong into the complex intersection of indigenisation and localisation within Pakistan's intricate energy landscape for revitalisation of energy sector. We need to discuss Climate Financing, the indispensability of Renewable Energy, Climate Change mitigation, the pivotal role of Independent System Operators, and the resounding significance of steadfast long-term planning, and most importantly the Pakistan's odyssey towards energy self-sufficiency, indigenisation, localisation and sustainability.

At present, Pakistan's primary energy demand stands at approximately 88.44 Million tonnes of Oil Equivalent (MTOE). Although seemingly modest when juxtaposed with the energy behemoths like India, China, and the USA, the sources constituting Pakistan's energy portfolio present a multifaceted challenge. A concoction of firewood (41%), dwindling natural gas (21%), imported oil (19%), and other sources including coal, portrays a precarious energy landscape that necessitates swift action, particularly with projections indicating an impending rise to 100 MTOE by 2030.

The pressing concern here lies in the environmental impact of this energy mix. The heavy reliance on firewood and fossil fuels has led to increased emissions of greenhouse gases, contributing significantly to Pakistan's carbon footprint. This not only exacerbates global climate change but also poses

immediate health hazards for the population due to air pollution. The need for a shift towards cleaner and more sustainable energy sources cannot be overstated.

## LOCALISATION AND INDIGENISATION: BEYOND BUZZWORDS

The clarion call for localisation and indigenisation is not mere rhetoric; it is a pragmatic economic imperative. The merits are myriad, encompassing economic growth, job creation, the fortification of local industries, and the substantial savings of foreign exchange. However, embarking on the journey towards true indigenisation demands more than ad hoc efforts; it necessitates a meticulously devised strategy.

This strategy begins with a comprehensive assessment of demand and available resources. It's not enough to simply substitute imported energy sources with domestically produced ones; the nation must identify its unique strengths and capabilities that can contribute to energy production. For instance, Pakistan's geographical location offers abundant sunlight, making solar energy a prime candidate for localisation. Wind energy, hydropower, and biomass are other areas where Pakistan can harness its indigenous potential.

Seamless integration within the energy supply chain is equally crucial. This involves the development of a robust ecosystem where local industries can contribute components and expertise, thus reducing reliance on

foreign imports. Collaborations between academia, industry, and policymakers are pivotal in nurturing this ecosystem. Moreover, the establishment of technology hubs and innovation clusters can accelerate the development and deployment of indigenous energy solutions. Moreover, there is also a need to develop mining industry for extraction of critical minerals required for energy transition.

## R&D: PAKISTAN'S CRUCIAL CHALLENGE

An in-depth scrutiny of Pakistan's R&D expenditures in comparison to global benchmarks paints a somber picture. At a mere 0.19 percent of the GDP, the nation trails even behind the South Asian average. The realm of innovation is further illustrated by patent registration figures, unveiling a stark gap: while India notched an impressive 23,141 patents in 2021, Pakistan struggled to amass 338.

This dearth of investment in research and innovation is a major stumbling block in achieving true indigenisation. Innovation is the bedrock upon which sustainable energy solutions are built. Countries that have successfully transitioned towards renewable energy, like Denmark and Germany, have done so by heavily investing in research and development. Pakistan must cultivate an environment that encourages curiosity, exploration, and technological breakthroughs to propel its energy sector forward.

## STAKEHOLDER CONVERGENCE: IMPERATIVE FOR PROGRESS

Effectuating a paradigm shift towards indigenisation demands a collective endeavor that unites diverse stakeholders - the government, the private sector, and academia/Civil Society Organizations (CSOs). This harmonious synergy is to be realised through forging robust connections between academia, industry, and policymakers.

The role of the government is pivotal in creating an enabling environment for indigenisation efforts. This encompasses the formulation of favorable policies, incentives for research and development, and streamlined regulatory procedures. The private sector, on the other hand, can drive innovation through investments, commercialisation of research, and establishment of local manufacturing capabilities. The academia and CSOs have a crucial role in bridging the gap between theory and practice, ensuring that research translates into tangible solutions.

## DRAWING LESSONS FROM GLOBAL EXEMPLARS

A beacon of inspiration for Pakistan lies in Denmark's remarkable trajectory toward harnessing wind energy. In the aftermath of the 1970s oil crisis, Denmark adroitly pivoted towards wind energy, catalysing local manufacturing and channeling substantial investments into R&D. Presently, Denmark stands as a formidable global leader in wind energy, with over 40% of its electricity sourced from wind turbines. The dividends of this transformation are manifold: amplified employment opportunities, diminished reliance on imports, reduced greenhouse gas emissions, and a palpable uplift of the local community.

## CHARTING THE WAY FORWARD

The tapestry of Denmark's success story weaves seamlessly into Pakistan's current narrative. Standing on the precipice of an impending energy crisis, the trajectory towards indigenisation and localisation ceases to be a luxury; it morphs into an inexorable necessity. The echoes from the world resonate with a resolute message: the hourglass of time is teetering on the brink of profound introspection, meticulous integration, potent incentivisation, and unflinching policy orchestration.

The path forward, intertwines Pakistan's pursuit of energy security with its aspirations for robust economic growth. By nurturing a thriving ecosystem for renewable energy, the nation can stimulate economic activity that ripples across industries. Job creation will burgeon, not only in the specialised field of energy technology but also in ancillary sectors, such as manufacturing, installation, and maintenance. The establishment of local technology hubs will catalyse innovation, fostering a culture of research and development that can further branch into diverse sectors, transcending the energy realm. Moreover, the coupling of economic growth with renewable energy initiatives serves as a powerful lever to uplift local communities. As wind turbines hum and solar panels glisten, regions once overshadowed by fossil fuel plants can experience a rejuvenation. This symbiotic relationship between progress and sustainability is the cornerstone of the narrative that Pakistan can script.

Simultaneously, this narrative must emancipate itself from the shackles of imported fossil fuels. As the world navigates geopolitical turmoil and energy insecurity, a nation that hinges its growth on indigenous energy sources becomes inherently resilient. Pakistan's reliance on imported oil and gas, prone to price fluctuations and international disputes, can be severed.

The process of localisation and indigenisation not only empowers Pakistan to determine its energy destiny but also shields it from the geopolitical quagmires that often accompany energy imports. It's an overture that reverberates with the harmony of local innovation, economic resurgence, and environmental stewardship.

The challenges that loom may be complex, but the solutions are equally ingenious. From harnessing solar and wind potential to investing in breakthrough research, from fostering public-private collaborations to instating visionary policies, Pakistan's voyage towards energy indigenisation is a saga of hope, determination, and resilience. As history etches its lines, let Pakistan be remembered not for the crises it faced, but for the fortitude with which it overcame them. Let its journey towards energy self-reliance echo as a resounding anthem, not just within its borders, but across the globe. With each solar panel installed and every wind turbine erected, Pakistan forges a future that is not just energy-secure, but economically vibrant, environmentally conscious, and resilient in the face of uncertainty. The time is now, the path is clear, and the destination is a sustainable, prosperous future.



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