

## Impact of Proposed Energy Vision 2025 of Pakistan

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The recently unveiled Pakistan Vision 2025 aims at ensuring continuous access to affordable and clean energy for all sections of the population. To achieve this objective the ten goals are identified which mainly focused on Hydropower projects, nuclear power generation plants, overcome transmission and distribution losses and Introduce institutional reform and strengthen regulatory frameworks to improve transparency and efficiency.

The current shortfall in supply of energy has resulted in a massive negative impact both on societal as well as economic well-being (4-7% loss to the country's GDP). The installed power generation capacity at the end of 2012-13 was 19,560MW, of which Thermal (65 percent), hydroelectric (33 percent) and Nuclear (2.4 percent). The annual per capita electricity consumption in Pakistan is around 320kwh and this only caters for 60 percent of the population. Forty percent of Pakistanis still have no access to electricity. The single renewable energy resource that Pakistan possesses in abundance is hydropower. The hydroelectric power is the cheapest, cleanest and indigenous form of energy. Pakistan is capable of generating 50,000 MW of hydroelectricity, but only about 6,595 MW has been developed for the last 50 years. Pakistan is facing the serious energy shortfall. There is a list of the new projects being implemented or to be launched by WAPDA (Pakistan Water and Power Development Authority). These hydropower projects include 15 very large projects including Bhasha (4,500MW), Dasu (4,320MW), Bunji (7,100MW), Pattan (2,800MW), Thakot (2,800MW) and others. There are some additional small projects ranges between 100 MW to 500MW. Pakistan has 65,000 megawatts of identified projects and 100,000MW potential. According to an authoritative research, if Pakistan is to develop economically and raise living standards, 50,000MW should be added in the next 15 years. AS we know that energy is vital for economic development of a nation.

Pakistan is one of those countries in which there are massive Transmission and distribution (T&D) losses which is termed as an integral part of the power system. T&D losses due to technical issues and electricity theft pose a very serious challenge. T&D losses in Pakistan are over 25%. According to figures given by World Bank, Electric power transmission and distribution losses (kWh) in Pakistan which include losses in transmission between sources of supply and points of distribution and in the distribution to consumers, including pilferage as last measured were 16115000000 (KWH) in 2011. In Monetary terms, the combined losses exceeded from Rs 31 billion in 2013-14 to Rs 52.6bn in 2014-15. Recently, Pakistan's government has also planned to set up a mega nuclear power plant with power generation capacity of 2,000 megawatts.

Given this new initiative towards energy vision 2025, the current study estimates the impact of additional power generation on the economy using a Global Computable general equilibrium (CGE) framework. Further, it calculates the amount of GHG reductions from renewable sources compared to traditional energy sources. It applies the GTAP database of version 9. The advantage of this new GTAP power database 9.0 contains disaggregated electricity sector such as transmission and distribution (T&D), nuclear, coal, gas, oil, hydroelectric, wind, solar, and other power technologies. Gas, oil, and hydroelectric power are further differentiated by load type: base and peak. Preliminary results show that an increase in industrial output, gross domestic product (GDP), and employment as a consequence of the additional production of renewable energy. It also contributes to nation's GHG emission reduction target.