

Evaluating the Impact of Prime Minister Agriculture Emergency Program for Food Security and Sustainable Agriculture in Southern Khyber Pakhtunkhwa Pakistan

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Global food security is greatly dependent on the intricate and interconnected agricultural production systems. Despite being a lagging economic sector, agriculture accounts for 18.5% of the nation's GDP and employs 38.5% of the labor force. However, high-performing agriculture is essential for both economic growth and the reduction of poverty. The productivity of all major crops has stagnated over the past ten years, which has contributed to the agriculture sector's below-desired performance. The five traditional crops' total cultivated area has likewise mostly stayed constant. Pakistan's agriculture is seriously threatened by climate change, which also jeopardizes the nation's food security and water supply. Due to its significance in establishing sustainable farming livelihoods and food security, groundwater utilization is a significant policy topic in developing countries. Pakistan's agriculture depends on the Indus basin, which is severely water-scarce because of climate change. There are two main dangers to the country's food and water security: inadequate irrigation techniques and a lack of policy changes. A resolution of the government is to increase the productivity of agriculture. In this connection the Prime Minister's Agriculture Emergency Program (PMAEP) has been initiated in 2018. The key objectives of the project are to bring maximum non cultivable land to best agriculture land, to conserve rainwater and to recharge aquifer. Water Conservation in barani areas the province is a huge project under the PMAEP where Soil and water conservation department constructed 1000 different structures to harvest rainwater. The purpose of this study is to find out the impact of water conservation structures in the region after the PMAEP and to find out how much

non-agriculture land were transformed to agriculture land. The Impact of the facilities were checked for the ground water potentially using MIF approach in GIS environment and supervised classification algorithm were used to find out the agriculture land use changes in KP after all the proposed sites were also marked for rainwater harvesting. The results reveals that 4500 water recharge facilities were constructed in Khyber Pakhtunkhwa including Checkdams, Gullys, Waterponds, Water reservoirs and earthen ponds that can conserve rainwater and quickly recharge the aquifer while in Chitral, Abbottabad, DI khan and Kohat 10 no's of Watershed were constructed. The PMAEP have a positive role in groundwater recharge and for future food security. A total of 220-hectare scrub land were converted to agriculture land in different micro watersheds, while different slope areas were converted to terrace farming for best agriculture production.