

25

Utilizing Renewable Energy Sources to Mitigate Power Outages in Hebron, Palestine: A Case Study

Wael A. Salah¹, Jasem Tamimi², Saleh Al-Takroui²

¹Palestine Technical University - Kadoorie, Tulkarm, Palestine. ²Palestine Polytechnic University, Hebron, Palestine

Abstract

Hebron Governorate in Palestine endures recurrent power outages that adversely affect residential, commercial, and industrial operations. Consequently, it is essential to establish dependable non-conventional energy sources to ensure a stable and sustained electrical supply. This study seeks to evaluate the critical incorporation of renewable energy sources, including solar and wind, within the region to alleviate power outages and enhance grid dependability. This research examines energy consumption trends, outage frequency, existing solutions, and the primary obstacles to renewable energy integration, including initial capital costs, legislation, and infrastructure. The research additionally investigates potential elements that facilitate the integration of renewable energy. The analytical results are presented, and recommendations are offered to decision-makers for developing policy measures that promote the adoption of renewable energy to guarantee long-term energy security. The findings seek to equip decision-makers, investors, and local inhabitants with ways to formulate a complete response that bolsters energy security by prioritizing a renewable and sustainable energy system.