

Energetic and Environmental Valorization of Renewable Resources

(Solar and wind power generation in Constantine Algeria)

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Algeria has considerable and diversified natural wealth, such as renewable natural resources, it is among the countries best endowed with solar resources in the world. The integration of renewable energies in the national energy mix is a major challenge in the development, and the perspective of preservation of fossil resources, diversification of electricity production sectors and contribution to sustainable development and the protection of the environment. Given its geographical location, Algeria is among the countries with one of the highest solar deposits in the world. The duration of sunshine on almost all of the national territory exceeds 2000 hours annually and can reach 3900 hours (high plateaus and Sahara). The intention of this study is to present an experimental of isolated hybrid system (photovoltaic and wind with battery storage) installed in Constantine-Algeria, to meet the demand for energy used in public lighting. The result shows the feasibility of the hybrid system whatever the weather conditions. Our system responds to demand throughout the year. Since the effects of conventional energies (fossil fuels) on the environment are well known, they cause atmospheric pollution (which contributes to global warming and climate change) as well as emissions of fine polluting particles. This is why renewable energy sources are a possible alternative to conventional energy production systems. The aim of this research is to reduce the days when we use traditional sources; thus reducing carbon dioxide emissions by approximately 20%. It would be interesting to implement the system for several areas such as electrification, pumping of water. The results clearly confirm the enormous environmental and energy potential of renewable resources, which justifies the great efforts made in this field by the scientific and editorial worlds. Renewable energy sources are apparently a solution to the issue of sustainability and environmental protection; also of supply and biodiversity and can be an alternative solution to conventional energy production systems.

Keywords: Hybrid System, Photovoltaic, Wind, Battery Storage, Carbone Dioxide.