

Green Energy: The New Era

Mr. Asude Sandeep Ramrao

Head of Department, Mechanical Engineering
Santosh N Darade Polytechnic, Yeola, Nashik, Maharashtra, India

Abstract: *The global shift from fossil-based energy to renewable energy sources marks a crucial turning point in addressing climate change's environmental, economic, and social challenges. This research explores the transition to green energy, focusing on technologies such as solar, wind, and hydropower, which offer sustainable, abundant, and economically viable alternatives to traditional fossil fuels. The paper reviews the environmental impacts of fossil fuel dependency, technological advancements in renewable energy, and the economic and market dynamics driving this transition. Methodologically, a comprehensive analysis of current technologies, economic implications, and case studies is conducted to provide a holistic view of the renewable energy landscape. The results demonstrate that advancements in energy efficiency, cost reductions, and the potential for large-scale job creation make green energy a feasible alternative. However, challenges remain, particularly in energy storage and grid integration, which require further innovation and supportive policies. The paper concludes by discussing the future research needs and the role of governments and industries in ensuring a smooth and equitable transition to a sustainable energy future.*

Keywords: Green energy, Renewable energy, Solar power, Wind energy, Sustainable energy transition, Fossil fuel alternatives