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The challenges of sustainable energy transition: A focus on renewable energy

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Abstract

Energy is both a fundamental necessity and a driving force behind human activities. Throughout history, energy consumption has steadily risen, evolving from basic needs like food and fire for early humans to complex industrial and technological requirements today. Transitioning to a sustainable energy system requires a policy framework that empowers developing nations to promote green industries, diversify their sectors, and accelerate growth while addressing climate change and related challenges. In response to the urgent need for a global transition towards sustainable energy sources, this research explores the pivotal roles of technology, research, and policy in advancing renewable energy solutions. Motivated by the growing environmental challenges associated with conventional energy sources, the primary goal of this study is to shed light on the multifaceted strategies that facilitate the widespread adoption of renewable energy and contribute to mitigating climate change. Through an extensive analysis of renewable energy technologies, research contributions, and policy frameworks, this research uncovers critical insights. Our findings reveal how technological innovations have revolutionized renewable energy sources, making them more efficient, affordable, and scalable. Furthermore, research efforts have identified new opportunities and addressed technical challenges, while also assessing the environmental and societal impacts of renewable energy adoption. Crucially, this study underscores the indispensable role of policy in driving renewable energy transitions. Governments worldwide play a pivotal role in incentivizing renewable energy development through financial incentives, regulatory mandates, and research and development support. Moreover, these policies aim to promote energy efficiency, conservation, and equitable access to sustainable solutions. The results of this research emphasize that the transition to renewable energy is not only a viable solution to climate change but also an opportunity to create green jobs, enhance energy security, and reduce greenhouse gas emissions. The potential for a sustainable future powered by renewable energy is within reach, and this study serves as a guidepost for realizing this transformative vision.

Keywords: sustainable energy transition, renewable energy, energy policy, climate change mitigation, renewable

Full text

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