Tackling Poor Waste Management and Reliance on Traditional Sources of Energy Through Waste Products

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Abstract:

The global transition to renewable energy has become crucial in addressing the challenges of both energy security and environmental sustainability. Ghana, like many developing countries, faces a growing energy demand as well as significant challenges in waste management. The improper disposal of plastic, metal, and organic waste not only results in environmental degradation but also represents a missed opportunity for utilizing these resources. This research explores the potential of converting waste materials into renewable energy solutions in Ghana. By integrating technologies such as biomass energy conversion, waste-to-energy systems, and upcycled materials for wind turbines, this study aims to demonstrate how innovative waste utilization can reduce the nation's energy and environmental challenges. Using waste as a resource offers a sustainable pathway to broaden the variety of Ghana's energy sources, reduce dependence on traditional energy sources, and help mitigate climate change. This paper evaluates the possibility, efficiency, and environmental benefits of such solutions, laying the basis for community-based implementations.