

RENEWABLE ENERGY FOR RURAL ELECTRIFICATION : A REVIEW

Author:M.A.ELHADIDY, S.M.SHAAHID

Journal: renewable and sustainable energy reviews

Volume: 10, issue: 8

Year:2006

DOI:10.1016/j.rser.2005.03.004

Summary:

The article reviews the potential of renewable energy sources for rural electrification focusing on solar wind hydro and biomass energy it discusses various technology benefits and challenges associated with each source the authors emphasize the importance of renewable energy for rural development energy security and environment sustainability.

Inference report:

Introduction:

Rural electrification is crucial for economic development improved healthcare and enhanced quality of life traditional grid extension is often costly and impactful for remote areas renewable energy offers a viable alternative.

Key findings:

1. Solar energy is sustainable for rural electrification due to its abundance and decreasing costs.
2. Wind energy can provide reliable power especially in areas with consistent wind patterns.
3. Hydro energy is ideal for rural areas with nearby water resources
4. Biomass energy can utilise local organic waste reducing Reliance on fossil fuels
- 5.hybrid systems combining multiple renewable sources can ensure reliable power supply.

Challenges:

1. High upfront costs
2. Technology limitations

3. Energy storage and grid integration issues
4. Policy and regulatory frameworks
5. Public awareness and acceptance

Conclusion:

Renewable energy is a promising solution for rural electrification offering energy security environment and benefits and economic opportunities addressing challenges through innovative technology policy support and community engagement can accelerate the transition to sustainable rural energy systems.

Recommendations:

1. Government should incentivize renewable energy investments.
2. Research and development should focus on improving efficiency and reducing costs.
3. Community based initiative should promote public awareness and participation.
4. Energy storage solution should be integrated into renewable energy system.

Future directions:

1. Smart grid technology for efficient energy distribution
2. Electric vehicle integration for rural transportation
3. energy access and equity for marginalized communities
4. Renewable energy based microgrids for resilient rural energy systems

This inference report summaries the key points from the reference article highlighting the potential of renewable energy for rural electrification and outlining challenges conclusions recommendations and future directions.