

Potential of Untapped Renewable Energy Resources in Pakistan: Current Status and Future Prospects [†]

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[†] Presented at the 4th International Electronic Conference on Applied Sciences, 27 October–10 November 2023; Available online: <https://asec2023.sciforum.net/>.

Abstract: Energy is a very essential indicator for the sustainable development and economic growth of any country. Pakistan heavily relies on imported fossil fuels; their excessive use contributes to environmental pollution. According to the National Electric Power Regulatory Authority, Pakistan produces 63% of its electricity from fossil fuels. The world is now shifting towards renewable energy sources such as biomass, wind energy, solar energy, ocean energy, hydropower, and geothermal energy. At present, Pakistan fulfills 5.4% of its energy demand from renewable energy sources, including biomass, wind, and sun, and 25% from hydropower. Due to economic and political challenges, the country is facing a severe energy deficit (7000 MW). By 2030, Pakistan plans to fulfill 30% of its energy demand from renewable sources. The untapped potential of energy from renewable sources in Pakistan is nearly 60,000 MW from hydropower, 40,000 MW from sun, 346,000 MW from wind. To address the escalating energy demands and bridge the energy deficit, Pakistan must intensify its efforts in harnessing renewable energy resources.

Keywords: sustainability; power generation; fossil fuel; renewable energy resources; electricity; Pakistan



Citation: Abbas, Y.; Aslam, R.A. Potential of Untapped Renewable Energy Resources in Pakistan: Current Status and Future Prospects. *Eng. Proc.* **2023**, *56*, 108. <https://doi.org/10.3390/ASEC2023-15274>

Academic Editor: Simeone Chianese

Published: 26 October 2023



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1. Introduction

Energy allows for the ability to work. Energy is a very important indicator for the sustainable development and economic growth of any country. Energy plays a very important role in eradicating poverty, improving human welfare and raising living standards [1].

Many regions of the world have no proper energy supplies, which limits economic progress, but other areas suffer from environmental degradation from energy use, which inhibits sustainable progress [2].

2. Purpose

The main purpose of the study is to determine the potential of untapped renewable energy resources in Pakistan: both their current status and future prospects.

The purpose of the study is to examine the opportunities that are provided by renewable energy resources and the role of the government in the process of policy development.

3. Methods

At present, the world is shifting towards renewable energy sources, such as biomass, wind energy, solar energy, ocean energy, hydropower, and geothermal energy.

Pakistan uses wind, solar, biomass and hydropower as renewable energy sources [3].

This study was presented using determinate qualitative data from multiple sources, including government annual performance reports, review papers, research works, journals, books, publications, and newspapers (Figure 1).

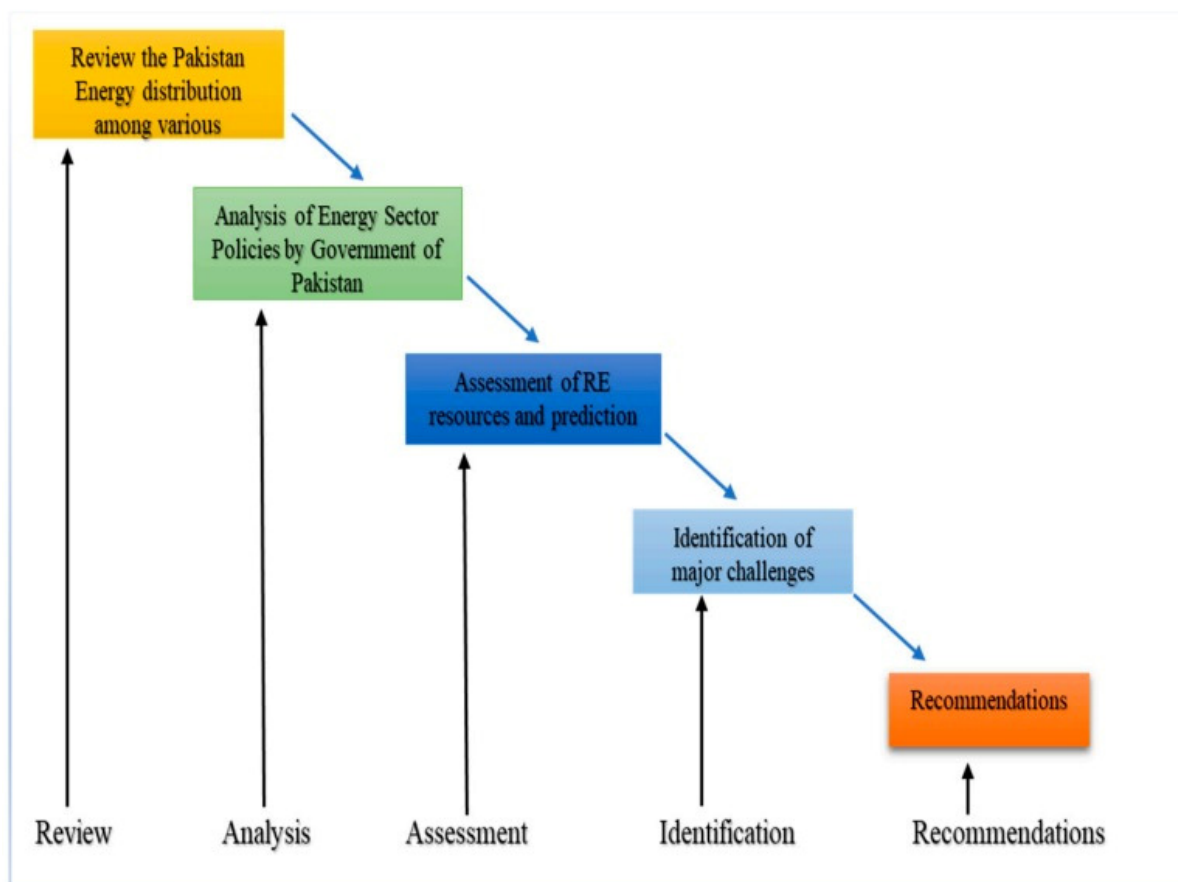


Figure 1. Methodological Framework [4].

4. Results

Pakistan fulfills 5.4% of its energy demand from renewable energy sources, including biomass, wind, and sun, and 25% from hydropower [5]. By 2030, Pakistan plans to fulfill 30% of its energy demand from renewable sources. The untapped potential of energy from renewable sources in Pakistan is nearly 60,000 MW from hydropower, 40,000 MW from the sun, and 346,000 MW from wind [6–9].

5. Conclusions

The study focuses on a large amount of untapped renewable resources in Pakistan, both their current and future prospects.

Author Contributions: Conceptualization, R.A.A. and Y.A.; methodology, R.A.A. and Y.A.; formal analysis, R.A.A. and Y.A.; investigation, Y.A.; writing Y.A. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: Data sharing does not apply to this article.

Conflicts of Interest: The authors declare no conflict of interest.

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