

Sustainability Assessment Report

Location: Latitude: 28.294311382932477, Longitude: 73.01623228024599

Reporting Period: 2024

Executive Summary

This report assesses the sustainability potential of the Site Assessment Area based on solar, wind, water resources, and land cover. The analysis reveals good potential for solar energy harvesting. However, wind energy is not feasible due to low wind speeds. Water harvesting potential is low, influenced by limited rainfall, soil characteristics, and slope. The area is entirely barren, lacking any green cover, which presents challenges for ecological balance and certain land-based sustainability initiatives.

Detailed Analysis

Resource	Value/Status	Result/Explanation
Solar	3.785 kWh/m ²	👍 Good potential. Solar installation is beneficial.
Wind	Not Feasible	Wind speed too low for a wind farm. Average wind speed: 3.187 m/s.
Water	Harvesting Score: 0.166	Low potential. Influenced by rainfall score (0.27), soil score (0.09), and slope score (0.021).
Green Area	0.00%	Analysis completed successfully. Not feasible for green initiatives. Requires >20% green coverage.
Barren/Open Area	100.00%	Analysis completed successfully. Meets criteria of >10% barren land.

Solar Energy: The site exhibits good solar irradiance, indicating a strong potential for solar energy generation. Implementing solar photovoltaic systems could provide a sustainable energy source.

Wind Energy: The average wind speed of 3.187 m/s is insufficient to support a wind farm, rendering wind energy generation not feasible at this location.

Water Resources: The overall water harvesting potential is low. The low rainfall score suggests limited water availability. The soil and slope scores further contribute to the low overall score, indicating challenges for effective water retention and collection.

Land Cover: The area consists entirely of barren land with no green cover. This lack of vegetation presents challenges for biodiversity, soil stability, and overall ecosystem

health. While the high percentage of barren land could be suitable for certain types of development, it necessitates careful planning to mitigate environmental impacts.

Recommendations

- **Prioritize Solar Energy:** Given the favorable solar potential, investing in solar photovoltaic systems is highly recommended. This can significantly reduce reliance on conventional energy sources.
- **Explore Water Management Strategies:** Despite the low water harvesting potential, explore alternative water management strategies like water-efficient landscaping and greywater recycling to maximize water use efficiency.
- **Implement Land Restoration Initiatives:** Given the complete lack of green cover, prioritize land restoration and revegetation projects. This will contribute to improving soil health, biodiversity, and carbon sequestration. Select drought-resistant and native plant species suited to the arid conditions.
- **Conduct Further Soil Analysis:** A more comprehensive soil analysis is recommended to understand its properties and inform appropriate land management and revegetation strategies.
- **Consider Micro-Wind Turbines:** While a large-scale wind farm is not feasible, investigate the potential of small-scale wind turbines for localized energy generation, considering their efficiency at the specific wind speeds recorded. This would require further wind resource assessment at different heights.