

# Sustainability Assessment Report

**Reporting Period:** January 1, 2024 - December 31, 2024

**Location:** Site Assessment Area

## Executive Summary

This report assesses the feasibility of implementing solar, wind, and water harvesting solutions at the Site Assessment Area. The assessment reveals moderate potential for solar energy generation, with an average of 2.783 kWh/m<sup>2</sup>. However, wind energy is not feasible due to low average wind speeds. Water harvesting potential is limited, primarily due to low soil and slope scores, resulting in a moderate overall harvesting score. Recommendations focus on optimizing solar energy implementation and exploring alternative water management strategies.

## Detailed Analysis

Resource	Key Metric(s)	Value	Assessment
<b>Solar</b>	Average Daily Solar Radiation	2.783 kWh/m <sup>2</sup>	⚠ Moderate potential. Consider additional analysis before installation.
<b>Wind</b>	Average Wind Speed	2.87 m/s	Not Feasible. Wind speed too low for a wind farm.
<b>Water Harvesting</b>	Rainfall Score	0.647	
	Soil Score	0.07	
	Slope Score	0.066	
	<b>Overall Harvesting Score</b>	<b>0.358</b>	Limited potential due to low soil and slope scores.

**Solar Energy:** The site exhibits moderate solar potential. The average daily solar radiation of 2.783 kWh/m<sup>2</sup> suggests that solar panels could generate a reasonable amount of electricity. Further analysis, including shading analysis, panel orientation optimization, and grid connection feasibility, is recommended before proceeding with installation.

**Wind Energy:** Wind energy is not a viable option for the Site Assessment Area. The average wind speed of 2.87 m/s is significantly below the threshold required for efficient wind turbine operation.

**Water Harvesting:** The overall water harvesting potential is limited. While the rainfall score is relatively good (0.647), the low soil score (0.07) and slope score (0.066) significantly restrict the site's ability to effectively capture and retain rainwater. This suggests that the soil might have poor infiltration capacity and the terrain is relatively flat, hindering runoff collection.

## Recommendations

- **Solar Energy:** Conduct a detailed site-specific solar assessment, including shading analysis and panel optimization, to maximize energy generation potential. Explore grid connection options and evaluate the economic viability of solar installation.
- **Wind Energy:** Wind energy is not recommended for this location.
- **Water Harvesting:** Given the limited potential for traditional rainwater harvesting, explore alternative water management strategies such as water conservation techniques, greywater recycling systems, and efficient irrigation methods. Soil improvement strategies could be considered to enhance infiltration, but the cost-benefit should be carefully evaluated. Investigate potential groundwater resources if applicable.