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Knowledge, Attitudes, and Practices on Renewable Energy in Island Communities Implications for Energy Transition

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ABSTRACT

This study examined the knowledge, attitudes, and practices (KAP) regarding renewable energy among residents of the geographically isolated island barangays of Calituban, Guindacpan, and Nocnocan in Talibon, Bohol. Using survey data and nonparametric statistical analyses (Kruskal–Wallis H tests), the study assessed differences in KAP levels and their association with demographic characteristics. Results showed no statistically significant differences in knowledge and attitudes toward renewable energy across the three communities, suggesting a shared baseline awareness and generally favorable perceptions. However, practices exhibited near-significant variation ($p = 0.054$), with Guindacpan residents demonstrating lower engagement. These findings highlight a uniform openness to renewable energy adoption while underscoring localized barriers to implementation, particularly in practice-based behaviors. The results emphasize the need for integrated, context-sensitive interventions, including infrastructure support, education campaigns, and participatory planning, to bridge the knowledge-to-practice gap. Insights from this study contribute to advancing equitable renewable energy transitions in remote and resource-constrained island communities, supporting Sustainable Development Goal 7.

INTRODUCTION

The global imperative to transition towards sustainable energy sources is becoming increasingly urgent in the face of climate change and dwindling fossil fuel reserves. Renewable energy (RE), encompassing solar, wind, hydro, and biomass, offers a promising pathway to mitigate environmental impact while ensuring energy security. Access to affordable, reliable, and sustainable energy is recognized as a fundamental human right and plays a pivotal role in achieving the United Nations' Sustainable Development Goals, particularly SDG 7 (Prasad *et al.*, 2025). Moreover, a rights-based conceptualization of energy access is gaining traction, proposing that ensuring access to energy should be enshrined as a legal obligation of states under frameworks of energy justice, energy democracy, and energy poverty alleviation (Shyu, 2021). However, the successful adoption of these technologies hinges not only on their availability but also on the knowledge, attitudes, and practices (KAP) of local communities. Community acceptance is shaped by a complex interplay of social, economic, environmental, and political factors. A recent systematic review refined the Community Acceptance Framework (CAF), identifying financial capital as a prominent economic determinant and highlighting the predominant role of social dimensions, including social capital, cognitive response, and cultural values in shaping acceptance of renewable energy projects (Zaharuddin *et al.*, 2025). In the Philippine context, a structured national survey involving 386 respondents revealed that 70% are generally aware of renewable sources, yet only about

30% are informed about specific local projects or government initiatives. Respondents overwhelmingly supported renewables for their environmental merits, though concerns regarding high initial costs (69%) and reliability (57%) persisted (Malang *et al.*, 2024). In this context, the development and utilization of renewable energy resources are crucial for fostering resilience and promoting sustainable development (Chingcuanco, 2023). This study focuses on three island barangays within Talibon, Bohol, Philippines, namely Calituban, Nocnocan, and Guindacpan. These islands, characterized by their unique socioeconomic and environmental contexts, provide a valuable lens through which to examine the nuances of renewable energy acceptance and implementation. These island communities, having no grid connection, rely on energy sources that are costly, unreliable, and environmentally damaging. Understanding community knowledge, attitudes, and practices (KAP) regarding renewable energy is essential for developing targeted, evidence-based interventions and policies that facilitate sustainable energy transitions. This study employed a structured survey to profile residents based on demographic variables, including age, sex, marital status, occupation, educational attainment, and household size. Statistical analyses were conducted to assess KAP levels, examine associations between demographic factors and KAP outcomes, and identify significant variations among respondents. The findings provide context-specific, empirically grounded insights that can inform policymakers, non-governmental organizations, and community leaders in advancing equitable access to renewable energy solutions.

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MATERIALS AND METHODS

A quantitative, cross-sectional survey design was employed in this study to evaluate the knowledge, attitudes, and practices of residents concerning renewable energy in three selected geographically isolated and disadvantaged island barangays of Talibon, Bohol, namely Barangay Calituban, Barangay Nocnocan, and Barangay Guindacpan. These three island communities were chosen due to their significant lack of access to grid-powered electricity and a high level of deprivation index. According to the Poverty Database Monitoring System (PDMS) 2006 survey, Guindacpan recorded the highest overall deprivation (41.85%), with critical challenges in access to safe drinking water (100%), high rates of land insecurity (90.93%), inadequate sanitation facilities (85.78%), and all surveyed households falling below the food threshold (100%). Although malnutrition (3.06%) and unemployment (3.12%) rates were relatively low compared to other indicators, the high prevalence of basic needs deprivation underscores severe poverty conditions. Calituban, ranked second (36.16%), also exhibited extreme deprivation in safe water access (99.16%) and a high proportion of households below the food threshold (86.89%). Land tenure insecurity affected over half of households (53.97%), while sanitation deprivation remained significant (79.08%). However, child mortality was nonexistent, and crime incidence was minimal (0.42%), suggesting a relatively safe but economically marginalized community. Nocnocan, with the lowest deprivation level among the three (34.67%), presented a mixed profile. While it fared better in sanitation (33.19% lacking sanitary toilets) and safe water access (85.59% deprived), it exhibited higher unemployment (28.68%) and school dropout rates (41.26%), coupled with severe land tenure insecurity (98.69%). Notably, although food threshold deprivation (48.47%) was lower relative to Guindacpan and Calituban, its education-related deprivation signals systemic barriers to long-term development.

The study employed purposive sampling to ensure the inclusion of respondents representing a range of demographic and socioeconomic characteristics. This selection strategy prioritized barangay officials, members of organized people’s groups, youth, and adult residents aged 18 years and above, based on their anticipated impact on household energy consumption and decision-making processes. Individuals engaged in diverse occupations prevalent in the local economy, such as fishing, farming, trading, and service provision, were also included to obtain varied insights into energy needs and usage patterns.

Ethical clearance was formally obtained from the Research Ethics Committee of the University of Bohol prior to data collection, ensuring adherence to ethical standards and guidelines. Subsequently, formal approval was secured from the local chief executive, and endorsements were obtained for the participating barangays. All participants were informed about the study’s objectives and the intended use of the data, and written informed consent was obtained before each interview. Strict confidentiality protocols were implemented to protect the privacy and anonymity of all respondents throughout the study. Participation was voluntary, anonymity was maintained, and participants were informed of their right to withdraw at any time without consequence.

Data was collected using a researcher-developed instrument, the Renewable Energy: Knowledge, Attitudes, and Practices (RE-KAP) survey form. Part 1 of the instrument gathered demographic and socioeconomic profiles of the respondents. Part 2 assessed knowledge (11 questions), attitudes (11 questions), and practices (12 questions) regarding renewable energy. The survey was translated into Cebuano, pilot-tested, and demonstrated acceptable reliability with a Cronbach’s alpha of 0.87. The quantitative data collected were analyzed using statistical techniques, including descriptive statistics and correlation analysis, with the aid of the Statistical Package for the Social Sciences (SPSS) software.

Tests of Normality

Table 1 assesses whether the data for respondents’ knowledge, attitudes, and practices on renewable energy follow a normal distribution. Two statistical tests are used: Kolmogorov-Smirnov and Shapiro-Wilk. Both tests indicate a significant deviation from normality for all three variables, as evidenced by the p-values (Sig.) of .000 across the board.

- Respondents’ Knowledge on Renewable Energy: The Kolmogorov-Smirnov test statistic is .181, and the Shapiro-Wilk test statistic is .845, both with p-values of .000, indicating that the data is significantly different from a normal distribution and is skewed.

- Respondents’ Attitudes on Renewable Energy: The Kolmogorov-Smirnov test statistic is .256, and the Shapiro-Wilk test statistic is .708, also with p-values of .000, further confirming a skewed distribution.

- Respondents’ Practices on Renewable Energy: The Kolmogorov-Smirnov test statistic is .156, and the Shapiro-Wilk test statistic is .893, with the same significance level, indicating skewness in the distribution. The normality tests demonstrate that the data for all three variables knowledge, attitudes, and practices regarding

Table 1: Tests of Normality

	Kolmogorov-Smirnova			Shapiro-Wilk			Normality
	Statistic	df	Sig.	Statistic	df	Sig.	
Respondents' Knowledge on Renewable Energy	.181	90	.000	.845	90	.000	Skewed
Respondents' Attitudes on Renewable Energy	.256	90	.000	.708	90	.000	Skewed
Respondents' Practices on Renewable Energy	.156	90	.000	.893	90	.000	Skewed

renewable energy do not follow a normal distribution and are skewed. This suggests that nonparametric statistical methods may be more appropriate for further analysis.

RESULTS AND DISCUSSION

Profile of the Respondents

The demographic profile of respondents across the three island barangays revealed the community characteristics. In Calituban and Guindacpan, the majority of participants were aged 25–44 years (53.33% and 43.33%, respectively), while in Nocnocan, individuals aged 45–64 years were most prevalent (53.33%). The proportion of respondents aged 65 years and older was also highest in Nocnocan (16.67%), indicating a relatively older population in this barangay. In terms of sex distribution, females predominated in Calituban (70.00%) and Guindacpan (56.67%), whereas Nocnocan had a slightly higher proportion of male respondents (53.33%). Marital status patterns showed that the vast majority of respondents were married, with Nocnocan recording the highest percentage (86.67%), while single individuals comprised the smallest segment across all communities. Occupational data indicated that homemakers formed the largest group in Calituban (63.33%), whereas fishing was a significant source of livelihood in Guindacpan (20.00%) and Nocnocan (16.67%). Moreover, barangay officials were more prominent in Nocnocan (20.00%), and Barangay Health Workers (BHWs) represented a considerable share in Guindacpan (23.33%). Educational attainment varies among the barangays: Calituban had the highest proportion of respondents at the elementary level (46.67%), Guindacpan recorded the largest percentage of college graduates (23.33%), and Nocnocan had a concentration of elementary graduates (16.67%). Household size also differed across communities, with families of four to five members most common in Guindacpan (50.00%), households with six to seven members most frequent in Nocnocan (40.00%), and Calituban showing a more evenly distributed household size range.

Knowledge on Renewable Energy

Table 2 presents the respondents' level of knowledge on renewable energy across Barangays Calituban,

Guindacpan, and Nocnocan. The results reveal a generally high level of knowledge among all three communities, as reflected in their composite means of 3.47, 3.45, and 3.61, respectively. These findings indicate that respondents demonstrate a strong understanding of renewable energy concepts and their environmental and economic benefits. Across all barangays, respondents displayed consistent awareness of the role of renewable energy in addressing climate change (Q1: M = 3.60–3.70) and recognized solar energy as a dependable source (Q2: M = 3.76–3.86). Knowledge was similarly high regarding the importance of environmental conservation in renewable energy projects (Q7: M = 3.53–3.86) and the critical role of public awareness and education in promoting adoption (Q8: M = 3.60–3.80). While knowledge was generally high, some areas exhibited moderate understanding. Perceptions of wind energy as an effective electricity source (Q3) were moderate in Barangay Guindacpan (M = 2.93), suggesting a knowledge gap regarding wind energy technologies in this community. Similarly, understanding that hydropower is the major source of renewable electricity generation worldwide (Q9) was moderate in Calituban (M = 3.10) and Guindacpan (M = 3.16). These variations suggest opportunities for targeted educational interventions to strengthen awareness of specific renewable energy technologies. Among the three barangays, Barangay Nocnocan exhibited the highest composite mean (M = 3.61), indicating slightly greater overall knowledge. Respondents in this barangay showed particularly strong understanding of geothermal energy (Q5: M = 3.66) and the economic potential of renewable energy transition (Q6: M = 3.80). Barangay Calituban (M = 3.47) and Guindacpan (M = 3.45) also demonstrated strong knowledge, but with slightly lower scores in items concerning wind and hydropower.

These findings demonstrate that all three communities are well-informed on renewable energy concepts, particularly regarding their environmental benefits, economic potential, and necessity for climate action. However, community-specific gaps in knowledge about wind and hydropower highlight the importance of localized education campaigns and training programs further to enhance public understanding and engagement with renewable energy initiatives.

Table 2: Knowledge on Renewable Energy

Items	Barangay Calituban		Barangay Guindacpan		Barangay Nocnocan	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
Q1. Renewable energy sources are an important solution to address climate change.	3.60	Highly Knowledgeable	3.63	Highly Knowledgeable	3.70	Highly Knowledgeable
Q2. Solar energy is a dependable source of renewable energy.	3.76	Highly Knowledgeable	3.86	Highly Knowledgeable	3.83	Highly Knowledgeable
Q3. Wind turbines are an effective means of generating electricity from wind energy.	3.26	Highly Knowledgeable	2.93	Moderately Knowledgeable	3.26	Highly Knowledgeable

Q4. Hydropower is a sustainable source of renewable energy.	3.30	Highly Knowledgeable	3.30	Highly Knowledgeable	3.40	Highly Knowledgeable
Q5. Geothermal energy has the potential to provide consistent and reliable power generation.	3.30	Highly Knowledgeable	3.36	Highly Knowledgeable	3.66	Highly Knowledgeable
Q6. Transitioning to renewable energy sources can boost employment and economic growth.	3.50	Highly Knowledgeable	3.70	Highly Knowledgeable	3.80	Highly Knowledgeable
Q7. Renewable energy projects should prioritize environmental conservation and biodiversity protection.	3.70	Highly Knowledgeable	3.53	Highly Knowledgeable	3.86	Highly Knowledgeable
Q8. Public awareness and education about renewable energy are essential for widespread adoption.	3.70	Highly Knowledgeable	3.60	Highly Knowledgeable	3.80	Highly Knowledgeable
Q9. Hydropower is the major source of renewable electricity generation in the world.	3.10	Moderately Knowledgeable	3.16	Moderately Knowledgeable	3.30	Highly Knowledgeable
Q10. A main environmental benefit of using renewable energy sources is the reduction of air pollution.	3.40	Highly Knowledgeable	3.26	Highly Knowledgeable	3.63	Highly Knowledgeable
Q11. Battery storage allows energy from renewable sources to be stored for later use when demand increases.	3.53	Highly Knowledgeable	3.46	Highly Knowledgeable	3.50	Highly Knowledgeable
Composite Mean	3.47	Highly Knowledgeable	3.45	Highly Knowledgeable	3.61	Highly Knowledgeable

Attitudes on Renewable Energy

Table 3 presents the attitudes of residents in Barangays Calituban, Guindacpan, and Nocnocan toward renewable energy, with mean scores ranging from 3.68 to 3.78, corresponding to a “Very Good Attitude” interpretation across all communities. It indicates a consistently positive orientation toward renewable energy initiatives, reflecting recognition of their environmental, economic, and moral significance. Residents in Calituban registered the highest composite mean ($M = 3.78$), demonstrating slightly stronger overall support, particularly in their belief that renewable energy can reduce reliance on foreign energy sources ($M = 3.93$). Guindacpan residents exhibited a similarly favorable stance ($M = 3.68$), with notably high agreement regarding the need for government incentives and subsidies ($M = 3.86$) and confidence in renewable energy’s potential to meet future demands ($M = 3.86$). In Nocnocan, respondents reported a composite mean of 3.75, with particularly high optimism about future renewable energy advancements ($M = 3.96$) and trust

in renewable technologies to address long-term energy needs ($M = 3.96$).

Although respondents expressed strong endorsement for renewable energy policies and infrastructure, willingness to pay slightly higher prices for renewable-sourced electricity received slightly lower but still favorable ratings ($M = 3.46$ – 3.76), suggesting that while communities strongly support the energy transition, economic considerations remain a practical concern.

The results highlight a cohesive, future-oriented, and ethically motivated stance toward renewable energy across all three barangays. Strong endorsement of government incentives and trust in renewable energy’s reliability suggest that these coastal communities are well-positioned to support strategic investments in sustainable energy systems. These findings provide valuable insights for policymakers and energy planners, reinforcing the importance of integrating public attitudes into renewable energy transition strategies while addressing affordability concerns to ensure equitable and widespread adoption.

Table 3: Attitudes on Renewable Energy

Items	Barangay Calituban		Barangay Guindacpan		Barangay Nocnocan	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
Q1. I believe renewable energy sources are important for minimizing greenhouse gas emissions and addressing climate change.	3.60	Very Good Attitude	3.46	Very Good Attitude	3.63	Very Good Attitude

Q2. I support government incentives and subsidies to encourage the adoption of renewable energy technologies.	3.83	Very Good Attitude	3.86	Very Good Attitude	3.70	Very Good Attitude
Q3. Renewable energy initiatives, such as wind farms or solar arrays, should be prioritized over fossil fuel-based energy projects.	3.76	Very Good Attitude	3.60	Very Good Attitude	3.66	Very Good Attitude
Q4. I am eager to pay a slightly higher price for electricity if it comes from renewable sources.	3.46	Very Good Attitude	3.66	Very Good Attitude	3.76	Very Good Attitude
Q5. Renewable energy has a promise to create new jobs and stimulate economic growth.	3.86	Very Good Attitude	3.83	Very Good Attitude	3.76	Very Good Attitude
Q6. I feel confident in the reliability and stability of renewable energy sources, which include but are not limited to solar and wind.	3.80	Very Good Attitude	3.50	Very Good Attitude	3.53	Very Good Attitude
Q7. Transitioning to renewable energy is a moral imperative to ensure a sustainable future for future generations.	3.90	Very Good Attitude	3.76	Very Good Attitude	3.83	Very Good Attitude
Q8. Renewable energy technologies should be integrated into our infrastructure as much as possible, even if it requires significant initial investment.	3.8000	Very Good Attitude	3.76	Very Good Attitude	3.8000	Very Good Attitude
Q9. I believe that renewable energy can reduce dependence on foreign energy sources.	3.93	Very Good Attitude	3.40	Very Good Attitude	3.66	Very Good Attitude
Q10. I am optimistic about the future of renewable energy technology advancements.	3.90	Very Good Attitude	3.76	Very Good Attitude	3.96	Very Good Attitude
Q11. I completely trust that renewable energy sources (e.g., solar, wind) will be able to meet our future energy needs.	3.73	Very Good Attitude	3.86	Very Good Attitude	3.96	Very Good Attitude
Composite Mean	3.78	Very Good Attitude	3.68	Very Good Attitude	3.75	Very Good Attitude

Practices in Renewable Energy

Table 4 illustrates the extent of engagement in renewable energy practices among residents of Barangays Calituban, Guindacpan, and Nocnocan, with composite means ranging from 3.35 to 3.64, corresponding to a “Highly Practiced” interpretation across all three communities. These results reflect a strong level of participation in renewable energy–related actions and sustainable behaviors, although the degree of adoption varies by specific practice and barangay. Barangay Nocnocan reported the highest overall practice level (M = 3.64), with particularly strong engagement in energy-saving behaviors (M = 3.90), renewable energy advocacy (M = 3.83), and recycling and waste reduction (M = 3.96). Respondents also reported actively encouraging peers to adopt renewable energy practices (M =

3.93), demonstrating a culture of community-driven environmental leadership. Barangay Calituban followed closely (M = 3.58), with notable emphasis on purchasing decisions based on renewable energy certifications (M = 3.87) and promoting sustainability awareness among others (M = 3.93). Barangay Guindacpan, while slightly lower at M = 3.35, also reflected strong participation in renewable energy initiatives (M = 3.90) and community advocacy (M = 3.83). However, despite these positive trends, adoption of higher-cost renewable energy technologies remains limited. The installation of solar water heaters was rated “Less Practiced” in Calituban (M = 2.40) and Guindacpan (M = 1.76) and “Not Practiced” in Nocnocan (M = 1.56), suggesting financial barriers to investment in such systems. Similarly, energy consumption monitoring through smart meters or applications was

only “Moderately Practiced” in Calituban (M = 3.03) and Guindacpan (M = 3.06). However, it was more common in Nocnocan (M = 3.83), possibly reflecting differences in infrastructure access and technological familiarity. Overall, these findings reveal a high level of community engagement in renewable energy practices, particularly in behavioral measures such as conservation, advocacy, and peer education. They also point to a willingness among

residents to participate in the renewable energy transition, although financial and infrastructural constraints limit the adoption of more advanced technologies. These findings reinforce the importance of targeted government incentives, awareness campaigns, and community-based programs to facilitate equitable participation in renewable energy transitions, especially in rural and island communities.

Table 4: Practices in Renewable Energy

Items	Barangay Calituban		Barangay Guindacpan		Barangay Nocnocan	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
Q1. I actively seek out renewable energy options when choosing electricity providers for my home.	3.80	Highly Practiced	3.33	Highly Practiced	3.93	Highly Practiced
Q2. I have installed solar panels on my property to generate renewable energy.	3.90	Highly Practiced	2.80	Moderately Practiced	3.86	Highly Practiced
Q3. I have installed solar water heaters on my property to generate renewable energy.	2.40	Less Practiced	1.76	Less Practiced	1.56	Not Practiced
Q4. I regularly participate in energy-saving practices, such as turning off lights and appliances when not in use, to reduce my energy consumption.	3.66	Highly Practiced	3.76	Highly Practiced	3.90	Highly Practiced
Q5. I always choose products or services based on their use of renewable energy (e.g., green energy-certified, energy-efficient appliances)	3.86	Highly Practiced	3.36	Highly Practiced	3.86	Highly Practiced
Q6. I support renewable energy initiatives in my community, such as advocating for renewable energy policies or participating in local clean energy projects.	3.83	Highly Practiced	3.83	Highly Practiced	3.83	Highly Practiced
Q7. I actively engage in recycling and waste reduction practices to minimize environmental impact.	4.00	Highly Practiced	3.73	Highly Practiced	3.96	Highly Practiced
Q8. I have volunteered with organizations or campaigns that promote renewable energy awareness or adoption.	3.33	Highly Practiced	3.9000	Highly Practiced	3.46	Highly Practiced
Q9. I encourage others to adopt renewable energy practices and educate them about the benefits of sustainable living.	3.93	Highly Practiced	3.70	Highly Practiced	3.93	Highly Practiced
Q10. I often participate in public discussions or events related to renewable energy (e.g., town hall meetings and community forums).	3.56	Highly Practiced	3.66	Highly Practiced	3.80	Highly Practiced
Q11. I monitor my energy consumption regularly (e.g., through smart meters or energy monitoring apps).	3.03	Moderately Practiced	3.06	Moderately Practiced	3.83	Highly Practiced

Q12. I frequently and actively seek information about renewable energy technologies and their benefits.	3.66	Highly Practiced	3.36	Highly Practiced	3.80	Highly Practiced
Composite Mean	3.58	Highly Practiced	3.35	Highly Practiced	3.64	Highly Practiced

Relationship between Respondents’ Age Groups and their Levels of Knowledge, Attitudes, and Practices

Table 5 examines the association between respondents’ age and their levels of knowledge, attitudes, and practices (KAP) on renewable energy using the Pearson Chi-Square test. The results show that while variations in KAP levels are observed across age groups, no statistically significant association was found between age and any of the three dimensions, as indicated by p-values greater than 0.05 for knowledge ($p = .357$), attitudes ($p = .090$), and practices ($p = .986$). In terms of knowledge, most respondents across all age groups were classified as “Highly Knowledgeable” about renewable energy (74.4%), with the highest representation from the 25–44 age group and the 45–64 age group. Similarly, attitudes toward renewable energy were overwhelmingly positive, with 87.8% demonstrating a “Very Good Attitude”. The

distribution was particularly strong among respondents aged 25–44 and 45–64, indicating consistent support for renewable energy across working-age populations. Practices related to renewable energy were also reported at high levels, with 83.3% categorized as “Highly Practiced.” The 45–64 age group demonstrated the most consistent engagement in sustainable practices, while younger respondents aged 18–24 also displayed commendable involvement, suggesting that sustainable practices are embraced across generations. The findings suggest that age is not a significant predictor of knowledge, attitudes, or practices on renewable energy among the surveyed population. The consistent levels of high knowledge, positive attitudes, and strong practices across age groups imply that awareness and engagement with renewable energy initiatives are widespread in these communities.

Table 5: Relationship between Respondents’ Age Groups and their Levels of Knowledge, Attitudes, and Practices

		Respondents’ level of knowledge of Renewable Energy			Total	Pearson Chi-Square
		Fairly Knowledgeable	Moderately Knowledgeable	Highly Knowledgeable		
Age	18 - 24 y/o	0	2	7	9	.357
	25 - 44 y/o	4	3	28	35	
	45 - 64 y/o	1	9	26	36	
	65 years old and above	1	3	6	10	
Total		6	17	67	90	
		Respondents’ Level of Attitudes on Renewable Energy			Total	Pearson Chi-Square
		Fair Attitude	Good Attitude	Very Good Attitude		
Age	18 - 24 y/o	0	2	7	9	.090
	25 - 44 y/o	2	1	32	35	
	45 - 64 y/o	0	3	33	36	
	65 years old and above	0	3	7	10	
Total		2	9	79	90	
		Respondents’ Level of Practices on Renewable Energy			Total	Pearson Chi-Square
		Less Practiced	Moderately Practiced	Highly Practiced		
Age	18 - 24 y/o	0	1	8	9	.986
	25 - 44 y/o	1	5	29	35	
	45 - 64 y/o	1	6	29	36	
	65 years old and above	0	1	9	10	
Total		2	13	75	90	

Relationship between Respondents’ Sex and their Levels of Knowledge, Attitudes, and Practices

Table 6 findings indicate no statistically significant

association between sex and knowledge ($p = .408$), attitudes ($p = .963$), or practices ($p = .242$), suggesting that engagement with renewable energy concepts

and behaviors is consistent between male and female respondents. Across both sexes, a substantial majority demonstrated high levels of knowledge about renewable energy (74.4%), with slightly higher representation among female respondents than males. Similarly, attitudes toward renewable energy were positive, with 87.8% of respondents categorized as having a “Very Good Attitude.” Female respondents showed a slightly greater

proportion of very positive attitudes compared to males. Practices related to renewable energy adoption and sustainability were also consistently strong, with 83.3% of respondents reporting “Highly Practiced” behaviors. While female respondents reported a slightly higher proportion of highly practiced behaviors compared to males, these differences were not statistically significant.

Table 6: Relationship between Respondents’ Sex and their Levels of Knowledge, Attitudes, and Practices

		Respondents’ level of knowledge of Renewable Energy			Total	Pearson Chi-Square
		Fairly Knowledgeable	Moderately Knowledgeable	Highly Knowledgeable		
Sex	Male	1	7	30	38	.408
	Female	5	10	37		
Total		6	17	67	90	
		Respondents’ Level of Attitudes on Renewable Energy			Total	Pearson Chi-Square
		Fair Attitude	Good Attitude	Very Good Attitude		
Sex	Male	1	4	33	38	.963
	Female	1	5	46		
Total		2	9	79	90	
		Respondents’ Level of Practices on Renewable Energy			Total	Pearson Chi-Square
		Less Practiced	Moderately Practiced	Highly Practiced		
Sex	Male	2	5	31	38	.242
	Female	0	8	44		
Total		2	13	75	90	

Relationship between Respondents’ Marital Status and their Levels of Knowledge, Attitudes, and Practices

Results from the Pearson Chi-Square test reveal that marital status has a statistically significant association with both knowledge ($p = .018$) and attitudes ($p = .000$) toward renewable energy, but shows no significant relationship with practices ($p = .959$). In terms of knowledge, the majority of respondents across all marital status categories were classified as “Highly Knowledgeable” (74.4%). Married respondents represented the largest proportion of highly knowledgeable individuals, indicating that those in marital relationships may have greater exposure to or awareness of renewable energy information. Respondents in domestic partnerships also showed strong knowledge levels, while widowed and separated participants were fewer but still displayed some representation of moderate and high knowledge. Attitudes toward renewable energy demonstrated a more pronounced association with marital status, with 87.8% of all respondents exhibiting a “Very Good Attitude.” Notably, the majority of married respondents and all respondents in domestic partnerships reported very positive attitudes, while fair and good

attitudes were minimal. This pattern suggests that household responsibilities and family-oriented decision-making may reinforce favorable perceptions of renewable energy as a sustainable investment for future generations. In contrast, practices related to renewable energy adoption and sustainability showed no statistically significant differences across marital status groups. Most respondents, regardless of marital status, reported “Highly Practiced” behaviors (83.3%), with married respondents again comprising the largest proportion. Widowed, separated, and partnered respondents also demonstrated high engagement, indicating that sustainable energy behaviors are widely embraced, independent of marital context. These findings underscore that marital status is an important factor influencing knowledge and attitudes, but not practices related to renewable energy. However, the absence of significant variation in practices suggests that pro-environmental actions are widely normalized across all demographic groups in the surveyed communities, reflecting the effectiveness of collective awareness campaigns and the integration of renewable energy values into daily life.

Table 7: Relationship between Respondents’ Marital Status and their Levels of Knowledge, Attitudes, and Practices

		Respondents’ level of knowledge of Renewable Energy			Total	Pearson Chi-Square
		Fairly Knowledgeable	Moderately Knowledgeable	Highly Knowledgeable		
Marital Status	Single	0	2	6	8	.018
	Married	5	13	56	74	
	Widowed	0	2	2	4	
	Separated/annulled	1	0	0	1	
	Domestic partnership	0	0	3	3	
Total		6	17	67	90	
		Respondents’ Level of Attitudes on Renewable Energy			Total	Pearson Chi-Square
		Fair Attitude	Good Attitude	Very Good Attitude		
Marital Status	Single	0	1	7	8	.000
	Married	1	6	67	74	
	Widowed	0	2	2	4	
	Separated/annulled	1	0	0	1	
	Domestic partnership	0	0	3	3	
Total		2	9	79	90	
		Respondents’ Level of Practices on Renewable Energy			Total	Pearson Chi-Square
		Less Practiced	Moderately Practiced	Highly Practiced		
Marital Status	Single	0	2	6	8	.959
	Married	2	11	61	74	
	Widowed	0	0	4	4	
	Separated/annulled	0	0	1	1	
	Domestic partnership	0	0	3	3	
Total		2	13	75	90	

Relationship between Respondents’ Occupation/ Primary Source of Income and their Knowledge, Attitudes, and Practices

Pearson Chi-Square analysis reveals no statistically significant association between occupation and respondents’ knowledge ($p = .823$), attitudes ($p = .818$), or practices ($p = .815$) related to renewable energy. It suggests that regardless of occupational background, respondents generally share similar levels of awareness, perceptions, and behaviors toward renewable energy. In terms of knowledge, most respondents were classified as “Highly Knowledgeable” (74.4%), regardless of employment status or livelihood. Other occupational groups, such as health workers, students, and small business owners, also demonstrated relatively high awareness levels, indicating that renewable energy education may have reached across diverse sectors within the community. Attitudes toward renewable energy were overwhelmingly positive across

all groups, with 87.8% of respondents exhibiting a “Very Good Attitude.” Homemakers, fishers, and barangay officials again constituted the largest numbers, but smaller occupational groups also demonstrated strong support, reflecting a collective appreciation for renewable energy solutions regardless of profession. Practices related to renewable energy adoption and sustainability also showed no significant variation between occupations. A total of 75 respondents (83.3%) reported “Highly Practiced” behaviors, demonstrating consistent engagement in energy-saving actions and renewable energy use across all income sources. The findings indicate that occupation does not significantly influence KAP levels regarding renewable energy within the surveyed population. It may be attributed to widespread awareness campaigns, community-based energy initiatives, or strong cultural values of environmental stewardship that transcend socioeconomic and occupational boundaries.

Table 8: Relationship between Respondents' Occupation/Primary Source of Income and their Knowledge, Attitudes, and Practices

		Respondents' level of knowledge of Renewable Energy			Total	Pearson Chi-Square
		Fairly Knowledgeable	Moderately Knowledgeable	Highly Knowledgeable		
Occupation/ Primary Source of Income	Housewife	3	4	20	27	0.823
	Fishing	0	3	12	15	
	Sari-sari store owner/ convenience store	0	1	1	2	
	Chef	0	0	1	1	
	Barangay official	0	1	10	11	
	Unemployed	1	1	7	9	
	Driver	0	0	1	1	
	Student	0	0	3	3	
	Barangay Health Worker	2	4	4	10	
	Staff Barangay Health Station	0	0	1	1	
	Farmer	0	1	1	2	
	Day-care worker	0	0	1	1	
	Bookkeeper	0	0	1	1	
	Midwife	0	1	0	1	
	Businessman	0	1	0	1	
	Barangay tanod	0	0	1	1	
	Laborer	0	0	2	2	
	Laundry attendant	0	0	1	1	
Total	6	17	67	90		
		Respondents' Level of Attitudes on Renewable Energy			Total	Pearson Chi-Square
		Fair Attitude	Good Attitude	Very Good Attitude		
Occupation/ Primary Source of Income	Homemaker	0	2	25	27	0.818
	Fishing	1	0	14	15	
	Sari-sari store owner/ convenience store	0	0	2	2	
	Chef	0	0	1	1	
	Barangay official	0	1	10	11	
	Unemployed	0	1	8	9	
	Driver	0	0	1	1	
	Student	0	0	3	3	
	Barangay Health Worker	1	3	6	10	
	Staff Barangay Health Station	0	0	1	1	
	Farmer	0	1	1	2	
	Day-care worker	0	0	1	1	
	Bookkeeper	0	0	1	1	
	Midwife	0	0	1	1	
	Businessman	0	1	0	1	
	Barangay tanod	0	0	1	1	
	Laborer	0	0	2	2	
	Laundry attendant	0	0	1	1	
Total	2	9	79	90		

		Respondents' Level of Practices on Renewable Energy			Total	Pearson Chi-Square
		Less Practiced	Moderately Practiced	Highly Practiced		
Occupation/ Primary Source of Income	Homemaker	0	5	22	27	0.815
	Fishing	2	1	12	15	
	Sari-sari store owner/ convenience store	0	0	2	2	
	Chef	0	0	1	1	
	Barangay official	0	1	10	11	
	Unemployed	0	1	8	9	
	Driver	0	1	0	1	
	Student	0	1	2	3	
	Barangay Health Worker	0	2	8	10	
	Staff Barangay Health Station	0	0	1	1	
	Farmer	0	0	2	2	
	Day-care worker	0	0	1	1	
	Bookkeeper	0	1	0	1	
	Midwife	0	0	1	1	
	Businessman	0	0	1	1	
	Barangay tanod	0	0	1	1	
	Laborer	0	0	2	2	
Laundry attendant	0	0	1	1		
Total		2	13	75	90	

Relationship between Respondents' Educational Attainment and their Knowledge, Attitudes, and Practices

Results of the Pearson Chi-Square test indicate no significant association between educational attainment and respondents' knowledge, attitudes, or practices on renewable energy. In terms of knowledge, respondents across all educational levels demonstrated high awareness, with the majority classified as highly knowledgeable. Participants who reached only the elementary level and those who were high school level completers exhibited a comparable level of knowledge to those with a college education, suggesting that awareness of

renewable energy is not strongly influenced by formal educational attainment. A similar pattern emerged in attitudes, where respondents consistently showed very good attitudes toward renewable energy regardless of educational attainment, with the highest frequencies observed among those with elementary-level education and high school-level education. In terms of practices, the findings reveal that most respondents across educational levels reported highly practiced renewable energy-related behaviors.

Even participants with lower educational attainment demonstrated comparable levels of engagement in renewable energy practices, indicating that factors beyond

Table 9: Relationship between Respondents' Educational Attainment and their Knowledge, Attitudes, and Practices

		Respondents' level of knowledge of Renewable Energy			Total	Pearson Chi-Square
		Fairly Knowledgeable	Moderately Knowledgeable	Highly Knowledgeable		
Highest Educational Attainment	Elementary level	1	8	23	32	0.755
	Elementary graduate	1	0	7	8	
	Technical-vocational	0	1	1	2	
	High school level	2	4	18	24	
	High school graduate	1	0	5	6	
	College level	1	2	5	8	
	College graduate	0	2	8	10	
Total		6	17	67	90	

		Respondents' Level of Attitudes on Renewable Energy			Total	Pearson Chi-Square
		Fair Attitude	Good Attitude	Very Good Attitude		
Highest Educational Attainment	Elementary level	0	3	29	32	0.275
	Elementary graduate	0	1	7	8	
	Technical-vocational	0	1	1	2	
	High school level	1	1	22	24	
	High school graduate	1	0	5	6	
	College level	0	2	6	8	
	College graduate	0	1	9	10	
Total		2	9	79	90	
		Respondents' Level of Practices on Renewable Energy			Total	Pearson Chi-Square
		Less Practiced	Moderately Practiced	Highly Practiced		
Highest Educational Attainment	Elementary level	1	4	27	32	0.986
	Elementary graduate	0	2	6	8	
	Technical-vocational	0	0	2	2	
	High school level	1	4	19	24	
	High school graduate	0	0	6	6	
	College level	0	1	7	8	
	College graduate	0	2	8	10	
Total		2	13	75	90	

formal education, such as community initiatives, cultural values, or local environmental experiences, may shape behavioral commitment to renewable energy. Overall, these findings suggest that while education is often considered a driver of environmental awareness and pro-environmental behavior, in this context, renewable energy knowledge, attitudes, and practices appear to be relatively uniform across educational levels, likely reflecting the influence of localized knowledge sharing and community-based environmental programs.

Relationship between the Number of Household Members and Respondents' Knowledge, Attitudes, and Practices

The Pearson Chi-Square analysis shows a statistically significant association between household size and respondents' knowledge levels, whereas no significant associations were observed for attitudes and practices. In terms of knowledge, respondents from households with four to five members exhibited the highest proportion of being highly knowledgeable, followed by those in households with six to seven members. Respondents from single-member households reported lower knowledge levels, with no one classified as highly knowledgeable. These findings suggest that household size may play a role in information exchange and awareness of

renewable energy, as larger households may create more opportunities for discussions, shared learning, or exposure to energy-related decision-making.

Regarding attitudes, most respondents across all household sizes reported very good attitudes toward renewable energy. Respondents from households with four to five members and six to seven members exhibited the highest levels of positive attitudes, indicating that larger household size does not diminish support for renewable energy initiatives. For practices, the majority of respondents from all household sizes reported highly practiced renewable energy behaviors. Those from four to five-member households again represented the largest group, followed by respondents in households with six to seven members. This consistency suggests that, regardless of household size, respondents are actively engaged in renewable energy practices, possibly due to shared community norms or local programs promoting sustainability. Overall, while attitudes and practices toward renewable energy appear consistent across household sizes, the significant relationship between household size and knowledge levels highlights the potential influence of family dynamics, communication, and resource-sharing on renewable energy awareness. Future interventions could leverage household networks to enhance energy literacy and sustainable practices at the community level.

Table 10: Relationship between Number of Household Members and Level of Knowledge, Attitudes, and Practices on Renewable Energy

		Respondents' level of knowledge of Renewable Energy			Total	Pearson Chi-Square
		Fairly Knowledgeable	Moderately Knowledgeable	Highly Knowledgeable		
Number of Household Members	1	0	2	0	2	0.010
	2-3	0	7	12	19	
	4-5	3	6	26	35	
	6-7	1	1	21	23	
	8 and above	2	1	8	11	
Total		6	17	67	90	
		Respondents' Level of Attitudes on Renewable Energy			Total	Pearson Chi-Square
		Fair Attitude	Good Attitude	Very Good Attitude		
Number of Household Members	1	0	0	2	2	0.426
	2-3	0	3	16	19	
	4-5	1	4	30	35	
	6-7	0	0	23	23	
	8 and above	1	2	8	11	
Total		2	9	79	90	
		Respondents' Level of Practices on Renewable Energy			Total	Pearson Chi-Square
		Less Practiced	Moderately Practiced	Highly Practiced		
Number of Household Members	1	0	1	1	2	0.815
	2-3	0	2	17	19	
	4-5	1	6	28	35	
	6-7	1	2	20	23	
	8 and above	0	2	9	11	
Total		2	13	75	90	

Degree of Variance in the Level of Knowledge, Attitude, and Practices Across Barangays

Table 11 presents the degree of variance in respondents' knowledge of renewable energy across the three island barangays of Calituban, Guindacpan, and Nocnocan. The mean ranks indicate that respondents from Barangay Nocnocan (49.02) and Calituban (47.05) reported slightly higher levels of knowledge compared to those from Guindacpan (40.43). However, the results of the Kruskal–Wallis H test ($\chi^2 = 1.822$, $df = 2$, $p = 0.402$) indicate that these differences are not statistically significant at the 0.05 level. It suggests that, despite minor variations in mean ranks, knowledge of renewable energy is relatively consistent across the three geographically isolated communities. The absence of significant differences may reflect a shared exposure to information channels, community-level experiences, and sociocultural factors that influence awareness of renewable energy in these barangays. Given their comparable geographic isolation and similar socioeconomic contexts, these findings imply that interventions aimed at improving knowledge about renewable energy can be designed and implemented uniformly across these communities, without the need

for barangay-specific modifications in messaging or training content.

The comparative analysis of respondents' attitudes toward renewable energy across the barangays of Calituban, Guindacpan, and Nocnocan. The mean ranks indicate minor differences, with Guindacpan respondents (47.98) showing slightly more favorable attitudes compared to those in Calituban (44.55) and Nocnocan (43.97). However, the Kruskal–Wallis H test ($\chi^2 = 0.442$, $df = 2$, $p = 0.802$) reveals no statistically significant differences in attitudes toward renewable energy among the three communities. This result suggests that attitudes toward renewable energy are generally homogeneous across these geographically isolated barangays, likely influenced by shared socioeconomic conditions, cultural values, and comparable access to renewable energy initiatives or information. The uniformity of attitudes implies a baseline community openness and receptiveness to renewable energy adoption, which can be leveraged to implement unified advocacy campaigns or policy interventions without requiring barangay-specific attitude-shaping strategies.

The analysis of variance in respondents' practices related to renewable energy across the barangays of Calituban,

Guindacpan, and Nocnocan. The mean ranks indicate that respondents from Calituban (50.42) and Nocnocan (49.92) demonstrate comparatively higher engagement in renewable energy practices, whereas Guindacpan shows a lower mean rank (36.17). The Kruskal–Wallis H test yielded a χ^2 value of 5.847 with 2 degrees of freedom and an asymptotic significance level of $p = 0.054$, which is slightly above the 0.05 threshold. While the result is not statistically significant at the conventional 5% level, it suggests a marginal difference in renewable energy practices among the three communities, with Guindacpan

potentially lagging in adoption or implementation. This near-significant finding may reflect contextual disparities such as differences in infrastructure availability, access to renewable energy technologies, or community-level initiatives that facilitate energy practices. Although not conclusive, these results highlight the need for targeted support and resource allocation for Guindacpan, where lower practice levels may hinder sustainable energy transitions. Future studies employing larger samples or longitudinal approaches could help confirm whether these observed differences are substantive and persistent.

Table 11: Degree of Variance in the Level of Knowledge, Attitudes, and Practices Across Barangay

Barangay		Mean Rank
Respondents' Knowledge of Renewable Energy	Barangay Calituban	47.05
	Barangay Guindacpan	40.43
	Barangay Nocnocan	49.02
Chi-Square	1.822	
df	2	
Asymp. Sig.	.402	
Respondents' Attitudes of Renewable Energy	Barangay Calituban	44.55
	Barangay Guindacpan	47.98
	Barangay Nocnocan	43.97
Chi-Square	.442	
df	2	
Asymp. Sig.	.802	
Respondents' Practices of Renewable Energy	Barangay Calituban	50.42
	Barangay Guindacpan	36.17
	Barangay Nocnocan	49.92
Chi-Square	5.847	
df	2	
Asymp. Sig.	.054	

CONCLUSION

This study examined the knowledge, attitudes, and practices (KAP) regarding renewable energy among residents of the geographically isolated island barangays of Calituban, Guindacpan, and Nocnocan in Talibon, Bohol. The findings revealed no statistically significant differences in knowledge and attitudes toward renewable energy across the three barangays, suggesting a shared baseline awareness and generally positive community perceptions shaped by similar socioeconomic and cultural contexts. However, practices related to renewable energy exhibited near-significant variation, with Guindacpan showing lower engagement compared to Calituban and Nocnocan. This indicates that while awareness and attitudes are broadly consistent, the translation of knowledge and attitudes into concrete practices may be influenced by localized factors such as infrastructure access, resource availability, or community-level initiatives. The results emphasize that these island communities possess a relatively uniform openness toward renewable energy adoption, presenting a strong foundation for

integrated policy interventions, education campaigns, and capacity-building programs. At the same time, the disparities in practices underscore the importance of context-specific support, particularly for communities demonstrating lower levels of engagement. Strengthening renewable energy adoption in these barangays will require not only improving access to technology but also bridging the knowledge-to-practice gap through sustained community involvement, participatory planning, and targeted resource allocation. These insights contribute to the broader discourse on renewable energy transitions in remote and resource-constrained settings, reinforcing the need for equitable and locally adapted energy strategies to advance sustainability goals.

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