

Community Practices and Sanitation Behaviors in Selected Barangays of Nueva Valencia, Guimaras: A Foundation for Igang Sub-Watershed Management Planning

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ABSTRACT Watershed management plays a critical role in maintaining environmental sustainability, ensuring water quality, and supporting the livelihoods of communities that depend on natural resources. This study assessed the socio-economic characteristics and health and sanitation practices of residents in selected barangays surrounding the Igang Sub-Watershed in Nueva Valencia, Guimaras, Philippines. Specifically, the research examined the demographic profile of households and analyzed their practices related to water sources, cooking fuel, sanitation facilities, and waste disposal. A descriptive research design employing quantitative methods was used in the study. Data were collected from 400 household respondents through a researcher-developed questionnaire administered using face-to-face interviews. The collected data were analyzed using descriptive statistical tools such as frequency counts and percentage distributions to determine patterns and trends in the respondents' socio-economic conditions and sanitation practices. The results revealed that most households rely on water pumps and refilling stations as their primary sources of drinking water, indicating increased access to improved water systems. Wood and charcoal remain the dominant cooking fuels among respondents, reflecting continued dependence on biomass energy in rural households. In terms of sanitation facilities, the majority of households reported using flush or water-sealed toilets, suggesting relatively improved sanitation conditions in the study area. However, waste management practices vary across communities, with garbage collection and dump pits being the most common disposal methods, while some households still practice burning and other informal waste disposal approaches. These findings highlight the relationship between socio-economic conditions, sanitation practices, and environmental sustainability in the watershed area. The study provides baseline information that can support the formulation of the Igang Sub-Watershed Management Plan by identifying key areas for intervention, including improved waste management systems, sustainable resource use, and community-based environmental education. Strengthening sanitation infrastructure, promoting sustainable household practices, and enhancing community participation are essential strategies for

protecting watershed resources and improving public health outcomes in Nueva Valencia, Guimaras.

Keywords: cleanliness practices, financial capacity, resource management, sustainability, waste management

INTRODUCTION

Watersheds have long been recognized as critical ecological systems that sustain water supply, biodiversity, and human livelihoods. In many rural communities, including those in the Philippines, watershed areas serve as the primary sources of drinking water, agricultural irrigation, and household resources. Historically, environmental management in watersheds has increasingly incorporated public health considerations, particularly the relationship between sanitation practices and environmental quality. Studies have shown that inadequate sanitation and poor hygiene behaviors contribute significantly to the transmission of soil-transmitted helminthiases (STH) and other waterborne diseases in rural communities (Lorenzo et al., 2019; Mationg et al., 2021). In response, national and international initiatives have integrated water, sanitation, and hygiene (WASH) programs into environmental and community health interventions to improve both ecological sustainability and public health outcomes.

In the Philippine context, WASH initiatives have become central components of disease control and environmental management strategies. Programs such as Community-Led Total Sanitation (CLTS), WASH in Schools (WinS), and nationwide deworming campaigns aim to reduce infection risks while promoting behavioral changes in sanitation and hygiene practices (Belizario et al., 2022; Lorenzo et al., 2019). Research consistently demonstrates that sanitation access and hygiene behaviors are major determinants of STH transmission and other water-related diseases in communities where sanitation infrastructure remains limited (Mationg et al., 2021). Moreover, spatial analyses at the barangay level reveal that infection risks vary according to environmental conditions, sanitation access, and community behaviors, suggesting the importance of localized planning and targeted interventions (Magalhães et al., 2015; Mendoza & Mercado-Asis, 2023). These insights are particularly relevant for watershed management planning in areas such as Nueva Valencia, Guimaras, where community practices directly influence water quality and ecosystem health.

Despite the expansion of WASH programs and sanitation infrastructure, significant gaps remain in achieving sustained behavioral change and effective sanitation utilization. Evidence indicates that the provision of sanitation facilities alone does not guarantee consistent usage, as cultural norms, community perceptions, trust in public health programs, and local governance dynamics strongly influence sanitation behaviors (Mationg et al., 2021; Lorenzo et al., 2019). In many rural settings, open defecation, improper waste disposal, and inadequate hygiene practices persist, contributing to environmental contamination and continued disease transmission. Furthermore, variations in sanitation coverage and community participation across barangays highlight the need for localized assessments that capture both infrastructure conditions and behavioral practices. Without integrating community knowledge, attitudes, and practices into planning processes, sanitation interventions may fail to achieve long-term environmental and public health improvements.

Given these challenges, integrating WASH strategies with watershed management planning offers a promising pathway for sustainable environmental and health outcomes. A comprehensive approach that combines sanitation infrastructure, hygiene promotion, health education, and multisectoral governance can enhance both watershed integrity and community well-being. Barangay-level institutions, including local government units, health workers, and community organizations, provide an effective platform for implementing integrated sanitation and watershed initiatives. For the Igang Sub-Watershed in Nueva Valencia, Guimaras, understanding community practices and sanitation behaviors is therefore essential for designing targeted interventions that align with local needs and environmental priorities. By strengthening community engagement, improving sanitation infrastructure, and aligning public health initiatives with watershed protection goals, the development of the Igang Sub-Watershed Management Plan can contribute to more resilient ecosystems and healthier communities.

Objectives:

This study was conducted to determine the practices and sanitation behaviors of residents in selected barangays of Nueva Valencia, Guimaras. Specifically, it sought to provide information on the following concerns:

1. Analyze the health and sanitation practices of household respondents including sources of drinking water, cooking fuel sources, sanitation facilities, and waste disposal practices.

METHODOLOGY

Research Design

This study employed a descriptive research design using quantitative methods to examine the socio-economic profile and sanitation practices of residents in selected barangays surrounding the Igang Sub-Watershed. The descriptive approach enabled the systematic collection, organization, and analysis of data related to the respondents' demographic characteristics and environmental practices. This design was appropriate for providing a comprehensive overview of household conditions and behaviors that may influence watershed management and sanitation outcomes in the study area.

Study Area

The study was conducted in five barangays located within the vicinity of the Igang Sub-Watershed in the Municipality of Nueva Valencia, Province of Guimaras. These barangays include Sto. Domingo, Lanipe, Concordia Sur, Salvacion, and Igang. The selected communities are situated within the watershed catchment area and have direct interaction with its natural resources. These barangays were purposively chosen due to their geographic proximity to the watershed and their dependence on its resources for household, livelihood, and environmental needs.

Respondents as Samples

The respondents of the study consisted of household residents from five selected barangays surrounding the Igang Sub-Watershed in Nueva Valencia, Guimaras, namely Sto. Domingo, Lanipe, Concordia Sur, Salvacion, and Igang. A total of 400 household respondents participated in the study. The respondents were selected based on their residency within the watershed area and their direct interaction with its natural resources for domestic and livelihood activities. Household heads or adult members who were knowledgeable about the household's socio-economic conditions and sanitation practices were prioritized as respondents.

Sampling Procedures

The study employed purposive sampling combined with random household selection to identify respondents from the selected barangays. Initially, barangays located within or near the Igang Sub-Watershed were identified in coordination with local government officials and the Municipal Environment and Natural Resources Office (MENRO/GENRO). These barangays were chosen because their residents are directly affected by and dependent on watershed resources.

Within each barangay, households were identified with the assistance of barangay officials and community leaders. From the identified households, respondents were randomly selected to ensure representation across different sitios and household types. This approach ensured that the respondents represented the diverse socio-economic conditions and environmental practices present in the watershed communities.

Data Collection

Data were collected using a researcher-developed structured questionnaire designed to gather information on the socio-economic characteristics and sanitation practices of the respondents. The questionnaire included items on demographic profile, occupation, income, housing conditions, water sources, sanitation facilities, and waste disposal practices.

Face-to-face interviews were conducted with the respondents to ensure clarity of questions and accuracy of responses. This method also allowed the researchers to clarify ambiguous responses and address sensitive questions related to income and sanitation practices. Prior to data collection, permission was obtained from barangay officials, and respondents were informed about the purpose of the study to ensure voluntary participation and confidentiality of their responses.

Data Analysis

The collected data were encoded, organized, and analyzed using descriptive statistical techniques. Frequency counts and percentage distributions were used to summarize the socio-economic characteristics and sanitation practices of the respondents. These statistical tools provided a clear representation of patterns and trends among the households in the selected barangays.

The results were presented in tabular form and interpreted to identify key socio-economic conditions and sanitation practices that may influence watershed sustainability. The findings served as baseline information for developing recommendations and policy inputs for the Igang Sub-Watershed Management Plan.

RESULTS AND DISCUSSION

Sources of drinking water

The findings indicate that the majority of households rely on water pumps and refilling stations as their primary sources of drinking water. This trend suggests an increasing dependence on modern and commercially supplied water systems within the community, which are often perceived to provide safer and more reliable drinking water compared to traditional sources. In contrast, only a small proportion of households obtain drinking water from natural sources such as springs, dug wells, and rivers. The shift toward improved water sources may reflect growing awareness of water safety and sanitation, as well as efforts by local government units and service providers to improve access to potable water in rural communities.

The increasing reliance on water pumps and refilling stations has important implications for watershed management and public health within the Igang Sub-Watershed. While these systems may enhance access to cleaner drinking water, they also raise concerns regarding the sustainability of groundwater extraction and the long-term reliability of water supply systems, particularly during periods of drought or increased demand. Moreover, the limited use of natural water sources may indicate declining quality or accessibility of these resources due to environmental degradation or watershed contamination. Therefore, watershed management planning should prioritize the protection and rehabilitation of natural water sources, promote sustainable water use practices, and strengthen water quality monitoring to ensure that both groundwater and surface water resources remain safe and sufficient for the communities surrounding the Igang Sub-Watershed.

As reported by Valdés-Pineda et al., (2021), Andrés et al., (2018) and Chaabane et al., (2024) from their research studies, that refill stations and pumps alter conventional pathways for water supply, often increasing the reliance on groundwater or surface water sources that may be vulnerable to contamination if source protection and maintenance are weak. Evidence from water-management studies demonstrates that water quality monitoring and infrastructure maintenance are critical when shifting toward expanded pumping-based provision, as contaminants can enter source waters through inadequate protection and operation of distribution systems.

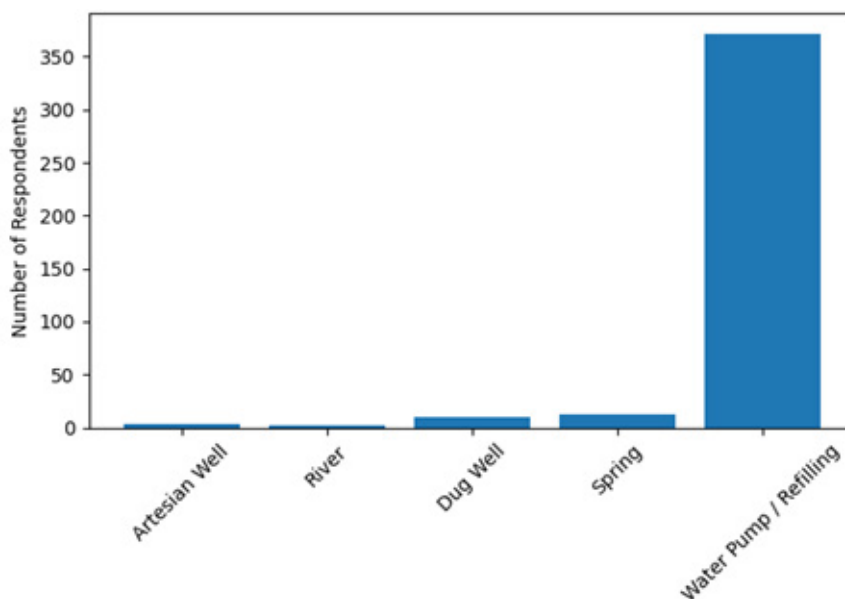


Figure 1. Sources of drinking water among households.

Cooking Fuel

The results indicate that wood and charcoal remain the dominant fuel sources for cooking among households in the selected barangays. This pattern reflects the continued reliance on biomass fuels in rural communities, primarily due to their affordability, accessibility, and cultural familiarity. In many households, wood and charcoal are readily available from nearby areas or can be obtained at relatively low cost compared to alternative fuels such as liquefied petroleum gas (LPG). As a result, these traditional fuels remain a practical option for families with limited income, particularly in communities where modern energy infrastructure is still developing.

However, the continued dependence on wood and charcoal has important environmental and public health implications for the Igang Sub-Watershed and the surrounding communities. The collection and use of biomass fuels can contribute to deforestation and vegetation loss, which may accelerate soil erosion, reduce watershed stability, and negatively affect water quality within the watershed system. In addition, indoor cooking with wood and charcoal can produce smoke and pollutants that pose health risks to household members, particularly women and children who are often exposed to indoor air pollution for extended periods. These findings highlight the need for integrated watershed management strategies that promote sustainable fuel alternatives, improve energy access, and encourage community awareness on environmentally friendly cooking practices while protecting the ecological integrity of the Igang Sub-Watershed.

As reported by research literatures, wood and charcoal consumption contributes to deforestation and forest-resource depletion, which in turn influences watershed health by altering runoffs, sediment loads, and catchment resilience. Studies on traditional biomass use and stoves emphasize that energy-poverty and reliance on solid fuels are linked to environmental degradation and higher emissions, underscoring the need for cleaner energy transitions to protect watershed integrity (Iribagiza et al., 2021; Martin et al., 2013; Bickton et al., 2020). The broader environmental-health literature also notes that biomass burning

drives ambient and indoor air pollution, with cascading effects on ecosystems and water quality through altered land cover and soil stability around headwaters (Thao et al., 2023; Eriksson et al., 2022; Iribagiza et al., 2021).

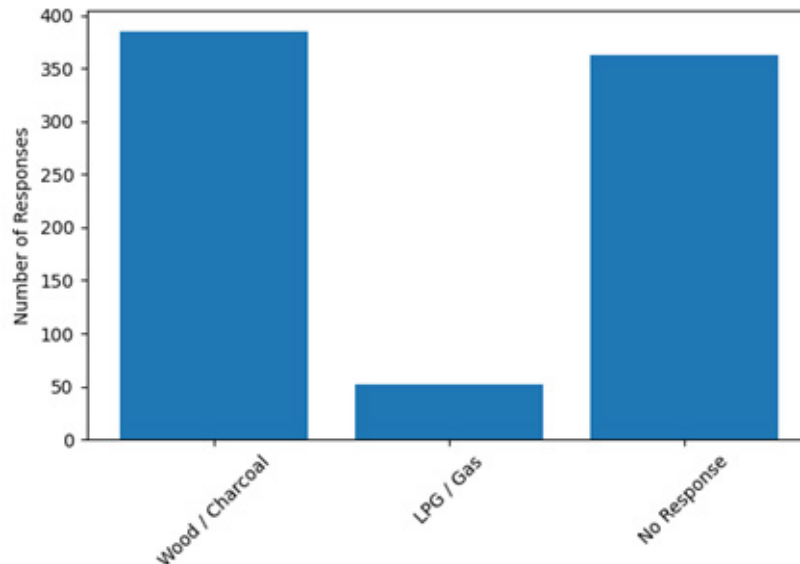


Figure 2. Primary cooking fuel among the households.

Sanitation Facilities

The results show that most households reported using flush or water-sealed toilets, indicating relatively improved sanitation conditions among the communities in the selected barangays. The presence of these sanitation facilities suggests that many households have access to basic sanitation infrastructure that helps ensure safer waste disposal practices. Compared to open defecation or the use of unsanitary facilities, flush or water-sealed toilets provide a more hygienic system for managing human waste, thereby reducing direct exposure to pathogens and improving overall household sanitation conditions.

The prevalence of improved sanitation facilities has important implications for public health and watershed protection within the Igang Sub-Watershed. Proper sanitation infrastructure can significantly reduce the risk of waterborne diseases and soil-transmitted infections by preventing human waste from contaminating nearby water sources, soil, and surrounding environments. From a watershed management perspective, improved sanitation practices contribute to maintaining water quality and minimizing pollutant loads entering rivers, streams, and groundwater systems. However, sustained benefits will depend on proper maintenance of sanitation facilities, continued community awareness on hygiene practices, and the expansion of sanitation access in households that may still lack adequate facilities. Strengthening sanitation programs and integrating them with watershed management initiatives can therefore enhance both environmental sustainability and community health in the study area.

In the Igang Sub-Watershed context, achieving higher coverage of improved sanitation is expected to reduce exposure to fecal pathogens, lower environmental contamination of surface and groundwater, and support healthier downstream ecosystems. The selected references consistently document that sanitation improvements alone do not guarantee behavior change or sustained use, but when coupled with hygiene promotion, school-based WASH initiatives, and strong governance, they contribute to meaningful health and environmental gains (Mationg et al., 2021, Lorenzo et al., 2021, Belizario et al., 2022) (Vally et al., 2019; Hutton & Chase, 2016).

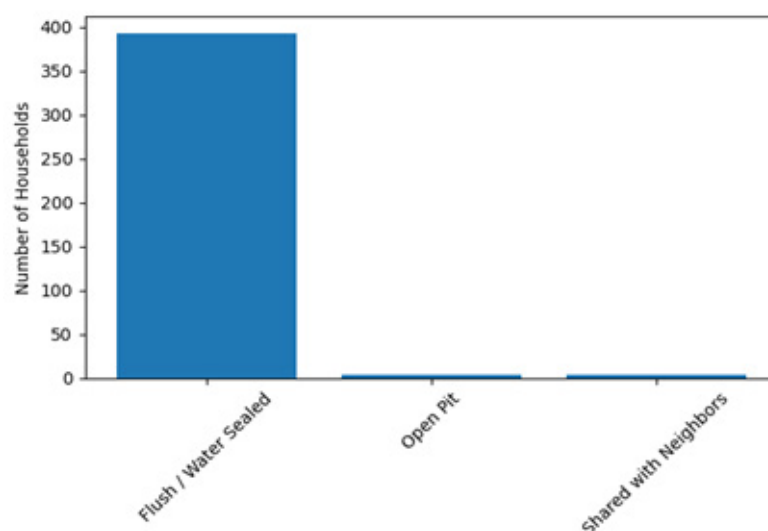


Figure 3. Household sanitation facilities.

Waste disposal

The findings reveal that garbage collection services and the use of dump pits are the most common waste disposal methods among households in the selected barangays. This indicates that many residents have access to some form of organized waste management system, particularly through municipal or barangay garbage collection services. The presence of dump pits also suggests that households adopt practical solutions for managing their solid waste in areas where regular waste collection may be limited. However, a number of households still practice waste burning and other informal disposal methods, which may reflect gaps in waste management infrastructure, limited awareness of proper waste segregation, or irregular waste collection services in certain communities.

These waste disposal practices have significant implications for both environmental protection and watershed sustainability within the Igang Sub-Watershed. Improper waste disposal methods, such as open burning or unregulated dumping, can contribute to environmental pollution, soil contamination, and the degradation of nearby water sources. Solid waste that is not properly managed may eventually enter waterways, particularly during heavy rainfall, thereby affecting water quality and aquatic ecosystems within the watershed. Consequently, strengthening community-based waste management programs, improving waste collection services, and promoting household-level waste segregation and composting practices are essential strategies for reducing environmental impacts and protecting the ecological integrity of the Igang Sub-Watershed.

The literature consistently shows that how communities manage solid waste, litter, and human excreta disposal can directly influence water quality, sediment dynamics, and ecological integrity of drainage basins and rivers that feed the Igang watershed. Integrating evidence on waste disposal with watershed planning highlights how improper waste management can elevate nutrient and microbial loads in headwaters, increase non-point source pollution, and undermine both public health and ecosystem services critical to Igang's resilience ("Influence of environmental disturbances on the bacteriological quality of Pagbanganan river in Baybay City, Leyte, Philippines", 2019; Sanchez et al., 2020; Susanti & Miardini, 2017; Supangat et al., 2023; Fazriyanti et al., 2019)Silva et al., 2021).

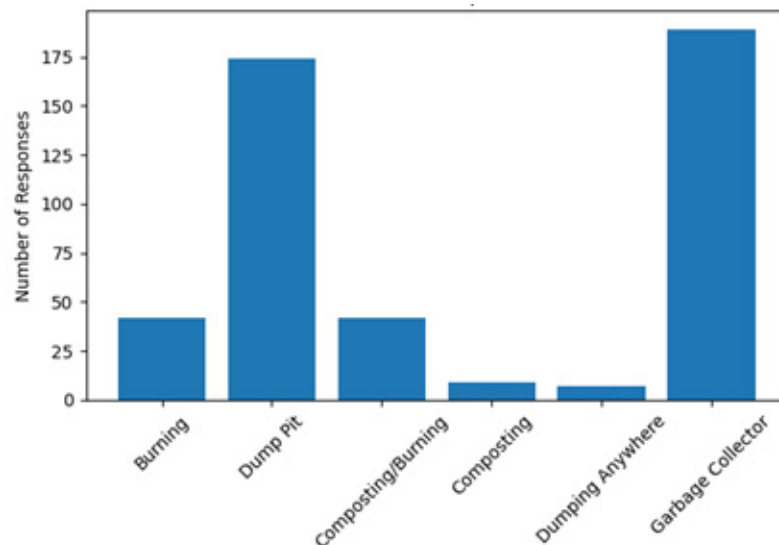


Figure 4. Waste disposal practices among household.

CONCLUSION AND RECOMMENDATIONS

CONCLUSION

This study examined the socio-economic characteristics and health and sanitation practices of residents in selected barangays surrounding the Igang Sub-Watershed in Nueva Valencia, Guimaras. The findings reveal that most households demonstrate relatively improved access to basic sanitation facilities, particularly through the use of flush or water-sealed toilets and reliance on water pumps and refilling stations for drinking water. However, the results also indicate that traditional practices such as the use of wood and charcoal for cooking and the continued reliance on dump pits and informal waste disposal methods remain prevalent among households. These practices reflect the socio-economic realities of the communities, including limited income, accessibility of resources, and varying levels of environmental awareness.

The sanitation and environmental practices observed in the study area have direct implications for the sustainability of the Igang Sub-Watershed. While improvements in sanitation infrastructure contribute to better public health conditions and reduced contamination risks, issues related to waste management, biomass fuel use, and potential groundwater dependency highlight the need for integrated environmental and community-

based interventions. Effective watershed management must therefore incorporate not only infrastructure improvements but also behavioral change initiatives, community education, and strengthened local governance mechanisms. By addressing these socio-economic and sanitation-related factors, the development of the Igang Sub-Watershed Management Plan can support both environmental protection and the long-term well-being of the communities that depend on the watershed's resources.

RECOMMENDATION

Based on the findings of the study, several recommendations are proposed to improve sanitation practices and support the sustainable management of the Igang Sub-Watershed in Nueva Valencia, Guimaras. First, local government units (LGUs), in coordination with environmental and health agencies, should strengthen water resource management programs to ensure the sustainability and safety of drinking water sources. Since most households rely on water pumps and refilling stations, regular monitoring of groundwater quality and sustainable extraction practices should be implemented to prevent overexploitation and potential contamination of water sources within the watershed.

Second, initiatives promoting alternative and cleaner cooking fuels should be introduced to reduce the community's dependence on wood and charcoal. Programs encouraging the use of liquefied petroleum gas (LPG), energy-efficient cookstoves, or other renewable energy technologies may help reduce pressure on forest resources and minimize indoor air pollution. Environmental education campaigns can also raise awareness about the environmental and health impacts of biomass fuel use and encourage the adoption of more sustainable energy practices.

Third, local authorities should enhance solid waste management systems by strengthening garbage collection services and promoting household-level waste segregation, recycling, and composting. Community-based waste management programs can be implemented in partnership with barangay officials and local organizations to reduce the use of dump pits and discourage open burning of waste. Establishing material recovery facilities (MRFs) and conducting regular environmental awareness activities can further improve waste disposal practices and reduce pollution risks within the watershed.

Finally, the development and implementation of the Igang Sub-Watershed Management Plan should integrate sanitation improvement, environmental protection, and community participation. Watershed management programs should involve barangay leaders, community members, and relevant government agencies in planning and decision-making processes to ensure that interventions are locally appropriate and sustainable. Capacity-building activities, health and sanitation education, and community-based monitoring systems can help strengthen environmental stewardship and promote long-term protection of the watershed's resources.

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