Evaluating Community Practices of Balcon Maravilla for Integrated Sor-Ohan Sub-Watershed Planning

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ABSTRACT

This study was conducted to understand the health and sanitation practices of the residents of Balcon Maravilla located near to Sor-ohan watershed at Jordan, Guimaras. Respondents of the study were the household members residing in Balcon Maravilla, Jordan, Guimaras nearest the Sor-ohan sub-watershed. Only 15% of the population was selected as sample size. Stratified random sampling was used in selecting the sample respondents. Random sampling was then used to select a sufficient number of subjects from each stratum. For drinking, respondents utilized refilling stations (34%), springs (31%), dug wells (16%), and artesian wells (13%). For cooking and washing, springs (44%) are the most utilized source of water and dug wells (40%) are the most second common source. There is a heavy reliance on wood and charcoal (97%) as the primary fuel for cooking. For lighting, it reveals that the majority of households (76%) rely on electricity, with minimal use of kerosene lamps (3%). The majority of waste is collected by garbage collectors (86%), with a smaller percentage of households relying on practices like burning (6%), using dump pits (5%), or composting/burning (4%).

Keywords – health practices, water sources, fuel sources, solar option, disposal, collection, dumping

INTRODUCTION

The importance of hygiene and sanitation practices in watershed planning, particularly in regions like Guimaras, cannot be overstated. Effective watershed management is intrinsically linked to the health of communities that rely on these water resources. Poor sanitation and hygiene can lead to significant public health challenges, particularly in rural areas where access to clean water is limited. Inadequate sanitation facilities contribute to the contamination of groundwater, which is a critical resource for drinking and agriculture (Graham & Polizzotto, 2013).

Moreover, the relationship between watershed conditions and public health is well documented. Herrera et al. found that upstream watershed conditions significantly predict health outcomes in rural populations, particularly among children (Herrera et al., 2017). This underscores the need for integrated approaches that combine watershed management with sanitation improvements to enhance community health. The study suggests that protecting watersheds and improving sanitation infrastructure should be complementary strategies to mitigate health risks associated with poor water quality.

Lastly, the integration of sanitation and watershed management is crucial for sustainable development. Effective watershed management requires a holistic approach that considers land use, water quality, and sanitation practices. Sriyana discusses the importance of maintaining a balanced ecosystem within watersheds

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to ensure the sustainability of water resources, which is vital for both environmental health and community well-being (Sriyana, 2018).

Addressing these issues through integrated approaches can significantly improve health outcomes and ensure the sustainability of vital water resources.

Objectives of the Study General:

This study was conducted to understand the health and sanitation practices of the residents of Balcon Maravilla located near to Sor-ohan watershed at Jordan, Guimaras.

Specific:

1. To gather data on sources of water, fuel sources, and garbage/waste disposal needed for watershed management planning.

METHODOLOGY

Methods

Respondents of the study were the household members residing in Balcon Maravilla, Jordan, Guimaras nearest the Sor-ohan sub-watershed. Only 15% of the population was selected as sample size.

Stratified random sampling was used in selecting the sample respondents. Each member of the population has an equal and known chance of being selected. This was done by dividing the population into strata, in this case, into barangays. A stratum is a subset of the population that shares at least one common characteristic. Random sampling was then used to select a sufficient number of subjects from each stratum.

RESULTS AND DISCUSSIONS

Sources of water For drinking

This data highlights the diverse sources of drinking water and underscores the importance of watershed management in ensuring the sustainability and quality of these resources.

As presented in the table there are Artesian wells (13%) that tap into confined aquifers, which are reliant on the recharge zones within watersheds. There is a presence of dug wells (16%) that depend on shallow groundwater, which is particularly vulnerable to contamination from agricultural runoff, septic systems, and surface pollutants. Some of the respondents utilize springs (31%) that rely on the natural discharge of groundwater and are highly sensitive to watershed conditions, and others are dependent on refilling stations (34%) that often process water from rivers, wells, or municipal sources.

This implies that in Balcon Maravilla, despite a higher percentage of the population who are dependent on refilling stations, they are still relying on springs, dug, and artesian wells.

Research by Huizenga et al.,(2022) indicates that involving local stakeholders in decision-making processes can lead to more effective and sustainable management practices. In Guimaras, fostering awareness about the importance of clean drinking water and the role of watershed health can empower communities to participate actively in conservation efforts. This can include educational campaigns that highlight the connection between land use practices and water quality, thereby promoting responsible stewardship of local water resources (Huizenga et al., 2022).

Furthermore, as suggested by Meals et al., (2010) and Plummer et al.,(2011), the implementation of monitoring programs to assess water quality is essential for effective watershed management. Regular monitoring can help identify pollution sources and track changes in water quality over time, allowing for timely interventions.

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TABLE 1 WATER SOURCES (DRINKING).

Category	F	%
Artesian Well	13	13%
Dug Well	16	16%
Rain	0	0%
Spring	31	31%
River	0	0%
Refilling Station	34	34%
Water District	0	0%
Others	0	0%
Total	94	100%

For cooking and washing

The data provided outlines the primary water sources for cooking and washing among respondents and highlights key insights for watershed management in Guimaras.

Springs (44%) are the most utilized source of water. This reliance emphasizes the need to protect and preserve the natural recharge zones and vegetation around spring catchments. Over-extraction or contamination of springs can deplete this critical resource. Dug wells are the second most common source with 40%. Their dependence indicates groundwater utilization. The use of refilling stations is 14%, often for potable water, reflecting an emerging reliance on processed water sources. While beneficial, their usage highlights the need to maintain water quality standards and ensure that raw water supplies for these stations are sustainably managed. Though less commonly used, artesian wells (4%) represent an alternative source that relies on confined aquifers. These wells should be regulated to prevent aquifer depletion and salinity intrusion, especially in coastal areas.

The integration of community participation in watershed management is vital for the success of these practices. As noted by Adesina et al. (2021), effective integrated watershed management considers the social, economic, and environmental issues relevant to local communities.

TABLE 2 WATER SOURCES (COOKING/WASHING).

Category	F	%
Artesian Well	4	4%
Dug Well	40	40%
Rain	0	0%
Spring	44	44%
River	0	0%

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Refilling Station	14	14%
Water District	0	0%
Others	0	0%
Total	92	100%

Fuel Sources For Cooking

The data on fuel sources for cooking in Guimaras highlights a heavy reliance on wood and charcoal (97%) as the primary fuel.

Heavy reliance on wood and charcoal can lead to deforestation or forest degradation within watersheds. This reduces forest cover, which is crucial for protecting soil and regulating water cycles. Loss of vegetation cover can result in increased soil erosion, sedimentation in rivers and streams, and reduced groundwater recharge.

While only 7% currently use LPG or gas, promoting its adoption can reduce pressure on forest resources. However, affordability and accessibility need to be addressed.

In the research study of Bamwesigye et al., (2020); Adom-Opare & Inkoom (2017), the environmental implications of using wood and charcoal are profound. The extraction of wood for fuel contributes to deforestation, which can lead to soil erosion and degradation of watersheds. This degradation impacts water quality and availability, exacerbating challenges in watershed management.

TABLE 3 FUEL SOURCES (COOKING).

Category	F	%
Wood/Charcoal	97	97%
LPG or GAS	7	7%
Kerosene	0	0%
Total	104	100%

For lighting

The data on fuel sources for lighting in Guimaras reveals that the majority of households (76%) rely on electricity, with minimal use of kerosene lamps (3%) and no significant use of solar or other lighting sources.

Electricity as the dominant lighting source suggests improved energy access, which is crucial for quality of life, education, and economic activities.

The low use of kerosene lamps (3%) reflects progress in transitioning away from polluting and hazardous lighting options. Reducing reliance on kerosene improves indoor air quality, reduces fire hazards, and limits carbon emissions.

The reliance on electricity for lighting in Guimaras indicates progress in energy access, but the lack of renewable options like solar highlights a gap in sustainable energy adoption. Introducing solar and other renewable technologies can complement current efforts and enhance resilience, affordability, and environmental sustainability.

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Tang & Adesina (2022) stresses that kerosene lamps, while historically common, contribute to air pollution and greenhouse gas emissions, which can adversely affect local ecosystems and water quality. Widjonarko & Maryono, (2022) added that the combustion of kerosene releases particulate matter and volatile organic compounds, which can contaminate water sources and degrade the health of watersheds. Alstone et al., (2010) contrast, that the use of electricity for lighting, especially when sourced from renewable energy technologies such as solar power, can mitigate these negative impacts. Solar energy systems not only provide clean lighting but also reduce reliance on fossil fuels, thereby decreasing the potential for water contamination and promoting healthier watershed ecosystems.

TABLE 4 FUEL SOURCES (LIGHTING).

Category	F	%
Electricity	76	76%
Kerosene Lamp	3	3%
Solar	0	0%
Others (Flashlight)	0	0%
Total	100	100%

Disposal of garbage/waste

The data on waste disposal practices in Guimaras provides insights into the community's approach to managing solid waste. The majority of waste is collected by garbage collectors (86%), with a smaller percentage of households relying on practices like burning (6%), using dump pits (5%), or composting/burning (4%).

High participation in garbage collection reflects effective municipal waste management services and community engagement. Proper collection reduces the risk of environmental contamination and public health hazards associated with unmanaged waste.

Burning (6) is a common yet harmful practice that releases toxic pollutants, including carbon monoxide, dioxins, and particulate matter, contributing to air pollution and health issues. This practice may also cause localized fires, further endangering communities and ecosystems. Combining composting and burning (4%) may indicate confusion about proper waste management or limited access to better options.

The lack of "dumping anywhere" suggests a strong community understanding of proper waste disposal, likely reinforced by local policies and awareness programs.

Yusof et al., (2017) stressed that the garbage collection systems, when effectively implemented, can significantly reduce the volume of waste that ends up in landfills or is incinerated.

TABLE 5 DISPOSAL PRACTICES.

Category	F	%
Burning	6	6%
Dumping Anywhere	0	0%

Dump pit	5	5%
Composting	1	1%
Compost/burning	4	4%
Collected by the garbage collector	86	86%
Total	102	100%

CONCLUSIONS

The practices of Balcon Maravilla residents reflect a mix of sustainable and unsustainable habits. To protect the Sor-ohan watershed, efforts should focus on promoting environmentally friendly practices, such as sustainable water management, alternative energy sources, and improved waste disposal systems. Community education and integrated watershed management strategies will be key to ensuring long-term ecological balance and resource sustainability.

Thus, the promotion of sustainable water management, the use of alternative energy, and the improvement of waste disposal, while prioritizing community education and integrated watershed strategies for lasting ecological balance must be included in the sub-watershed plan.

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