

# Evaluating Flood Risk and Control Mechanism In San Carlos City: Basis For Enhanced Community-Based Disaster Plan

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*Abstract* — Floods severely impact people's lives through direct dangers like drowning, injury, and indirect health problems from contaminated water. They also cause significant socioeconomic disruption, leading to loss of property and livelihoods, displacement, and long-term mental health issues like anxiety and depression. This study examined the status of flood control mechanisms in relation to the level of city's preparedness of San Carlos City, Negros Occidental, during Calendar Year 2025. The study gathered data thru surveys, and employing quantitative method research design. Assessments were conducted among Barangay DRRMC implementers and residents at the identified flood prone areas. The profile of the Barangay DRRMC respondents showed that majority belonged to age bracket 31-40 years old with mean age of 35; great number on males and married, had baccalaureate degree, living in suburban areas and engaged in elective positions. On the other hand, majority of residents belonged to age bracket 41-50 years old, married, had baccalaureate degree and engaged in service and sales. Mostly were living in rural areas. The status of flood control mechanisms was described as Implemented while the city's level of preparedness

was described as Prepared. The test of correlation shows significant relationship hence, was Rejected. It is therefore concluded that flood control mechanisms be given due attention and concern to ensure the safety of the lives and limbs of the people. Based on the findings, it is therefore recommended that enhanced community-based disaster plan be implemented to mitigate the catastrophic effect of flood.

***Keywords — Public Management, Flood Control Mechanism, City’s Preparedness, Descriptive-Quantitative, San Carlos City, Negros Occidental, Philippines.***

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## I. INTRODUCTION

Flash flood refers to a high-intensity and rapid-onset flood usually caused by heavy rainstorms or the sudden release of water from dams or streams. Due to its sudden and rapid impact, it is considered as one of the deadliest natural hazards. Flash floods cause negative and massive damages in housing, transportation, infrastructure, and human lives; as well as its contribution to environmental issues like soil erosion and water pollution – all of which affects people's mental health (Pascual, LAC, 2024). This is because evident damages are seen over the years, leading to massive damages as reported to be experienced by 105 out of 139 countries according to World Meteorological Organization (WMO). In 2017, a flash flood occurred in Bangladesh, specifically in the northeastern part, popularly called Hoar. Primary livelihood and income were damaged, and it was revealed that individuals engaged in agricultural and fishing activities experienced greater financial setbacks (Chakraborty, D. 2021). It was specified that 90 % of crops and fish production were damaged by the natural disaster, leading to immense financial loss. Another study showed how China's experience in 2016 led to 481 (70.3 %) deaths out of 684 casualties. Ma et al. (2024) explained that this was caused by the 180 continuous flash flood throughout the year. This is considered to have a lower death count compared to their 2010 experience of 1765 casualties which led to implementing preventive measures by the Chinese government (Pascual, LAC 2023). In accordance, Dobhal et al. (2024) presented vast destruction

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in North India due to flash floods, damaging 30 hydropower plants, infrastructures, and 6000 people died.

### **Literature Review**

This research provided a systematic literature review of studies analyzing the status of flood control mechanisms in San Carlos City, Negros Occidental in relation to the city's level of preparedness during onslaught of flood for Calendar Year 2025.

Status of the flood control mechanisms were determined as to the following structural measures: dam and reservoir, levees and flood-walls, drainage systems, floodways, and flood barriers. These mechanism variables played a very important role in measuring the level of the city's preparedness as to the following key components: early warning systems, risk assessment, mitigation strategies, emergency response planning, and community engagement (Azhar, M., et al. 2025).

This study is anchored on the Theory on Urban Resilience to Floods. The idea of resilience has a long history in ecology and engineering, but its application to natural hazard management is relatively recent (Berkes, cited 2022). What defines resilience to floods remains ambiguous, despite the increasing attention given to the concept of resilience in flood hazard management. There are two major resilience interpretations—engineering resilience and ecological resilience. (Holling, cited 2022). In order to operationalize the theory for planning practices, a resilience surrogate measure is proposed for assessing urban resilience to floods. The theory and the measure together indicate that flood adaptation should replace flood control in order to build urban resilience to floods (Liao, K.H., 2025).

## II. METHODOLOGY

### Research Design

This study aimed to assess the status of flood control mechanism in San Carlos City, Negros Occidental, particularly in the affected barangay areas in relation to the city's preparedness in addressing the problem.

This study employed descriptive-quantitative research design. The primary purpose of descriptive research is to describe the characteristics, behaviors, and attributes of a particular population or phenomenon (Sirisilla, S. 2023). Primarily, this study determined the demographic profile of the respondent groups; status of flood control mechanisms and level of the city's preparedness in addressing the problem. San Carlos City has a population of about 150,000 residents and a land area of 451.50 square kilometers. It consists of 18 barangays, five of which are identified as flood-prone areas. There are about thirty employees in each barangay. With this data, there is about a total of around 540 barangay DRRMC implementers in San Carlos City, Negros Occidental. These areas were chosen as environment of the study because they were among the most flood-prone parts of the city. Residents in these barangays often face the impacts of flooding, making their insights and experiences highly valuable in evaluating how well current flood control systems are working. Conducting the study in this setting ensures that the data collected truly reflected the realities of the community.

### Sample of the Study

The sample refers to the number of barangay DRRMC implementers and residents that were utilized in this study. The sample size, which were determined by the number of items, individuals, or data points chosen to statistically represent a larger population, is a crucial determinant in research due to its direct impact on the reliability and generalizability of the results to the broader population (Coursera, 2023). In this study, a sample size of 100 will be taken from the population size of (N=540) for barangay DRRMC implementers while for residents (N=150,000) one hundred fifty (150) was utilized as respondents, or a total of 250 respondents. The residents were randomly chosen because they were the ones who really experienced flooding

and encountered challenges, coping mechanisms, and opinions on flood control measures. The second group consisted of the barangay DRRMC implementers who were directly involved in disaster preparedness and response. Their perspectives helped provide a broader understanding of institutional efforts and community-based strategies. A balanced number of participants from each barangay were targeted to ensure that the data represented the community fairly. In this sampling method, each member of the population was given an equal chance of being selected. This method is the most straightforward of all the probability sampling methods, since it involved a single random selection and requires little advance knowledge about the population. The range started from 1 to 100, therefore, using the randomizer the set of numbers to be included as respondents was (5, 10, 15, 20, 25, and so forth until it reaches the desired number of samples). Because it used randomization, any research performed on this sample had a high internal and external validity, and at a lower risk for research biases like sampling bias and selection bias.

Table 1 presents the distribution of the respondent groups.

**TABLE 1**  
**DISTRIBUTION OF THE RESPONDENT GROUPS**

<b>Respondents</b>	<b><i>f</i></b>	<b>%</b>
Barangay DRRMC Implementers	100	40.00
Residents	150	60.00
<b>Total</b>	<b>250</b>	<b>100.00</b>

As reflected in Table 1, the respondents of the study composed of 100 (40%) barangay DRRMC implementers and 150 (60%) residents from the affected areas in San Carlos City, Negros Occidental. A total number of 250 respondents were asked to answer the survey questionnaires.

### Measures

The main tool used for gathering data was a structured survey questionnaire adopted from related studies but was modified to fit to the current study. The questionnaire was carefully designed and divided into four main sections: Part I shows the demographic profile of the respondent groups – questions about barangay DRRMC implementers' age, sex, civil status,

educational attainment, occupation, residential location, and position classification (*whether the respondent held an elective or non-elective position*); resident's age, sex, civil status, highest educational attainment, occupation, and residential location. Part II presents the status of flood control mechanisms – questions assessing the condition and effectiveness of dams, levees, floodwalls, drainage systems, floodways, and flood barriers. Part III shows the level of city's preparedness– questions on early warning systems, risk assessment, mitigation strategies, emergency response planning, and community engagement. Part IV shows the issues and concerns encountered –where respondents could describe specific issues related to flood control and rank them as to its degree of seriousness.

To make sure the questionnaire is reliable, content validation was conducted by a panel of experts of Northwest Samar State University, with the instrument undergoing revisions based on their feedback. This process helped refine the wording and structure of the questions.

In order to determine the perception of teacher respondents in Part II as to the status of flood control mechanisms the following data scoring, scale and descriptive category was adopted: Scale: (5) 4.21 – 5.00 Very Effective (VE); (4) 3.41 – 4.20 Effective (E); (3) 2.61-3.40 Moderately Effective (ME); (2) 1.81-2.60 Slightly Effective (SE); (1) 1.0- 1.80 Not Effective (NE).

In order to measure the level of the city's preparedness in Part III, the following data scoring, scale and descriptive category was adopted: Scale: (5) 4.21 – 5.00 Very Prepared (VP); (4) 3.41 – 4.20 Prepared (P); (3) 2.61-3.40 Moderately Prepared (MP); (2) 1.81-2.60 Slightly Prepared (SP); (1) 1.0- 1.80 Not Prepared (NP).

To determine the extent of the issues and concerns related to the flood control mechanisms, the same was ranked from No. 1 to 10 according to its degree of seriousness with No. 1 as the highest..

## **Procedures**

The data-gathering procedure in this study involved the following steps to report the defined research queries and to come up with the appropriate result constructed on the findings of

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the current study. Subsequently, coordination was made with the barangay officials and arranged schedules that would accommodate in the administration of research. Before distributing the questionnaires, permission was sought from the Chief of the local government unit of San Carlos City to conduct the study.

Upon securing approval, the researcher personally visited the concerned communities and distributed the survey forms. The researcher conducted an orientation session with the participating respondents through face to face or virtual, whichever was viable. The session outlined the objectives of the study, the significance of their participation, the procedures to be followed, and the measures taken to ensure confidentiality and anonymity. The purpose of the study was clearly explained to the respondents, and they were assured that their answers would be treated with confidentiality. After respondents filled-out the questionnaires, the researcher collected the completed forms for checking and analysis. This process ensured accuracy and fairness in data collection.

After gathering all responses, the data were organized and tabulated. The results were then analyzed using descriptive statistics such as frequency, percentage, mean, and standard deviation to describe the respondents' profiles and their evaluation of flood control mechanisms and preparedness. To determine whether there is a connection between the status of flood control mechanisms and the level of preparedness of San Carlos City, a correlation analysis was conducted. The findings from these analyses provided the basis for developing an enhanced community-based disaster plan tailored to the needs of the city during the onslaught of floods.

There were challenges encountered during surveys like low response rates. Many people are busy or uninterested, leading to a low percentage of people completing the survey, which can skew results. People lose interest if a survey is too long, complex, or repetitive. Participants may provide inaccurate answers due to social desirability bias (saying what they think is right), recall issues, or bias from their current mood. Lack of engagement as respondents might answer questions without much thought, leading to inaccurate data. Researchers have to exercise patience in dealing with these issues as participation to this research is voluntary

## Data Processing

Descriptive statistics such as **frequency counts, percentages, means, and standard deviations** were used to summarize the profile variables. The **weighted mean** determined the overall status of flood program mechanism and level of the level of city's preparedness during flood. To test the significant relationship between the extent of utilization of remedial learning strategies and learners' literacy performance, the **Pearson Product-Moment Correlation Coefficient** was employed. Qualitative responses on challenges was subjected to **thematic analysis**, allowing patterns and recurring issues to emerge.

## Ethical Considerations

Research ethics protect the rights and well-being of participants, uphold the integrity of research findings, and contribute to the positive impact of research on individuals and society. Research ethics play a crucial role in ensuring the responsible conduct of research. The research design must address specific research questions. Hence, the conclusions of the study must correlate to the questions posed and the results. Also, research ethics demands that the methods used must relate specifically to the research questions. An individual should at no point feel any coercion to participate in a study. This includes any type of persuasion or deception in attempting to gain an individual's trust. Informed consent states that an individual must give their explicit consent to participate in the study. One can think of consent form as an agreement of trust between the researcher and the participants.

Sampling is the first step in research design. The researchers need to explain why they want a particular group of participants. Researchers explained why they left out certain people or groups. In addition, if the sample includes children or special needs individuals, the researcher had additional requirements to address like parental permission. Researchers did everything in power to protect study participants. For this, researchers focused on the risk to benefit ratio. If possible risks outweigh the benefits, then they should abandon or redesign the study. Risk of harm also

requires researchers to measure the risk to benefit ratio as the study progresses (Enago Academy, 2023).

Lastly, the researcher guaranteed that the study is carried out in accordance with the highest standards of competence and integrity, in an ethical and responsible manner. This entailed adhering to ethical standards and procedures in conformity with the Data Privacy Act, university policy, and the appropriate disposal of the raw data that has been gathered.

### III. RESULTS AND DISCUSSION

This section provided, evaluated, and interpreted the information gleaned from the study participants' questionnaires. Together with related statistical analysis and interpretation, the data are given in tabular and graphical formats. The conversation focuses on the status of flood control mechanism in relation to the city's level of preparedness.

**Summary of Findngs. Profile of respondents.** This subsection provided the demographic profile of the respondents, which was used in obtaining data on the status of flood control mechanism in relation to the city's level of preparedness in San Carlos City, Negros Occidental, during Calendar Year 2025.

#### **Barangay DRRMC Implementers**

**Age.** Based on the data gathered Table 2 shows that out of 100 Barangay DRRMC Implementers, forty (40) or 40 percent were under the age bracket of 31-40 years old; thirty (30) or 30 percent were under the age bracket of 41-50 years old; twenty (20) or 20 percent were under the age bracket of 21-30 years old; and ten (10) or 10 percent was under the age bracket 18-20 years old. The mean age was 35 and standard deviation is 12.91. Barangay workers aged 31-40 generally represent a prime working-age group with a balance of vitality and emerging experience.

This age bracket often constitutes a significant portion, or even a majority, of the barangay workforce, especially among specific roles like Barangay Health Emergency Response Teams (BHERTs) and Barangay Secretaries (Fuentes, H. C. 2024).

**TABLE 2 PRESENTS THE PROFILE AS TO AGE OF BARANGAY DRRMC IMPLEMENTERS OF SAN CARLOS CITY, NEGROS OCCIDENTAL.**

<b>Bracket</b>	<b>Total/ Percentage</b>	
41-50 yrs. old	30	30
31-40 yrs. old	40	40
20 - 30 yrs. old	20	20
18 – 20 yrs. old	10	10
<b>Total</b>	<b>100</b>	<b>100</b>
<b>Mean Age: 35 years old</b>		
<b>Standard Deviation 12.91</b>		

Since roles vary by sector, there is not a fixed age requirement for all DRRMC implementers. The implementing body for other jobs, such those in local government, is made up of representatives from different organizations and barangay officials; the age of implementation varies according to the role.

**Sex.** Based on the data below shows that sixty (60) or 60 percent of the Barangay DRRMC implementers were male while forty (40) or 40 percent were females.

There are likely more male barangay workers than female workers due to a combination of factors, including the disproportionate burden of unpaid domestic work on women, lower female participation in the labor force, and potential gender-based stereotypes and discrimination. These issues can lead to women having less time and opportunity to take on formal jobs like those in barangay administration, especially if the roles are seen as requiring long hours or are associated with male-dominated tasks . Though the data implied that majority of the Barangay DRRMC Implementers were male both gender played vital roles (Asian Development Bank, cited 2025). A study entitled “Working with Both Women and Men to Promote Gender Balance” (McDonald, M.)

cited 2024. Given the important role of women and men in the use and management of water resources, the project reflects the importance of gender from its early stages.

**Civil Status.** Based on the data gathered shows that 55 or 55 percent of the Barangay DRRMC implementers were married, 37 or 37 percent were single, 4 or 4 percent were Widow/widower and four (4) or 4 percent of the Barangay DRRMC implementers were separated.

Local community studies in the Philippines have shown that DRRMC implementers are frequently married, which can be explained by a number of overlapping social, demographic, and practical variables.

According to the statement, a more steady and responsible approach to disaster risk reduction (DRR) may be influenced by the large proportion of married respondents (70%). According to {Wisner et al., 2004}, married people, who frequently have families, might be more driven to defend their loved ones and community.

**Highest Educational Attainment.** Based on the research gathered shows that 50 or 50 percent of the DDRMC respondents were college graduates, 20 or 20 percent with acquired tertiary education, 16 or 16 percent completed secondary education, 10 or 10.0 percent completed Elementary education while the rest, or 4.0 percent of the DDRMC respondents have been pursuing post graduate level. The presence of more college-educated individuals working in barangays in the Philippines is driven by a combination of a surplus of college graduates relative to available high-skilled jobs in the formal sector and the inherent importance of educated workers in effective local governance and service delivery (Dumlao, S. n. d.).

Fifty counts or 50 percent of respondents had a Baccalaureate degree, indicating a comparatively high level of educational achievement. This has advantages DRRMC activities since more education is linked to a deeper comprehension and application of complicated DRRMC tactics (Alexander, cited 2025).

**Residential Location:** Based on researched shows that 40 or 40 percent of the Barangay DDRMC implementers were living in a suburban area; 35 or 35 percent were in rural areas and 25

or 25 percent were in urban Area. Accordingly, barangay DRRMC implementers prefer to live in urban areas because of accessibility in terms of education, health, and jobs.

**Position Classification:** Based on the research gathered shows that “elective position” has the highest weighted mean of 65 or 65 percent, the remaining 35 or 35 percent went to non-elected position.

National DRRM statutes, like the Philippine Disaster Risk Reduction and Management Act of 2010 (RA 10121), which specifies the makeup of the BDRRMC, usually outline this structure. DRRM is incorporated into the formal governance structure thanks to the authority and budget control provided by elected members. The technical know-how, sectoral reach, and local expertise provided by non-elective members guarantee that the plan is thorough and implementable throughout the entire barangay. This arrangement guarantees the BDRRMC's political legitimacy, functional stability, and representation of the community's varied demands and capacities.

## Residents

**Age.** Based on the data gathered shows that out of 150 Residents responders; sixty (60) or 40 percent were under the age bracket of 41- 50 years old; thirty-five (35) or 23.33 percent were under the age bracket of 20-30 years old; thirty (30) or 20 percent were under the age bracket of 31-40 years old; and twenty-five (25) or 16.67 percent was under the age bracket 18-20 years old. The mean age was 51 and standard deviation is 13.46.

In conclusion, equal composition is a strength multiplier. For the entire barangay population, it results in more equitable and resilient outcomes as well as better informed planning and trusting communication.

**Civil Status.** Based on the data gathered (Table 10) shows that seventy 70 or 46.67 percent of the residents respondents were married, sixty (60) or 40 percent were single, 10 or 6.67 percent were Widow/widower and separated.

Due to its strong correlation with age, stability, and deep community rootedness, married civil status consistently ranks highest in surveys involving resident respondents. This pattern reflects the demographic reality of the adult population in the Philippines, filtered through the particular requirements of community leadership and engagement.

**Highest Educational Attainment.** Based on the research gathered (Table 11) below shows that 55 or 36.67 percent of resident respondents were college graduates, 38 or 25.33 percent with acquired tertiary education, 33 or 22 percent completed secondary education, 20 or 13.33 percent completed elementary education while the rest, 4 or 2.57 percent of the resident respondents have been pursuing post graduate level. A majority of people in the workforce having a college degree is important for job markets because it creates a more competitive, skilled, and adaptable workforce that drives economic growth and innovation. Educational attainment signals to employers that a job-seeker is desirable (Horowitz, J. 2019).

Screening workers for a minimum level of educational attainment is a low-cost strategy for removing undesirable candidates: it complies with anti-discrimination regulations, and exceptionally well-educated workers may be flagged for further review. But although education represents acquisition of skills, it is also a positional good, which means at least some of its value is relative—whether you have more or less of it than your competition (Hirsch, F. cited 2019).

**Occupation:** Based on the data gathered shows that 50 or 33.33 percent of the resident respondents ranked as highest total and percentage were in Services and Sales; 45 or 30 percent were from Skilled Trades; 30 or 20 percent were doing Manual work and 25 or 16.67 percent are Professionals. People in San Carlos City were highly engaged in the services and sales sectors primarily due to broad economic shifts toward service-based economies, the nature of the work itself (which often offers personal and professional growth), and strong personal motivators like financial potential and job security. One of the most significant advantages of a career in sales is the unlimited earning potential. Unlike many other professions where your income is capped by a salary structure, sales offers the opportunity to earn as much as you're willing to work for.

With commissions, bonuses, and incentives, hard work directly translates into financial rewards. Workers in the service and sales industries include those that either sell things in retail or

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wholesale settings or offer personal and protective services including security, hospitality, and care. They do a variety of duties, including as serving customers, cooking, cleaning, and serving as cashiers, salespeople, or security personnel (The Daily Sales, 2024).

**Residential Location:** Based on researched shows that 70 or 46.67 percent of the Resident respondents were living in a Rural Area; 50 or 33.33 percent are in Suburban areas and 30 or 20 percent resides in Urban Area. More than half of the world's population now live in urban areas — increasingly in highly dense cities. However, urban settings are a relatively new phenomenon in human history. This transition has transformed the way we live, work, travel, and build networks (Ritchie, H. et al. 2025).

Essentially, the overrepresentation of rural voices guarantees that the Barangay DRRMC's work tackles the most profound and frequently neglected vulnerabilities, changing the strategy as a whole in the direction of a truly inclusive and community-resilient framework. As the world continues to urbanize, sustainable development depends increasingly on the successful management of urban growth, especially in low-income and lower-middle-income countries where the pace of urbanization is projected to be the fastest. Many countries will face challenges in meeting the needs of their growing urban populations, including for housing, transportation, energy systems and other infrastructure, as well as for employment and basic services such as education and health care. Integrated policies to improve the lives of both urban and rural dwellers are needed, while strengthening the linkages between urban and rural areas, building on their existing economic, social and environmental ties. To ensure that the benefits of urbanization are fully shared and inclusive, policies to manage urban growth need to ensure access to infrastructure and social services for all, focusing on the needs of the urban poor and other vulnerable groups for housing, education, health care, decent work and a safe environment (United Nations Department of Economic and Social Affairs, 2018).

Research on flood barriers in the Philippines looks at both more modern, nature-based methods and more conventional engineering solutions, analyzing their implementation, efficacy, and problems including corruption and project failure. In order to reduce flood damage and guarantee community safety, research emphasizes the necessity of comprehensive flood risk

management strategies that integrate non-structural solutions like enhanced forecasts and early warning systems with structural initiatives like flood walls (Salisbury, N. E. 2024).

In order to lessen flood disasters, flood control refers to altering the natural state of flooding using engineering techniques. When people learned that floods were unavoidable yet controllable, flood control was first implemented. However, the risk of flooding is rising due to climate change, and flood control project requirements need to adapt as well. However, flood disasters persisted even after a number of flood management initiatives were put into place, and people started to recognize the limitations of these initiatives (Kundzewicz et al., cited 2022).

The local government unit (LGU) of San Carlos City, Negros Occidental ensured that dams and reservoir were constructed to prevent flooding in the affected areas with little budget being allocated for the purpose. San Carlos City uses structural flood control mechanisms like seawalls, revetments, and river dredging to manage flooding. Specific projects include a P20-million seawall and wave deflector in Barangay 6 to protect against high tides and storms, and a P50- million structure along the Andoon River to prevent overflows and control erosion by widening and deepening the river (DPWH, 2023).

**Levees and Floodwalls:** Based on the data gathered (Table 15) under statement No.1 “Raised barriers along rivers and coastlines that act as barriers to contain high water levels”, had the highest weighted mean of 2.56 with standard deviation of 0.88 described as Implemented. Levees, dikes, floodwalls, and seawalls are popular names for the elevated barriers found along rivers and beaches with high water levels. In order to safeguard human habitation and development in floodplains and coastal areas, these structures are essential parts of the infrastructure for managing floods.

The Department of Public Works and Highways (DPWH) has delivered the completion of a flood control structure along Andoon River that aims to protect residents in the city of San Carlos, Negros Occidental during heavy rains. Implemented by DPWH Negros Occidental Sub-District Engineering Office in the amount of P50 million, scope of works on the flood control project involves the construction of a 212-lineal meter stone masonry wall structure with provision of coco

nets and sodding to control river bank erosion. Nevertheless, respondent groups perceived that the completion of these projects were moderately implemented.

**Drainage Systems:** Based on the data gathered (Table 16) under statement No.2 “*Simple maintenance like cleaning gutters to more complex projects like installing new infrastructure*”, has the highest weighted mean of 2.50 with standard deviation of 0.90 described as Moderately Implemented. San Carlos City's drainage system is addressed through various infrastructure projects, including river control structures and seawalls, aimed at preventing flooding from overflowing rivers and the sea. Recent efforts by the Department of Public Works and Highways (DPWH) include a P50-million project on the Andoon River to widen and deepen it and a P20-million seawall in Barangay 6 to protect against storm surges. Other initiatives involve widening waterways and improving flood control plans, though a recent probe was launched to investigate suspected irregularities in some flood control projects (DPWH, 2023).

#### IV. CONCLUSIONS

The findings indicate that the city's flood control mechanisms are rated as implemented and its level of preparedness as prepared. The significant correlation between these variables suggests that the effectiveness of flood mitigation strategies directly influences the city's disaster readiness. Given this relationship, it is imperative that local authorities continue to prioritize and refine flood control initiatives. Strengthening community-based disaster planning, anchored in participatory approaches and updated risk reduction strategies, is recommended to further reduce vulnerability and enhance the city's adaptive capacity.

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