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FLOOD CONTROL SYSTEM OF THE MUNICIPALITY OF LA PAZ TARLAC: BASIS FOR POLICY ENHANCEMENT

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ABSTRACT
In order to improve policy, this research project set out to evaluate the municipal flood control system in La Paz, Tarlac. Data were acquired by questionnaires distributed to members of the Emergency and Disaster Preparedness (EPD), Disaster Risk Reduction and Management Council, barangay authorities, and non-governmental groups in the municipality using a descriptive research approach. According to the results, La Paz's flood control system obtained excellent ratings for prevention and mitigation, readiness, and reaction, as well as a combination of outstanding and very satisfactory ratings for rehabilitation and recovery efforts.The adoption of environmentally vital infrastructure projects, reforestation initiatives, and compliance with solid waste management plans are notable examples of proactive prevention and mitigation activities. Infrastructure design based on risk assessments, involvement of the local and commercial sectors, and public awareness campaigns were highlighted as preparedness strategies. Effective governance, the provision of fundamental services, interagency collaboration, and infrastructure built for life support during disasters were all indicated by response metrics. Coordination, infrastructure repair, livelihood support, and resilience-building were the main goals of the rehabilitation and recovery efforts. However, issues such as a lack of an operation and maintenance budget, choosing projects for political reasons, and insufficient collaboration with associated authorities were noted. The results highlight La Paz's proactive flood prevention efforts while also highlighting the need for better funding, coordination, and decision-making procedures. These results serve as a foundation for improved policy, assuring the community's safety, wellbeing, and resilience in the case of flooding disasters in the municipality.

Keywords: Flood Control System of the Municipality of La Paz Tarlac: Basis for Policy Enhancement
Keywords: flood,risk, flood control system, emergency, recovery measures, response measures

1. INTRODUCTION

Floods have devastating consequences worldwide, impacting livelihoods, resources, and human lives. Educational institutions, including schools, are not spared from these calamities, often experiencing suspension of classes, destruction of infrastructure, and loss of teaching materials. The recent floods have left millions of students affected, posing significant risks to their emotional, intellectual, and physical development, thereby endangering the country's future. The aftermath of these floods has resulted in a surge of school dropouts, hindering academic progress and reducing the likelihood of pursuing higher education (Khuwaja, 2010).

The effects of floods on school infrastructure are also substantial, with floodwater causing lasting damage to buildings, leading to issues such as saturation damage, mold growth, wood decay, and erosion. Moreover, the damage extends to educational materials, furniture, and equipment, leaving a long-lasting impact on learning environments (REMS, 2022).

In the Philippines, a country prone to frequent floods due to typhoons and heavy rains, schools and higher education institutions are regularly affected. The frequency of flooding in the country disrupts academic activities, often leading to the closure of schools during floods. A study by Rappler (2016) reported that a significant percentage of primary and high schools experienced flooding at least once in a year. Moreover, "super typhoons" like Typhoon Mangkhut in 2018 caused widespread destruction to schools, affecting over a million students, and rendering thousands of schools unusable (Their World, 2018).

One specific region heavily impacted by floods is the municipality of La Paz in the province of Tarlac, Philippines. Despite efforts to mitigate flood risks through various measures, including dredging, unclogging canals, and constructing pumping stations, La Paz continues to face significant challenges during heavy and prolonged rainfall events. The geographical characteristics of the province, surrounded by high mountains and large flat areas, exacerbate the risk of flooding in La Paz. When floods occur, the municipality faces various difficulties, including power outages, disrupted communication networks, and impassable roads, isolating the community from external assistance (Bergonia, 2021).

In light of the recurring flood-related issues faced by the municipality of La Paz, this study aims to investigate the impact of floods on educational institutions in the area. By examining the consequences of floods on school infrastructure, learning materials, and students' educational attainment, the study seeks to highlight the importance of implementing effective flood-resilience strategies in educational institutions. Furthermore, the research will explore ways to improve disaster response coordination among various agencies, including the Philippine National Police, to ensure the safety and well-being of residents during flood incidents.

To support the investigation's significance and novelty, related studies have been conducted on flood occurrences and mitigation efforts in the Philippines. The studies conducted by the National Irrigation Administration (NIA) in La Paz, Tarlac, have provided valuable insights into ongoing flood control projects in the region (NIA, 2023). Additionally, geospatial data and analysis from the UP Lipad Flood Modelling Component (Lipad FMC) present an in-depth understanding of flood hazard areas in the municipality of La Paz (Lipad FMC, 2023).

Through this study, we aim to contribute valuable data and knowledge that can assist educational policymakers and local authorities in developing comprehensive flood resilience plans for schools in flood-prone regions like La Paz, Tarlac. Ultimately, the research endeavors to enhance the overall disaster preparedness and recovery strategies within the educational sector to safeguard the future of the students and the community.

Furthermore, this study seeks to build upon and complement existing literature by focusing on the specific context of the municipality of La Paz, Tarlac. While some related studies have investigated flood occurrences and mitigation efforts in various regions of the Philippines, few have delved into the localized impact of floods on educational institutions within flood-prone areas. By narrowing our focus to La Paz, we can gain a deeper understanding of the unique challenges faced by schools in this particular region and tailor flood resilience strategies accordingly.

The geospatial data provided by UP Lipad Flood Modelling Component (Lipad FMC) and the ongoing flood control projects documented by the National Irrigation Administration (NIA) will serve as valuable references in identifying flood hazard areas and evaluating the effectiveness of existing mitigation measures. By analyzing these data sets in conjunction with our findings, we can assess the vulnerability of schools in La Paz to flood damage and recommend targeted interventions to enhance their resilience.

Moreover, this study aims to highlight the importance of coordinated disaster response efforts involving various agencies, including the Philippine National Police (PNP). While disaster response protocols are in place, examining their effectiveness during flood incidents in La Paz will provide insights into potential areas for improvement. By identifying any gaps or challenges in the current response mechanisms, we can propose recommendations to enhance the efficiency of disaster coordination and ensure a swift and effective response to future flood events.

The significance of this research lies in its potential to inform evidence-based policies and strategies that can protect educational institutions and students from the detrimental effects of floods. By integrating the findings into the disaster risk reduction and management plans of schools in La Paz, Tarlac, decision-makers can prioritize measures that safeguard school infrastructure, learning materials, and student well-being during and after flood incidents. Additionally, the research can contribute to the broader field of disaster management and resilience, providing insights that can be applied to other flood-prone regions and educational settings.

In conclusion, this study will investigate the impact of floods on educational institutions in the flood-prone municipality of La Paz, Tarlac. By leveraging related studies on flood occurrences and mitigation efforts in the Philippines and utilizing geospatial data and analysis, the research will provide localized insights into the challenges faced by schools in La Paz during floods. The findings will contribute to evidence-based policies and strategies to enhance flood resilience in educational institutions, safeguarding the well-being and educational opportunities of students in the face of recurring flood events. Additionally, the study aims to improve disaster response coordination among various agencies, fostering a more resilient and prepared community in La Paz, Tarlac, and beyond.

Thus, this study was conducted to determine the flood control system in the Municipality of La Paz, which served as the basis for policy enhancement.

Specifically, this study aimed to find answers to the following:

1. How was the flood control system of the Municipality of La Paz described along the following:
   1.1. Prevention and Mitigation
   1.2. Preparedness
   1.3. Response
   1.4. Rehabilitation and Recovery
2. What were the problems encountered by the Municipality of La Paz in its flood control system?
3. What policy enhancement plan could be proposed to address the problems encountered by the Municipality of La Paz in its flood control system?

2. RESEARCH METHOD

In this study, the descriptive research design was used. According to McCombes (2020), descriptive research aims to correctly and methodically describe a population, circumstance, or phenomena. To enable the examination of numerous variables, a descriptive research design could be employed with a number of research techniques. The design of descriptive research did not involve the manipulation or control of variables, in contrast to experimental research.

The descriptive method was used to describe and document the flood control system of the Municipality of La Paz in terms of Prevention and Mitigation, Preparedness, Response, and Rehabilitation and Recovery.

Researcher disseminated, gathered, and analyzed data from the responses of the EPD, Disaster Risk Reduction and Management Council, barangay officials, and non-governmental organizations and experts in the technical fields in the Municipality of La Paz, served as the respondents, to describe the flood control system's prevention and mitigation measures in the Municipality of La Paz. Additionally, they looked over pertinent records, documents, and municipal flood mitigation and prevention policies. The researcher concentrated on outlining the current plans, systems, and initiatives put in place to lessen and prevent floods in various parts of La Paz.

The descriptive approach was also used to explain the readiness component of the flood control system. Information was obtained by researchers about the municipality's preparedness efforts prior to, during, and following flood disasters. This required creating and distributing surveys to the research participants. The information gathered gave a thorough account of how prepared the municipality was to handle possible flood catastrophes.

Additionally, the Municipality of La Paz's flood control system's response mechanism was described using the descriptive technique. Researcher examined previous flood catastrophes and gathered information on how the regional governments and people responded to those occurrences. He analyzed the information gathered from the respondents and used it to create a thorough description of the coordination and response tactics in use.

The descriptive approach was utilized to describe the process of rehabilitation and recovery for the flood control system. Researcher looked into the initiatives taken by the Municipality of La Paz to repair and rebuild flood-damaged areas in the past. Data on infrastructure improvements, assistance given to impacted areas, and restoration efforts were analyzed in order to do this. The findings of this study shed light on the efficacy of recovery and rehabilitation strategies.

Meanwhile, based on the findings of the study, the Municipality of La Paz's flood control system faults were identified and described using the descriptive approach. They recorded the difficulties, restrictions, and flaws in the current flood control system. The descriptive approach allowed researcher to offer a concise and in-depth overview of the concerns the municipality was facing, facilitating a thorough grasp of the problems.

Finally, a policy improvement plan for the flood management system in the Municipality of La Paz was suggested using the descriptive technique. The results from the earlier goals were analyzed, together with pertinent literature and best practices from other areas. By using this method, he discussed potential policy improvements and ways to solve the issues they had found. The suggested plan was comprehensive, describing particular actions, approaches, and suggestions for enhancing the flood control system. The descriptive style of the study made sure that the suggested policy improvements were presented in detail.

Research Instruments

The members of EPD, the Disaster Risk Reduction and Management Council, barangay authorities, and non-governmental organizations in the Municipality of Lapaz were surveyed as part of the study using questionnaires as the research instrument. The surveys were created to gather data regarding the Municipality of Lapaz's flood control

system and the issues faced. The questions were thoughtfully crafted to suit the research goals and collect pertinent information from the respondents.

This was carried out to ascertain the Municipality of Lapaz's flood control system and the issues the Municipality of Lapaz had with it. A policy enhancement plan was put up based on the data collected to address the issues the Municipality of Lapaz's flood control system was having.

A formal letter was the first step the researcher took in getting permission to carry out this investigation. Following approval, the researcher obtained the participants' permission before launching the online survey. The collected data was then compiled and tallied by the researcher.

Validation of Instruments

A thorough validation approach was used to guarantee the surveys' validity and reliability. The questionnaires were carefully examined by a group of specialists in catastrophe risk reduction and flood management, as well as by a statistician. The statistician confirmed that the questionnaire design was dependable to produce the desired results while the experts evaluated the questions' clarity, relevance, and appropriateness.

The statistician and the expert panel both offered insightful criticism and suggestions for making the instruments' validity and reliability stronger. The surveys were amended as needed to address any issues found in light of their feedback.

A pilot test of the updated questionnaires was then conducted using a small sample of respondents from the intended audience. The purpose of the pilot test was to evaluate the questionnaires' clarity, understandability, and completion time.

The questionnaires were modified further in response to comments after the pilot test based on the analysis of the results. Data collection utilized the final versions of the questionnaires, which had now undergone extensive expert and statistical validation and verification.

This thorough validation procedure makes sure that the information gathered via the questionnaires is trustworthy, accurate, and able to shed light on the flood control system and associated problems in the Municipality of La Paz.

The pre- tested data were analyzed using the Statistical Package for Social Science (SPSS). Cronbach’s coefficient method was used with 0.89 computed Cronbach Alpha that signifies the instrument’s very high reliability

Statistical Treatment of Data

The gathered data was statistically processed to yield insightful findings and make judgments. The data pertaining to the flood control system in the Municipality of Lapaz and the issues faced were summarized and presented using descriptive statistics, such as frequencies and percentages.

Descriptive statistics gave a thorough overview of the responses, enabling a clear picture of the municipality's difficulties and the state of the flood control system today.

Statistical Package for Social Science (SPSS was used to handle the data statistically, ensuring the analysis process' accuracy and effectiveness. Tables, charts, and narratives were used to present the findings, giving them a thorough and succinct portrayal.

3. RESULTS AND DISCUSSION

The results and discussion section presents the findings of the study, highlighting the flood control system in the Municipality of Lapaz and the problems encountered. The

analysis and interpretation of the data provide insights that can inform policy enhancements, contributing to effective disaster risk reduction and management in the area.

1. FLOOD CONTROL SYSTEM OF THE MUNICIPALITY OF LA PAZ

Table 1
Prevention and Mitigation

Flood Control System of Municipality of Lapaz	Mean	Description
1. Prevention and Mitigation		
The river basin management concept is adopted in infrastructure planning to ensure upstream and downstream compatibility.	4.48	Outstanding
In the implementation of environmentally-critical infrastructure projects, environmental rules and regulations are strictly complied to mitigate hazardous impacts of the projects.	4.54	Outstanding
It designs roads with slope protection.	4.9	Outstanding

It adopts adopt non-structural or non-engineering measures, such as warning system and controlled zoning.	4.84	Outstanding
It intensifies reforestation, forest protection and other watershed protection activities	4.76	Outstanding
It pushes for the full implementation of solid waste management plans under the Ecological Solid Waste Management Acts	4.9	Outstanding

The data presented in Table 1 provides an assessment of the prevention and mitigation measures in the Municipality of Lapaz. The mean values indicate the average rating given by the respondents for each statement, with higher means indicating a higher level of agreement with the statements.

Overall, the prevention and mitigation measures in the Municipality of Lapaz received outstanding ratings across all statements. The mean values range from 4.48 to 4.9, reflecting a strong consensus among the respondents regarding the effectiveness and implementation of these measures.

The highest mean value of 4.9 is observed for the statement "It designs roads with slope protection," indicating a high level of agreement and satisfaction with this particular preventive measure. This suggests that the Municipality of Lapaz has implemented measures to ensure the stability and safety of roads, especially in areas prone to flooding and landslides.

Similarly, the statements related to adopting the river basin management concept, complying with environmental rules and regulations, implementing non-structural measures, intensifying reforestation and watershed protection activities, and promoting

solid waste management all received mean values above 4.5, indicating a strong consensus and positive perception among the respondents.

These outstanding ratings imply that the Municipality of Lapaz has taken significant steps in incorporating preventive and mitigation measures into their flood control system. The high scores reflect a commendable effort in infrastructure planning, environmental compliance, and the adoption of various measures to reduce flood risks and ensure the safety and well-being of the community.

A comprehensive literature review by Vojinović, Zoran, et al. entitled "Integrated Flood Risk Management: A Comprehensive Literature Review" explores the concept of integrated flood risk management, which emphasizes a holistic and multidisciplinary approach to mitigate and manage flood risks. The study highlights the importance of adopting strategies such as river basin management, environmental compliance, non-structural measures, and reforestation to enhance flood prevention and mitigation efforts.

Table 2 Preparedness

Flood Control System of Municipality of Lapaz	**Mean**	**Description**
2. Preparedness		
It designs infrastructure facilities according to specific hazard risk assessments	4.82	Outstanding
It builds backup capabilities and alternative routes into infrastructure facilities, where appropriate, to ensure life support systems and services (fire-fighting services, access to medical services, power and water supply, transportation, and telecommunication) in the event of a disaster	4.92	Outstanding
It promotes local and private sector participation in infrastructure planning and implementation.	4.84	Outstanding

It shares capital costs and maintenance responsibilities between with the private sector.	4.5	Outstanding
It conducts public awareness programs and more research on disaster preparedness.	4.72	Outstanding
It allots sufficient budget in the need of establishing excellent flood control system in the municipality.	4.44	Very Satisfactory

The data presented in Table 2 provides an assessment of the preparedness measures in the Municipality of Lapaz. The mean values represent the average rating given by the respondents for each statement, with higher means indicating a higher level of agreement with the statements.

Overall, the preparedness measures in the Municipality of Lapaz received outstanding ratings, indicating a strong consensus among the respondents regarding their effectiveness and implementation.

The highest mean value of 4.92 is observed for the statement "It builds backup capabilities and alternative routes into infrastructure facilities to ensure life support systems and services in the event of a disaster." This reflects the municipality's commitment to ensuring the continuity of critical services, such as fire-fighting, access to medical services, power and water supply, transportation, and telecommunication, during and after a disaster.

Similarly, the statements related to designing infrastructure facilities based on hazard risk assessments, promoting local and private sector participation in infrastructure planning and implementation, conducting public awareness programs and research on disaster preparedness, and sharing capital costs and maintenance responsibilities between the public and private sector all received mean values above 4.5, indicating a strong consensus and positive perception among the respondents.

However, the statement "It allots a sufficient budget for establishing an excellent flood control system in the municipality" received a slightly lower mean value of 4.44, indicating a very satisfactory rating. This suggests that while the budget allocation is deemed satisfactory, there may still be room for improvement in terms of securing adequate resources for further enhancing the flood control system.

These findings suggest that the Municipality of Lapaz has implemented effective preparedness measures, emphasizing infrastructure design based on risk assessments, collaboration with local and private sectors, public awareness programs, and shared responsibilities. The outstanding ratings demonstrate the municipality's proactive approach and commitment to disaster preparedness.

However, there is a need for continued attention to budget allocation to ensure the establishment and maintenance of an excellent flood control system in the municipality.

Table 3 Response

Flood Control System of Municipality of Lapaz	**Mean**	**Description**
3. Response		
It enacts ordinances, approve resolutions and appropriate funds for the general welfare of its inhabitants and to ensure the efficient and effective delivery of the basic services.	4.9	Outstanding
It delivers basic services including flood control facilities, which are intended primarily to service the needs of residents of the municipality.	4.8	Outstanding
It conducts survey for flood and sediment disasters, and for rivers and river basins.	4.72	Outstanding
It prioritizes the river basin for flood control works.	4.44	Very Satisfactory
It exchanges information among the related agencies	4.56	Outstanding

The data presented in Table 3 provides an assessment of the response measures in the Municipality of Lapaz. The mean values represent the average rating given by the respondents for each statement, with higher means indicating a higher level of agreement with the statements.

Overall, the response measures in the Municipality of Lapaz received outstanding and very satisfactory ratings, indicating a positive perception among the respondents regarding their effectiveness and implementation.

The highest mean value of 4.9 is observed for the statement "It enacts ordinances, approves resolutions, and appropriates funds for the general welfare of its inhabitants and to ensure the efficient and effective delivery of basic services." This reflects the municipality's commitment to governance and resource allocation for the well-being of its residents and the efficient provision of basic services, including flood control facilities.

Similarly, the statements related to delivering basic services, conducting surveys for flood and sediment disasters and rivers, and prioritizing the river basin for flood control works all received mean values above 4.4, indicating a strong consensus and positive perception among the respondents.

However, the statement "It exchanges information among related agencies" received a mean value of 4.56, indicating an outstanding rating. This suggests that there is effective coordination and information sharing among the agencies involved in flood control and response efforts in the Municipality of Lapaz.

These findings suggest that the Municipality of Lapaz has implemented effective response measures, emphasizing governance and resource allocation, the delivery of basic services, surveying and prioritization of flood control works, and interagency coordination. The outstanding and very satisfactory ratings reflect the municipality's proactive approach and commitment to efficient and coordinated responses to flood events.

Table 4
Rehabilitation and Recovery

Flood Control System of Municipality of Lapaz	**Mean**	**Description**
4. Rehabilitation and Recovery		
It provides close coordination among agencies through an organization of flood management	4.78	Outstanding
It develops the financial sources for flood control works	4.44	Very Satisfactory
It ensures the continuity of operations and planning, including social and economic recovery, and the provision of basic services in the post-disaster phase.	4.08	Very Satisfactory
It provides recovery and livelihood support are also necessary for the restoration of income- and food-generating activities, particularly for farmers, fisherfolk, farm laborers, and small entrepreneurs.	3.76	Very Satisfactory

It helps restore, rehabilitate, or reconstruct damaged infrastructure necessary to sustain economic and	4.7	Outstanding
It helps repair houses or rebuild settlements and basic community facilities and services (school, health center, etc.) that are more resilient to hazard events.	4.24	Very Satisfactory
It increases resilience and capacities of communities in coping with future hazard events.	4.24	Very Satisfactory

The data presented in Table 4 provides an assessment of the rehabilitation and recovery measures in the Municipality of Lapaz. The mean values represent the average rating given by the respondents for each statement, with higher means indicating a higher level of agreement with the statements.

Overall, the rehabilitation and recovery measures in the Municipality of Lapaz received a mix of outstanding and very satisfactory ratings, reflecting a generally positive perception among the respondents regarding their effectiveness and implementation.

The statement with the highest mean value of 4.78 is "It provides close coordination among agencies through an organization of flood management." This indicates the importance of coordination and collaboration among various agencies involved in rehabilitation and recovery efforts. The outstanding rating suggests that the Municipality of Lapaz has established effective mechanisms to facilitate close coordination and cooperation among relevant stakeholders.

The statement "It helps restore, rehabilitate, or reconstruct damaged infrastructure necessary to sustain economic and social activities" received a mean value of 4.7, reflecting an outstanding rating. This highlights the municipality's efforts in addressing the restoration and reconstruction needs of damaged infrastructure, which is crucial for sustaining economic and social activities in the post-disaster phase.

Other statements such as developing financial sources for flood control works, ensuring continuity of operations and planning, providing recovery and livelihood support, and rebuilding resilient community facilities received mean values in the range of 3.76 to 4.44, indicating a very satisfactory rating. While these measures were generally positively perceived, there may be room for further improvement and enhancement to meet the needs of affected communities.

Overall, the findings from Table 4 suggest that the Municipality of Lapaz has implemented effective rehabilitation and recovery measures. The outstanding and very satisfactory ratings reflect the municipality's commitment to close coordination, restoration of infrastructure, and support for livelihoods and community facilities. These measures are vital for the long-term recovery and resilience of the affected areas and communities.

2. PROBLEMS ENCOUNTERED BY THE MUNICIPALITY OF LAPAZ ON ITS FLOOD CONTROL SYSTEM

Table 5
Problems Encountered by the Municipality of Lapaz on Its Flood Control System

Problems Encountered by the Municipality of Lapaz on Its Flood Control System	**f**	**%**	**Rank**
Lack of flood control data such as discharge, catchments area and/or survey work on all flood-prone areas	20	40	10
Needs further study on the river flow behavior especially on the effect of floodwater backflows and quarrying	32	64	5
Design insufficient relative to physical condition of the river and flooding condition	15	30	10
Lack of consultation and coordination with other related agencies during planning period	5	10	18
Improper river dike alignment	4	8	19
No comprehensive study	16	32	9
Choice of projects and priority in implementation are dictated more by political expediency rather than by actual appropriateness and capability	39	78	2
Wrong construction method being adopted	21	42	7
Lack of continuity of	34	68	3

the system (piece-meal implementation)			
Lack of cooperation and coordination during construction period	2	4	15
Lack of regular maintenance	36	72	2
No funds and no manpower at the LGU level to undertake operation and maintenance	28	56	3
Responsibility of the LGU in operation and maintenance is not clear	12	24	7
No clear agreement exists between LGU and DPWH regarding operation and maintenance structures in the municipal engineering office.	15	30	4
No comprehensive implementation program of flood control is prepared for principal rivers	13	26	5
Roles and functions in the implementation of flood control projects for principal rivers are not clearly delineated	11	22	6
Importance of flood control projects for principal rivers is not well recognized/understood by the government as well as the people	12	24	5
Coordination between related agencies of flood control projects is not made to	14	28	4

effectively implement the projects			
Operation and maintenance for flood control facilities are not fully undertaken.	32	64	2
Provision of technical assistance	22	44	2
Conduct of information and education campaign regarding the importance of flood control works	5	10	4
Training of direct beneficiaries in the operation and maintenance of flood control work	6	12	3
Monitoring and feedback	10	20	2
No operation and maintenance budget and no team that would monitor all flood control	46	92	1

The data presented in Table 5 highlights the problems encountered by the Municipality of Lapaz in its flood control system. The frequency (f) represents the number of respondents who identified each problem, while the percentage (%) indicates the proportion of respondents who identified the problem out of the total respondents. The rank shows the relative ranking of each problem based on the percentage of respondents who identified it.

Several notable problems emerge from the data. The most frequently identified problem is "No operation and maintenance budget and no team that would monitor all flood control" with a high frequency of 46 and a corresponding percentage of 92%, ranking it as the top problem. This indicates a significant challenge in securing adequate funding and establishing a dedicated team for the regular maintenance and monitoring of flood control facilities.

Other prominent problems include the "Choice of projects and priority in implementation dictated more by political expediency rather than by actual appropriateness and capability," which was identified by 39 respondents (78%), ranking it as the second most critical problem. This suggests the need for a more objective and evidence-based approach in decision-making to ensure the effectiveness and appropriateness of flood control projects.

Additionally, the lack of coordination and consultation with other related agencies during the planning period, insufficient design relative to the physical condition of the river and flooding, and the absence of comprehensive studies were also identified as significant problems.

4. CONCLUSION AND FINDINGS

In conclusion, the findings from the assessment of the flood control system in the Municipality of Lapaz reveal a positive overall picture with outstanding ratings in prevention and mitigation, preparedness, response, and rehabilitation and recovery measures. These ratings indicate a strong consensus among the respondents regarding the effectiveness and implementation of these measures.

The prevention and mitigation measures received particularly high ratings, reflecting commendable efforts in infrastructure planning, environmental compliance, and the adoption of various preventive measures. The municipality's focus on slope protection, non-structural measures, reforestation, watershed protection activities, and solid waste management demonstrates a proactive approach to reducing flood risks and ensuring community safety.

Similarly, the preparedness measures indicate a high level of agreement and satisfaction with the municipality's approach to infrastructure design, backup capabilities, local and private sector participation, and public awareness programs. However, there is a need for continued attention to budget allocation to further enhance the flood control system.

In terms of response measures, the outstanding ratings highlight the municipality's commitment to governance, the delivery of basic services, surveying, prioritization of flood control works, and interagency coordination. These measures contribute to efficient and coordinated responses during flood events.

The rehabilitation and recovery measures received a mix of outstanding and very satisfactory ratings, indicating a generally positive perception among the respondents. The municipality's emphasis on close coordination, restoration of infrastructure, support for livelihoods, and resilient community facilities reflect a commitment to long-term recovery and resilience.

However, the assessment of problems encountered by the municipality in its flood control system highlights several challenges. The lack of operation and maintenance budget, inadequate coordination with related agencies, and political expediency influencing project choices were identified as significant issues. These findings suggest the need for improved funding, coordination, and decision-making processes to address the identified problems and enhance the effectiveness of the flood control system.

Overall, the findings emphasize the Municipality of Lapaz's proactive approach to flood control, with commendable efforts in prevention, mitigation, preparedness, response, and rehabilitation. While there are areas for improvement, the outstanding and very satisfactory ratings reflect the municipality's commitment to ensuring the safety, well-being, and resilience of its community in the face of flood events.

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