

INTEGRATED MULTI-HAZARD ACTION PLAN FOR BARANGAY LINGGA AND PARIAN, CALAMBA CITY, MITIGATING TYPHOON IMPACTS, FLASH AND SEVERE FLOODING, DENGUE AND ASSOCIATED PUBLIC HEALTH RISK

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I. Abstract

This summary presents the highlights of the Integrated Multi-Hazard Action Plan addressing typhoon impacts, flash floods and severe flooding, dengue, and other associated public health risks in Calamba City, particularly barangays Lingga and Parian. The city's geographical location and the effects of climate change make it highly vulnerable to these hazards. In addition, the city is considered a catch basin for Silang, Cavite, and Santo Tomas, Batangas. Flood events due to weather disturbances create stagnant water in low-lying areas, providing breeding grounds for mosquitoes, particularly *Aedes aegypti*, the primary vector. Another factor is the prolonged submersion of the community in the floodwater, which causes the IDPs to stay in the evacuation center, that make the more vulnerable to different communicable diseases like influenza-like illness due to the crowded evacuation center, and the availability of the facility was not sufficient.

The three-year action plan (2027-2030) focuses on infrastructure improvement, early detection of dengue cases, enhancement of the early warning system, strict implementation of policies, and interagency coordination. Monitoring and evaluation mechanisms are integrated to track the progress of the project implementation. This initiative aims to strengthen Calamba City, particularly the two barangays mentioned, in terms of disaster resilience and the public health system.

Keywords: Flooding, Flash Flood, Dengue, Influenza -like Illness, Calamba City, Barangay Lingga and Parian.

II. Introduction

The Philippines is widely recognized as one of the most hazard-prone countries in the world due to its geographical location and geological characteristics. Moreover, the country lies within the western Pacific typhoon belt, adjacent to the Pacific Ocean. Every year, the country receives an average of nine (9) landfalling Tropical Cyclones (TCs) with a total of 19-20 Tropical Cyclones (TCs) (Cinco et al. al 2016).

The country is blessed with oceans, rivers, lakes, and streams, but the weather events can release massive amounts of water, causing flooding. These events cause widespread destruction, with

flash floods being one of the most recurrent and devastating hazards. According to PAGASA (2018), the country experiences an average of 20 typhoons annually, five of which are destructive enough to trigger flash floods, particularly in low-lying and coastal areas. Additionally, monsoon- induced floods play a significant role in shaping the country's hydrological landscape, particularly during the rainy season. Also known as *Habagat*, this monsoon brings heavy rainfall to the country, often for extended periods. This type of flooding is more common during the wet season, which typically runs from June to October.

2.1. Background

Calamba City is divided into 54 barangays with 149.50 square kilometers (PSA), Calamba city is the largest Local Government Unit (LGU) of the Province of Laguna and is eight percent of the province's total land area. The city is politically subdivided into 54 barangays, composed of 37 urban and 17 rural barangays. According to the Land Coverage Map of the National Mapping and Resource Information Authority (NAMRIA),

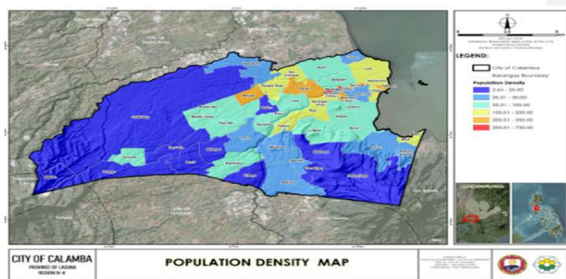


Figure 1 Population Density Map

Above are the barangays that are geographically located in Laguna de Bay and along the San Juan River and San Cristobal River. These barangays are the most affected when typhoons strike and during continuous heavy rains. Most of these barangays had prolonged flooding that lasted for months, and the flood water was above 1 meter.

Table 1: Number of Dengue Cases by Classification January 1-December 31, 2019

Case Classification	No.of Cases	Percentage
Confirmed	28	0.9
Probable	2266	71.4
Suspect	881	27.7
Total	3175	100
Clinical Classification		
Dengue with Warning signs	1720	54.2
Dengue without Warning Signs	1426	44.9
Severe Dengue	29	0.9
Total	3175	100

Source: City Health Office

Based on the data, 28 are confirmed cases, 2266 are probable, and 881 are suspected dengue cases, for a total of 3175 cases in 2019. And based on the

classification, 29 of the cases are categorized as severe dengue.

Table 2 Number of influenza-like illness per month 2019-2025

Month	2019	2020	2021	2022	2023	2024	2025
Jan	8	30	20	26	23	29	9
Feb	1	31	34	4	2	25	40
March	7	8	49	2	17	26	32
April	2	11	119	9	14	33	36
May	2	6	188	8	20	42	29
June	4	6	196	16	17	22	21
July	6	14	131	19	2	47	35
Aug	11	11	94	49	4	89	51
Sept	34	12	58	24	5	67	85
Oct	34	13	32	19	8	87	99
Nov	18	8	13	26	5	14	6
Dec	33	20	9	12	2	2	48
Total	160	170	943	216	140	483	491

Source: City Health Office -Surveillance

As we can see during 2019-2025, 1,661 cases out 2,603 total cases of were reported from June to December considering this month are mostly rainy season where in the community stays in the evacuation center where they become more vulnerable since the space on the area is crowded where disease is easily transmittable specially to the vulnerable sectors.

Another factor is mostly of the houses in the community.

III. Scope and Limitation

This plan targets specific knowledge gaps regarding mitigating the effects of typhoon impact, such as flooding and flash floods, dengue, and associated public health risks on Barangay Parian and Barangay Lingga. While comprehensive in its approach, certain limitations remain. Several factors may hinder its successful implementation and the execution of its proposed actions.

Its time frame span is from 2027-2030, allowing for phased implementation and continuous improvement, with the understanding that its immediate focus is on Barangay Parian and Lingga;

its lessons and strategies may eventually inform broad initiatives across Calamba City.

IV. Methodologies of the Plan

The plan was developed through:

- Quantitative data collection: Historical data of dengue cases, incidents of flood, and other health-related data.
- Qualitative assessment: Key informant interviews and focus group discussions.
- Risk Mapping: Flood composite map, population density map using Geographic Information System (GIS).
- Literature review: Global and local reports on typhoon impacts, dengue cases, and influenza-like incidents
- Stakeholders consultation: Barangay Officials, City Planning and Development Office, City Disaster Risk Reduction and Management Office, and City Health Services Department.

4. Assumptions of the plan

First, it assumes that the LGU may steadfastly and continuously support for the plan in four (4) thematic areas of DRRM. This encompasses political support and distribution of essential supplies, but also the commitment to bolstering the capacity and knowledge building, skills enhancement, and strategic management of barangay disaster DRRM initiatives. And also, to strengthen the implementation of the NO BUILDING ZONE in danger zone areas.

Second is to encourage the people in Barangay Parian and Lingga to have active participation in all the barangay, city, and province DRRM initiatives. Without community participation, the best practices and programs are nothing.

V. Situational Analysis

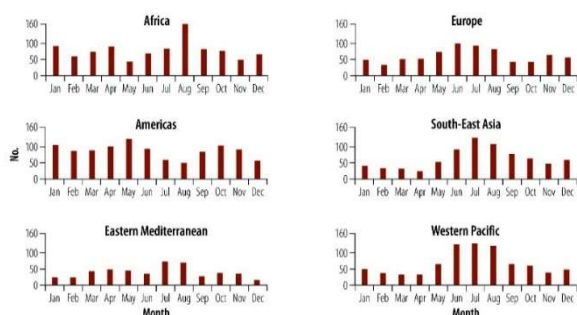


Figure 2 Number of floods per month by WHO region 1990-2022.

From 1990 to 2022, 4713 floods were recorded in 168 countries, which affected > 3.2 billion people, caused 218 353 deaths, and were responsible for more than 1.3 trillion United States dollars of economic losses. The WHO Western Pacific Region had the most people affected by floods (> 2.0 billion), accounting for 63.19% (2 024 599 380/3 203 944 965) of all affected populations. The South-East Asia Region had the most deaths (71 713, 32.84%). The African and Eastern Mediterranean Regions had the highest number of people affected and killed by floods per 100 000 population in 2022. The odds of floods causing more than 50 deaths were significantly higher in low-income countries (adjusted odds ratio: 14.34; 95% confidence interval: 7.46 to 30.04) compared with high-income countries. The number of people affected and mortality due to floods declined over time.

The survey was conducted through face-to-face interviews with the support and approval of the Barangay Captains and barangay officials.

VI. Results of the Conducted Survey

The survey was conducted through face-to-face interviews with the support and approval of the Barangay Captains and barangay officials.

Part I. Demographic Profile

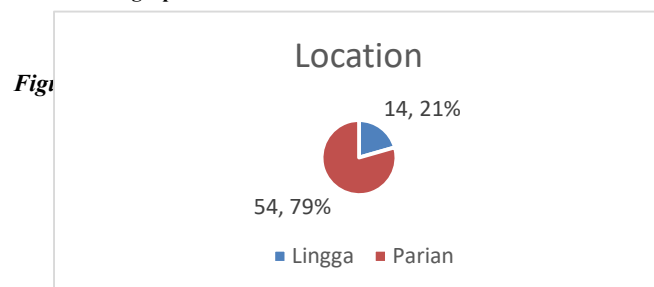


Figure 3: Respondents of barangays.

Figure 3 illustrates the respondents from Barangay Lingga and Parian.

The samples were selected using the proportional random sampling method for the 68 respondents. They were divided according to the population of Barangay Parian and Lingga. 80% or 54 respondents are chosen from barangay Parian with

a population of 29,608 and 20% or 14 respondents from Barangay Lingga with a population of 7,174.

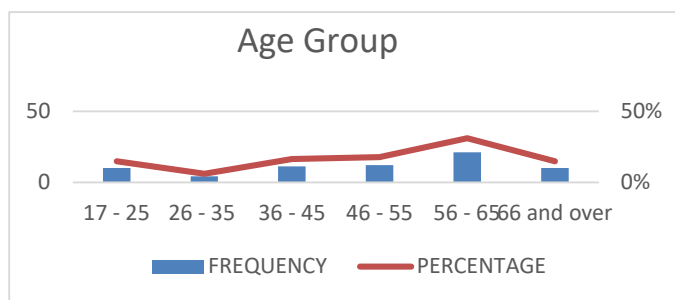


Figure 4. Age Range of Respondents

Figure 4 shows that the highest age group was 56-65 with 31%, followed by 46-55 with 17%, 17-25 with 15%, and 66 and over, both reaching 15%, 36-45 with 16%, and lastly 26-35 with 6%. Research on older adults in disaster contexts highlights several critical factors: 1. Age-related physical limitations, cognitive impairment, and chronic health conditions significantly impact disaster preparedness and response capabilities. 2. Community involvement, social support, and neighbor interactions are crucial facilitators of preparedness among older adults (Liao, Hu., 2025). The effects of age and disability on disaster vulnerability were clearly seen among elderly individuals trapped in nursing facilities during Hurricane Katrina. Moreover, it is estimated that individuals ages 65 and older represented over 70 percent of the fatalities from Hurricane Katrina.

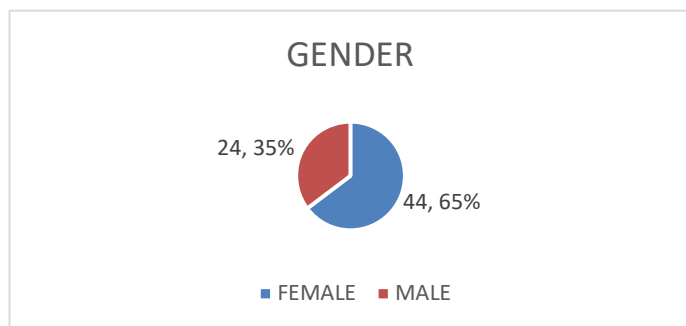


Figure 5. Gender of the Respondents

Figure 5 presents the distribution of respondents according to gender. Out of the total number of respondents, **44 (65%)** are female, while **24 (35%)** are male. This indicates that female respondents constitute the majority of the sample.

The data reveal a moderate imbalance in terms of gender representation, with a higher proportion of female participants compared to male participants. This may be attributed to factors such as greater availability or willingness of female respondents to participate in the study, or the characteristics of the target population.

Table 2 Respondents by Occupation

Occupation	Frequency	Percentage
AID	1	1%
ALUMINUM STALLER	1	1%
BARBER	1	1%
BHW	5	7%
BNS	1	1%
BPSO	7	10%
BUSINESSMAN	1	1%
CLERK	2	3%
COMPANY	1	1%
DAY CARE AID	2	3%
DRIVER	3	4%
GOVERNMENT EMPLOYEE	1	1%
HOUSEWIFE	3	4%
MESSENGER	1	1%
NONE	15	22%
OFFICE STAFF	1	1%
OPERATOR	1	1%
PRODUCTION	1	1%
RESPONDER	1	1%
RETIRED	1	1%
SECRETARY	1	1%
STREET VENDOR	1	1%
STUDENT	6	9%
TANOD	3	4%
TEACHER	1	1%
UTILITY	2	1%
VAWC	2	1%
VENDOR	2	1%
VOLUNTEER	1	1%
TOTAL	68	100%

Table 2 shows the diverse occupational distribution with “NONE” (22%) being the largest category, followed by BPSO (10%) and TANOD (9%). The respondents are a combination of community-related roles (BPSO, Tanod, BNS, VAWC, Day Care Worker, and BHW), Informal sectors (Housewife, Vendors, Barbers, and Volunteers), Professionals

(Teachers, Company workers, Office staff), Students, retired professionals, and non-working professionals.

Part II. Risk Perception and Awareness

Presents the respondents' assessment of their risk perception and awareness regarding the hazards of typhoon impacts, flash and severe flooding, dengue, and influenza-like illness (ILI). The overall weighted mean of 3.56, with a verbal interpretation of "Strongly Agree," indicates that respondents possess a high level of awareness and understanding of the hazards affecting their community. This suggests that residents are generally knowledgeable about the risks they face and recognize the importance of disaster preparedness and public health awareness.

Among the indicators, the statement "I believe that the community knows which part of the purok experiences typhoon impacts, flash and severe flooding, dengue, and ILI" obtained the highest weighted mean of 3.82, ranking first and interpreted as "Strongly Agree." This finding demonstrates that respondents are highly familiar with the hazard-prone areas within their community. Such awareness is essential in promoting informed decision-making, timely evacuation, and the implementation of appropriate preparedness measures before and during disaster events.

Part III. Community Preparedness and Capacity

presents the respondents' assessment of the community preparedness and capability in responding to the hazards of typhoon impacts, flash and severe flooding, dengue, and influenza-like illness (ILI). The overall weighted mean of 2.71, with a verbal interpretation of "Agree," indicates that respondents generally perceive their community as moderately prepared and capable of responding to disaster and public health emergencies. While the findings reflect a positive level of preparedness, certain areas require further improvement to strengthen overall community resilience.

Among the indicators, the statement "The community has sufficient information when needed to evacuate due to the hazards of typhoon impacts, flash and severe flooding, dengue, and ILI" obtained the highest weighted mean of 3.18, ranking first and interpreted as "Agree." This finding suggests that respondents believe disaster-related information, evacuation advisories, and warning systems are generally accessible and effectively communicated to the community. Timely dissemination of information enables residents to make informed decisions and undertake appropriate protective actions before and during emergencies.

Part IV. institutional preparedness and capability

Presents the respondents' assessment of the **institutional preparedness and capability** of the Barangay Disaster Risk Reduction and Management Committee (BDRRMC) in addressing the hazards of typhoon impacts, flash and severe flooding, dengue, and influenza-like illness (ILI). The overall weighted mean of **2.91**, with a verbal interpretation of "**Agree**," indicates that respondents generally perceive the BDRRMC as capable and adequately prepared to perform its disaster risk reduction and management responsibilities.

Among the three indicators, the statement "The BDRRMC has enough manpower to effectively address the hazards of typhoon impacts, flash and severe flooding, dengue, and ILI" obtained the highest weighted mean of **2.99** and ranked **first**. This finding suggests that respondents have confidence in the availability and adequacy of personnel assigned to disaster preparedness, emergency response, and public health-related activities within the barangay. Adequate manpower is considered essential in ensuring timely implementation of disaster management interventions, emergency operations, and community assistance during disaster events.

The statement "The BDRRMC has the capability to address the hazards of typhoon impacts, flash and severe flooding, dengue, and ILI" ranked second with a weighted mean of 2.91, also interpreted as "Agree." This result reflects respondents' belief that the BDRRMC possesses the necessary knowledge, skills, and organizational capacity to manage multi-hazard situations. It further indicates confidence in the committee's ability to coordinate disaster risk reduction initiatives, implement preparedness measures, and collaborate with relevant agencies during emergencies.

Part VI. Community Disaster Management

Demonstrates community disaster management with a weighted mean of 2.75("Agree"). A 2.86 mean (rank 1) for Coordination between barangay and other agencies is very vital in disaster management; without this, there is a possible failure of the response operations or worse, lead to miscommunication that causes mortality or injury to the community.

Part VII Response Management

Demonstrate response management weighted mean 3.08 (agree). The community received enough assistance, such as medical, food, and non-food items, immediately during the disaster (3.09 rank 1). The affected families received assistance immediately from the local government unit. During Typhoon Kristine, approximately 28,566 families received food and non-food items, and medicines were distributed in the evacuation center.

The community has an effective and efficient response (3.07 rank 2) when disaster strikes, resulting in zero casualties in the city of Calamba for more than 5 years. Aside from the BDRRMC, each barangay has a maximum of 10 members of a barangay quick response team who serve as the first responders of the barangay. They are trained by the local government unit to enhance their capability in disaster management.

Part VIII Rehabilitation and Recovery Management

Demonstrate Rehabilitation and Recovery Management weighted mean 2.40 agree). The local government unit provided financial assistance (2.41,

rank 1). During Typhoon Kristine 7, 694 families with partially and totally damaged houses received emergency shelter assistance amounting to approximately Php 93,000,000. Fisherfolks and farmers also received financial assistance amounting to approximately Php 3,000,000.00.

A mean (2.39, rank 2) for LGUs has livelihood programs, but it is open to all, including the affected families during emergencies, but it needs to be monitored and evaluated.

PESTEL ANALYSIS

Political Factor

An active CDRRMC, an established office, and a 24/7 Emergency Operations Center, enabling continuous monitoring, coordination, and response. The use of Pre-Disaster Risk Assessment (PDRA) before the disaster strikes further strengthens anticipatory planning and preparedness. However, incomplete Barangay DRRM Plans indicate gaps in planning consistency and implementation across barangays.

Political leadership and governance structures further reinforce DRRM implementation. The City Mayor, as chair of the MDRRMC, provides direction and support, while the council's multi-sectoral composition, including CSOs, private sectors, Faith based organization and academe, enhances coordination and shared responsibility. This promotes more organized and collaborative disaster management efforts.

Economic Factor

Economic conditions significantly influence the capacity of Calamba City to implement disaster risk reduction and management (DRRM) programs. The local economy is primarily driven by agriculture, tourism, industry, and small-scale enterprises, which shape employment patterns, household income, and the financial resources available for disaster preparedness, response, and recovery.

Social Factor

Barangay Lingga and Parian compose of total combined population of 32,471. These include landowners, renters, and informal settlers. The community also hosts elementary and high schools

that serve as the evacuation center during the impact of typhoons, flash and severe flooding, dengue outbreak, and influenza-like illnesses. The barangay has a Memorandum of Agreement with the school principal that the school can be used in case of disaster for a maximum of 15 days.

Technological Factor

The barangay utilizes their Mega phones and PA system as an early warning system for awareness of the community in times of disaster. Geographic Information Systems (GIS) technology available with the LDRRMO has proven valuable for vulnerability assessment and flood risk mapping in Philippine coastal barangays, enabling the generation of hazard maps, vulnerability maps, and disaster risk maps that inform local planning and are communicated to the barangay level.

Environmental Factor

Barangays Lingga and Parian are highly exposed to typhoon impacts, flash and severe flooding, and rain-induced landslides due to their geographic location. Their mountainous, forested, and agricultural landscapes, along with rivers and low-lying areas, increase environmental vulnerability. Improper waste management and limited garbage collection further contribute to these risks, while climate change intensifies hazards through more frequent and severe weather events.

Legal Factor

The barangays Lingga and Parian have several frameworks that shape and govern disaster management within the context of Philippine national legislation. First and foremost are the Philippine Disaster Risk Reduction and Management Act (RA10121) of 2010 that provides the overarching legal framework for disaster management activities, including the establishment of the BDRRMC. This law was the basis for the development of Barangay executive orders for the development of the BDRRMC and creation of the BDRRM Plan, including the allocations of the LDRRM Fund. The barangays also developed contingency plans for flooding and identified

community risks. Also, the implementation of the land use plan and zoning is generally poorly enforced based on the evidence of informal settlers in hazard-prone areas.

SWOC ANALYSIS

Strengths

Disaster Prevention & Mitigation: One of the noticeable strengths of Barangay Lingga and Parian was they are in line with the national framework established under the Republic Act of 2010 (RA 10121) to have an established and functional Barangay Disaster Risk Reduction and Management Committee at the local level, ensuring even in a small community they have the initiatives to ensure an organize structure to prepare, response and recovery during a disaster. Based on the survey, the community recognizes that their BDRRMC has the capability and adequate manpower to address the needs of the community during a disaster

Disaster Preparedness: One of the strengths of Barangay Lingga and Parian are they have an indigenous water level monitoring system painted in the vicinity of the barangay, with make the people aware when to evacuate. They also use a paging system to warn the people that there is a weather disturbance that may affect their locality.

Disaster Response: One of the strengths is the availability of volunteers in Barangay Parian and Lingga; this is called the Barangay Quick Response Team (BQRT) that serves as the first line of defense during the disaster since they are appointed by their brgy. Captains; they are also residents of the said barangay. Their familiarity with the easy access of the barangay is really vital during the response period, and they also undergo various training through CDRRMO (SFA-BLS, WASAR, CVERT, etc.).

Disaster Recovery and Rehabilitation: Government support from the national, provincial, and local levels provides financial assistance like emergency shelter assistance programs, financial aid, and financial support for farmers and fisherfolks

Weaknesses

Prevention & Mitigation: One of the weaknesses of Barangay Parian and Lingga has limited technical training programs for the formulation of the plans and other DRRM policies. Many of the community groups, volunteers, and local officials and volunteers lack the technical capabilities to effectively plan, implement, and disaster prevention initiatives.

Preparedness: Despite the high level of awareness of the community they still lack disaster facilities during evacuation since they have only one designated evacuation center that can't provide all the required facilities. Resource limitations at the household level also represent a significant weakness in preparedness, identifying minimal financial capacity for purchasing "emergency bags" since they are seldom prioritized. The community understands what preparedness requires based on the results of the survey; however, they cannot afford to implement recommended measures.

Response: One of the weaknesses is lack of equipment, vehicles and supplies that is crucial in disaster response. One of the weaknesses is the communication breakdown since the barangay has only one generator set available in the barangay, so when the power supply shutdown the communication will be difficult. The community also relies on the manual announcements.

Rehabilitation & Recovery: One of the weaknesses is there is limited programs for Disaster rehabilitation and recovery that is included in term BDRRM Plan majority of the programs focuses on the preparedness and mitigating measures. The BDRRMC also has lack of training in conducting post damage needs analysis

Opportunities

Prevention & Mitigation: Opportunities for Barangay Lingga and Parian in Calamba City span across economic development, community services, and infrastructure improvements. Current initiatives and potential areas for growth include

serbisyo caravan that includes medical, legal, birth certificate, and other government services.

Preparedness: There is also growing emphasis on school-based disaster education, creating opportunities to build a long-term preparedness culture by training children who then influence family behaviors in the communities of Lingga and Parian.

Response: Several opportunities exist for strengthening disaster response in the capacity of the BQRT provided by the LGU. Network strengthening through deliberate cultivation of inter-organizational relationships.

Rehabilitation & Recovery: Through the City Social Services Department conducted Cash for work or food-for-work is an opportunity for faster recovery of affected communities. The community also receives donations from private companies and LGUs, for example, construction materials.

Challenges

Prevention & Mitigation: One of the major challenges of these two barangays are the intensifying impact of climate change, which frequently experiences typhoon impact, flash, and severe flooding to the locality. Due to this severe flooding the flood water stays in the community for more than weeks or even months that make them more vulnerable to other disease like dengue and influenza like illness.

Preparedness: Socioeconomic barriers create persistent obstacles, as low household income fundamentally limits the ability to retrofit their houses, procurement of Go bags, insurances are not their priority since the main priority is their everyday living.

Response: Coastal barangays like Lingga at Parian confront formidable response challenges that can overwhelm even well-prepared systems. Overwhelming catastrophic events represent the ultimate challenge. Like of example during typhoon Kristine, all the equipment, vehicles and supplies are pre-positioned but due to over whelming affected populations, damages the barangays immediately asked assistance from the LGU to provide the basis needs of the affected population. And also, the untoward incidents happen like broken electrical

lines that makes the response operations more challengeable due to existing flood water in the area. **Rehabilitation & Recovery:** Due to the effect of climate change, there is an overlapping or successive events that impede the recovery process and introduce of new hazard. Due long exposure to the flooding area the community have hard time to rebuild their houses due to hard time of delivery of services due to submersion of the roads in the area.

VII. GOALS AND OBJECTIVES

Disaster Prevention and Mitigation

Goal 1: To established efficient and comprehensive policies, plans and controls to address the effect of typhoon impact, flash and severe flooding, dengue and influenza like illness by 2030.

1.1 To ensured readiness of infrastructures in the city of Calamba vis-à-vis identified hazards. To institutionalized timely, response, context and culture-specific early warning systems.

1.2 To protect community health by reducing the spread, complications, and impact of dengue and influenza-like illness through effective prevention and early detection.

B. Disaster Preparedness

Goal 2: By the end of 2030, strengthen barangay disaster and health emergency preparedness by ensuring 85% trained response teams, increase level of awareness and readiness, resulting in more resilient to multiple hazards.

Objectives:

2.1 To equipped governments, institutions, communities, families and individuals with necessary skills and awareness to respond and cope with the adverse impacts of disasters.

2.2 To eliminated the use of schools as primary evacuation centers and provide dignified, hazard-resilient shelters for 85% of the local population.

2.3 To procure essential medicines and relief supplies to evacuation centers to ensure they are available for immediate community support.

C. Disaster Response and Early Recovery

Goal 3: To deliver risk-based, timely, and anticipatory response actions that address basic needs, protect life, and meet the immediate requirements of

communities and government, while ensuring affected populations can continue living with dignity and that the worsening of emergency situations is prevented or minimized by 2030.

Objectives:

3.1 To evacuate safely, preemptively and immediately, affected communities and ensure their safety.

3.2 To ensure the timely delivery of basic life-saving assistance, including food, water, shelter, and medical support, to affected communities during emergencies.

D. Disaster Rehabilitation and Recovery

Goal 4: To accelerate recovery from disaster losses through rehabilitation and recovery programs that are aligned with sustainable development and the “Build Back Better” principle by 2030.

Objectives:

4.1 Restored and improved living conditions of affected populations within 6–24 months after disasters.

4.2 To Assessed damage, losses and damage needs during disaster as basis for formulation of rehabilitation and recovery programs

4.3 To ensured that recovery programs are implemented in accordance with the “Build Back Better” principle for long-term resilience.

VIII. Action Plan

I. Disaster Prevention and Mitigation

Goals	To established efficient and comprehensive policies, plans and controls to address the effect of typhoon impact, flash and severe flooding, dengue and influenza like illness by 2030.
Objectives	1.1 To ensured readiness of nfrastructures in the city of Calamba vis-à-vis identified hazards. To institutionalized timely, response, context and culture-specific early warning systems. 1.2 To protect community health by reducing the spread, complications, and impact of dengue and influenza-like illness

	through effective prevention and early detection.
PPAs	1.1.1 Continuous Flood Programs and riprapping projects
	1.1.2 Conduct of structural Integrity of housing, building and critical infrastructure
	1.1.3 Construction of underground detention tanks or "retarding basins" under public parks or plazas
	1.1.4 Lot acquisition for new evacuation center
	1.1.5 Retrofitting of existing barangay halls, multi purpose hall etc.
	1.2.1 Auditing and installation of additional signages along danger zone and accident-prone areas.
	1.2.2 Installation of CCTV at high-risk areas
	1.2.3 Procurement of Communication Equipment

II. Disaster Preparedness

Goals	By the end of 2030, strengthen barangay disaster and health emergency preparedness by ensuring 85% trained response teams, increase level of awareness and readiness, resulting in more resilient to multiple hazards.
Objectives	2.1 To equipped governments, institutions, communities, families and individuals with necessary skills and awareness to respond and cope with the adverse impacts of disasters. 2.2 To eliminated the use of schools as primary evacuation centers and provide dignified, hazard-resilient shelters for 85% of the local population. 2.3 To procure essential medicines and relief supplies to evacuation centers to ensure they are available for immediate community support.
PPAs	2.1.1 Continuous conduct DRRM and Health related training and seminars (strength in preparedness)
	2.1.2 Continuous IEC materials distributed
	2.1.3 Continuous coordination with barangays officials regarding their preparedness measures. (

	2.2.1 Construction of Warehouse
	2.3.1 Procurement of Welfare goods
	2.3.2 Procurement of Vaccines and medicines
	2.3.3 Procurement of Dengue Duo Kit
	2.3.4. Procurement of GO Bags

III. Disaster Response and Early Recovery

Goals	To deliver risk-based, timely, and anticipatory response actions that address basic needs, protect life, and meet the immediate requirements of communities and government, while ensuring affected populations can continue living with dignity and that the worsening of emergency situations is prevented or minimized by 2030.
Objectives	3.1 To evacuate safely, preemptively and immediately, affected communities and ensure their safety. 3.2 To ensure the timely delivery of basic life-saving assistance, including food, water, shelter, and medical support, to affected communities during emergencies
PPAs	3.1.1 Enforcement of Pre-emptive Ordinance (in coordination with PNP, BFP and other agencies
	3.1.2 Implement a resource tracking system to monitor the allocation and distribution of aid during emergencies.
	3.1.3 Activation of Standard Operating Procedures (SOP) for joint response operations among CSSD, CDRMD, CHSD, BFP and PNP.
	3.2.1 Distribution of feeding, micronutrients, vermin, mosquito nets, aqua tabs, portalets.
	3.2.2 Distribution of relief goods.
	3.2.3 Distribution Emergency Response Kit

IV. Disaster Rehabilitation and Recovery

Goals	To accelerate recovery from disaster losses through rehabilitation and recovery programs that are aligned with sustainable development and the "Build Back Better" principle by 2030.
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Objectives	Restored and improved living conditions of affected populations within 6–24 months after disasters. 4.2 To Assessed damage, losses and damage needs during disaster as basis for formulation of rehabilitation and recovery programs 4.3 To ensured that recovery programs are implemented in accordance with the “Build Back Better” principle for long-term resilience
PPAs	4.1.1 Provision of ESA (Emergency Shelter Assistance)
	4.1.2 Distribute financial assistance to affected farmers
	4.1.3 Conduct livelihood training courses (e.g., , dressmaking, baking)
	4.2.1 Conduct detailed Post Disaster Needs Assessment
	4.2.2 Conduct Infra Audit
	4.3.1Coordination with NIA for rehabilitation of irrigation systems and DPWH for roads and bridges (strength in response)
	4.3.2 Rehabilitate damaged roads, bridges, and flood control systems with climate smart designs-Challenge rehab and recovery
	4.3.3 Post-Calamity Health Sweep(weakness in prevention)

IX. Monitoring and Evaluation

The Multi-Hazard Action Plan for Lingga and Parian, Calamba City provides a comprehensive and strategic framework for reducing typhoon impacts, flash,severe flooding,dengue and other public health risk. By integrating hazard assessments, community-based planning, and evidence-based Programs, Projects, and Activities (PPAs) across the four thematic areas DRRM, the plan addresses existing vulnerabilities while strengthening the overall disaster resilience of the three barangays. It emphasizes collaboration among the local government, barangay officials, national government agencies, partner organizations, and community members to ensure that disaster risk

reduction measures are effectively implemented and sustained.

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XII. ACKNOWLEDGEMENT

The author expresses her deepest gratitude to Almighty God for His boundless guidance, strength, and wisdom throughout this endeavor. God’s divine presence provided him with clarity, resilience, and

purpose in the completion of this action plan. All glory and honor belong to Him;

Likewise, this work is dedicated to her children Francis Kayven Tacana, Zian Khyle Tacana, and Jhaiven Tacana, who remain his greatest source of strength and inspiration in the pursuit of higher learning. Their unwavering support has been the cornerstone of this achievement;

To Mr. Edward Landayan, her thesis adviser, professor, mentor, and critic, for the guidance, patience, and invaluable support throughout the completion of this study. Your expertise, constructive feedback, and encouragement greatly contributed to the improvement and success of this research.

To Dr. Amante Moog, her mentor and professor, for sharing his knowledge and experience and giving encouragement to pursue this journey.

To Dr. Nickie Boy Manalo, for reminding her of the pointers and considerations to be taken into account in the fulfillment of the action plan.

The author is profoundly grateful to Hon. Roseller H. Rizal, City Mayor of Calamba, for approving the proposal and recognizing its critical importance in strengthening public safety, promoting disaster preparedness, and enhancing community resilience. His visionary leadership and unwavering commitment to advancing disaster risk reduction efforts served as a major inspiration for the development of this action plan;

Deepest Acknowledgement to Hon. Darwin Retusto, Barangay Captain of Barangay Lingga, together with his staff and administrator, for the support given to the researcher throughout Multi-Action, from the gathering of data all the way to the survey process. Also, to Hon. Rodnie Perez, Barangay Captain of Barangay Parian, together with his secretary, Mr. Jomar Tena, for their remarkable support to the study. Their dedication to grassroots governance and assistance in facilitating surveys was pivotal to the success of this research

Genuine thanks to the invaluable contributions of Dennis Lanzanas, City Planning and Development Coordinator, Mr. Mark Aaron Alchacubas, and Mr. Jerome Adviento, for providing essential data and technical insights critical to the plan's development.

Sincere thanks to the City Health Office of Calamba, headed by Dr. Rodrigo Esguerra, Mr. Boris Erang, and his colleagues, for their support and valuable inputs, especially in providing health-related data and guidance essential to this action plan. Their cooperation and dedication to community well-being greatly contributed to the completion of this work.

Deepest thanks to my City Disaster Risk Reduction and Management Office for allowing the researcher to have access to the files and documents that she will need to complete her study.

To her classmates, friends, coworkers, and others, for their valuable suggestions in improving the action plan and for their moral and emotional support.

And lastly, to her partner, Carlito Alcaraz, who pushed the researcher to pursue this course. His encouragement and moral support gave the researcher the courage to overcome all the hindrances that came along the way. Hope you're happy and smiling in heaven.

The authors of the books and references from internet websites the researcher used in this paper, for without them, this paper would not even exist.

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