Discussion Paper Series 2025-34

PROGRAM ON ALTERNATIVE DEVELOPMENT

Fostering Collaboration for Community-Based Disaster Risk Reduction and Management

A Case Study of Barangay Tatalon, Quezon City

Ma. Simeona M. Martinez, Eunice B. Santiago, and Junah Amor C. Delfinado

■ PROGRAM ON ALTERNATIVE DEVELOPMENT

Fostering Collaboration for Community-Based Disaster Risk Reduction and Management

A Case Study of Barangay Tatalon, Quezon City

Ma. Simeona M. Martinez, Eunice B. Santiago, and Junah Amor C. Delfinado

UP CIDS Discussion Paper Series
is published by the

University of the Philippines
Center for Integrative and Development Studies
Lower Ground Floor, Ang Bahay ng Alumni
Magsaysay Avenue, University of the Philippines
Diliman, Quezon City 1101

Telephone: (02) 8981-8500 loc. 4266 to 4268 / (02) 8426-0955
Email: cidspublications@up.edu.ph
Website: cids.up.edu.ph

cids.up.edu.ph

ISSN 2619-7448 (Print)
ISSN 2619-7456 (Online)

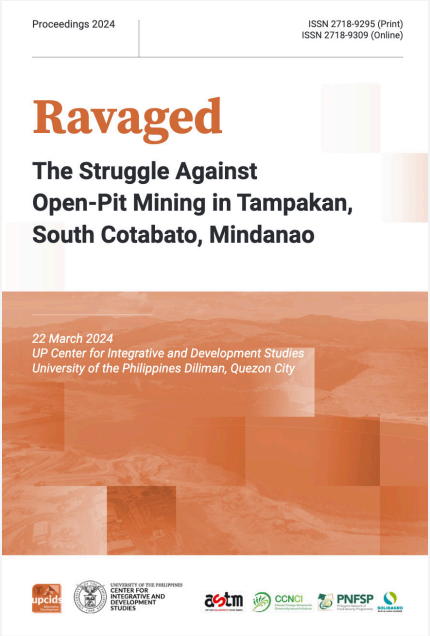
Cover image credit

"Participants identify and locate response strategies in Barangay Tatalon using the provided maps, based on Google imagery."

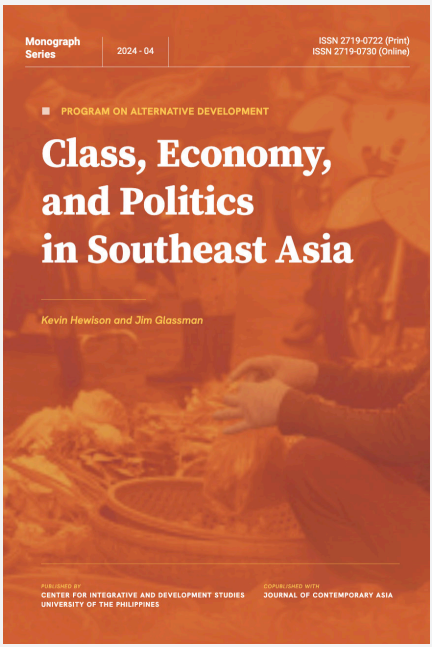
Photo by Eunice Santiago, UP CIDS Program on Alternative Development
Taken on May 4, 2024

Table of Contents

Download related policy papers for *free*



Ravaged: The Struggle Against Open-Pit Mining in Tampakan, South Cotabato, Mindanao



Class, Economy, and Politics in Southeast Asia

cids.up.edu.ph/collection-database

FOSTERING COLLABORATION FOR COMMUNITY-BASED DISASTER RISK REDUCTION AND MANAGEMENT

A Case Study of Barangay Tatalon, Quezon City

Ma. Simeona M. Martinez, Eunice B. Santiago, and Junah Amor C. Delfinado[1]

1 Ma. Simeona M. Martinez (mmmartinez@up.edu.ph) is a faculty member of the UP Diliman Department of Geography concurrently serving as Co-Convenor of the UP Center for Integrative Studies, Program on Alternative Development. Eunice B. Santiago (ebsantiago@up.edu.ph) and Junah Amor C. Delfinado (jcdelfinado@up.edu.ph) are researchers from UP Center for Integrative Studies, Program on Alternative Development.

INTRODUCTION

Local communities in the Philippines endure profound social and economic challenges due to hazard susceptibility and the frequency of disasters occurring in the country. According to the World Risk Report 2018, the Philippines ranked as the third most disaster-prone nation globally (UNDRR 2019). Between 2000 and 2016, natural disasters inflicted significant human and economic tolls, with over 23,000 lives lost and approximately 125 million individuals directly affected, highlighting the scale of devastation (Jha 2018, 4). The economic repercussions were equally staggering, with total damages estimated at $20 billion. This translates to an average annual loss of about $1.2 billion (4). An estimated 85.2 percent of the Philippines' production resources are reported to be vulnerable to disasters, while 50.3 percent of the country's total land area is classified as economically at risk (ADB 2012 quoted in UNDRR 2019). These conditions may also worsen with the threat of climate change impacts.

The poorest populations suffer the worst disaster impacts, including livelihood disruptions (Anttila-Hughes and Hsiang 2013). In Quezon City, over 95 percent of informal settler families across its six districts face flood risks of up to 0.5 meters in a 100-year flood scenario (Tanhueco et al. 2022), and the city records approximately 900 fire-related incidents annually. As first responders and most affected, marginalized communities are key in disaster mitigation and response.

This paper discusses the challenges and opportunities for implementing community-based disaster risk reduction and management (CBDRRM) in the Philippines. It outlines the preliminary steps taken to establish collaborative partnerships among researchers, students, community members, and advocacy groups to operationalize CBDRRM in a disaster-prone area within one of the largest urban settlements in the country. Examining local policy frameworks of disaster risk reduction efforts highlights the need to integrate disaster risk management into the broader development agenda to enhance community resilience. Using Barangay Tatalon in Quezon City as a pilot case, the paper provides insights and recommendations on the practical challenges and potentials for implementing CBDRRM at the grassroots level.

THE CASE FOR COMMUNITY-BASED DISASTER RISK REDUCTION AND MANAGEMENT

Disaster risk is defined in various ways within the disaster literature, but Kelman (2018, 286) identifies two common elements across these definitions: (1) the potential losses resulting from a hazard and (2) the possible negative outcomes or consequences of a disaster. UNISDR (2009, 25) describes disaster risk as "the potential disaster losses, in lives, health status, livelihoods, assets and services, which could occur to a particular community or a society over some specified future period." The institute further explained the purpose of disaster risk reduction, that is, "preventing new and reducing existing disaster risk and managing residual risk, all of which contribute to strengthening resilience and therefore to the achievement of sustainable development" (25).

White et al. (2004, 1) offer a more pragmatic definition of disaster risk reduction as "measures to curb disaster losses, through minimizing the hazard, reducing exposure and susceptibility, and enhancing coping and adaptive capacity." In other words, disaster risk reduction (DRR) encompasses strategies and policy measures designed to enhance resilience to future catastrophic events by fostering development that eliminates the underlying conditions that may lead to future disasters (White et al. 2004).

Community-based disaster Management (CBDM) emerged as a response to the challenges of economic, political, and environmental crises in the mid-1980s. Lorna Victoria (2003), former director of the Center for Disaster Preparedness, highlighted its roots in the Citizens' Disaster Response Center/Network (CDRC/N), founded in 1984, a period marked by widespread discontent with government responses and a series of disasters. This context underscored the need for an "alternative approach," leading to the development of a "citizenry-based and development-oriented disaster response and preparedness strategy" initiated by people's organizations (POs) and nongovernment organizations (NGOs) (CDRC 1990 cited in Victoria 2003). Since then, CBDM has been embraced by local communities, government agencies, NGOs, and local government units (LGUs).

Unlike top-down, state-led programs, community-based disaster management (CBDM) prioritizes community participation, viewing members as the "main actors" (Victoria 2003, 67). It focuses on the most vulnerable groups—

subsistence farmers, fisherfolk, indigenous peoples, the urban poor, informal workers, PWDs, and the elderly. Using participatory tools, CBDM ensures disaster risk assessments and management measures align with local needs. It values local knowledge and resources, with community members leading risk reduction efforts while NGOs and support groups serve as facilitators (Victoria 2003, 68).

Emmanuel Luna (2007) underscores the need to integrate DRR into local development planning to address the disproportionate risks faced by disadvantaged sectors of society. Poor communities often endure severe deprivation and confront numerous social challenges such as limited access to resources, inadequate institutional responses, and systemic powerlessness (Luna 2007, 2). Local development planning, as a people-centered approach, empowers (marginalized) communities by enhancing their well-being and enabling them to shape their futures. This approach emphasizes the importance of collective action and participatory mechanisms that include diverse sectors in development processes. Thus, community-based disaster risk reduction and management, from the perspective of community development, is "a comprehensive and participatory approach in reducing possible losses in the lives, properties, community resources and environment" due to hazards, which focuses on community empowerment by "transforming structures that generate inequity and underdevelopment" (9).

OPERATIONALIZING DISASTER RISK REDUCTION AND MANAGEMENT IN PHILIPPINE COMMUNITIES

The Philippine Disaster Risk Reduction and Management Act of 2010 (Republic Act [RA] No. 10121) addresses policy gaps by shifting from reactive disaster response to a proactive risk management approach: it underscores the participation of local actors and their local practices, as well as the involvement of civil society, in addressing the underlying factors of disaster risk (Agsaoay-Saño, n.d., 5). The Act mainstreams DRRM and climate change adaptation (CCA) towards community resilience by institutionalizing multi-scale policy mechanisms to ensure the integration of these approaches into development processes and planning (Philippine Disaster Risk Reduction and Management Act of 2010, §2).

To implement this, the NDRRMP outlines 23 outcomes under four thematic pillars: (1) Disaster Prevention and Mitigation; (2) Disaster Preparedness; (3) Disaster Response and Early Recovery; and (4) Disaster Rehabilitation and Recovery (OCD-PDPS 2020). A guide matrix for localizing the NDRRMP provides detailed recommendations on activities and projects, including updating zoning, land use, and building regulations based on risk information, as well as enhancing the capacity of local development councils and barangay development councils to formulate and implement risk-informed local development plans (OCD-PDPS 2020, 116–17).

The National Disaster Risk Reduction and Management Plan (NDRRMP) integrates DRRM into sustainable development, fulfilling the mandate of RA No. 10121, to set goals, objectives, and actions for risk reduction. Developed by the National DRRM Council through the Office of Civil Defense, the NDRRMP strengthens national and local capacities, institutionalizes risk reduction measures, addresses climate change impacts, and enhances preparedness and response (Agsaoay-Saño, n.d., 11).

THE BARANGAY DISASTER RISK REDUCTION AND MANAGEMENT PLAN

RA 10121 underscores disaster preparedness at all levels, from national to barangay. Section 12 mandates the establishment of Local Disaster Risk Reduction and Management Offices (LDRRMOs) in every province, city, and municipality, and Barangay Disaster Risk Reduction and Management Committees (BDRRMCs) in each barangay. These bodies oversee disaster risk management programs within their jurisdiction. Furthermore, section 12C defines their roles, including facilitating risk assessments and contingency planning. This involves developing a Barangay DRRM Plan and identifying priority hazards to create hazard-specific contingency plans.

COLLABORATION TOWARD CBDRRM: BARANGAY TATALON CASE STUDY

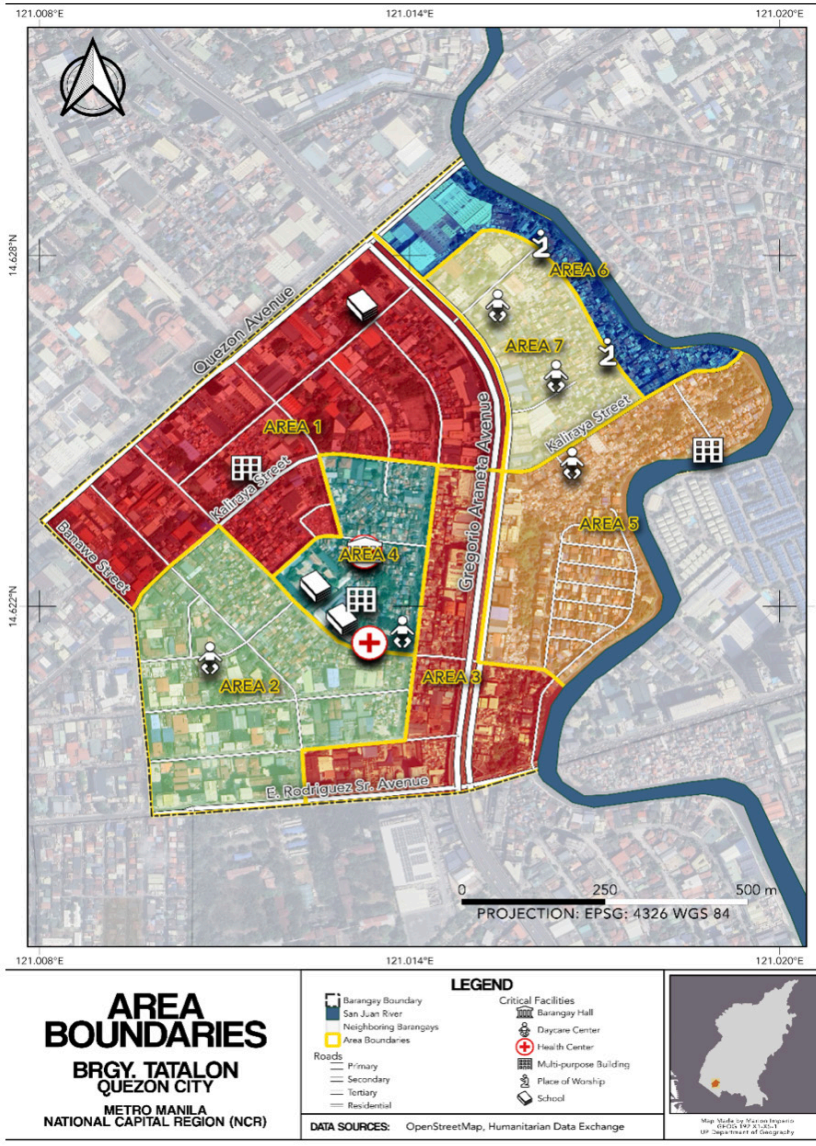
Given that the Barangay Disaster Risk Reduction and Management Plan (BDRRMP) serves as an integral tool for operationalizing disaster preparedness at the community level, as mandated by RA 10121, this paper examines its

application on Barangay Tatalon, a densely populated and geographically distinct area in Quezon City. It explores the challenges and opportunities of community-based disaster risk reduction and management strategies and the role of community and local governance in building resilience.

Providing more context on Barangay Tatalon, it covers an area of 96.26 hectares[2]. It was established in 1960 by the City Council of Quezon City through an ordinance defining the boundary and creation of the barrio of Tatalon. Ordinance No. 60-4581 was approved on 1 December 1960. It is subdivided into 107 puroks, with a population of 63,129 as reported in the 2023 barangay profile, making it the largest barangay in District 4 of Quezon City in terms of population. The barangay is bordered to the south by Eulogio Rodriguez Sr. Avenue, to the north by Quezon Avenue, to the east by the San Juan River, and to the west by Banawe Street. It has a mixed residential and commercial landscape, housing approximately 6,390 businesses (Tanggapan ng Punong Barangay ng Tatalon 2023).

An estimated 10,000 residents live in depressed areas across 10 settlement locations, with informal settlers occupying about 30 percent of the land (Tanggapan ng Punong Barangay ng Tatalon 2023). Below is a map that illustrates the landmarks, critical facilities, and transportation networks in the area.

2 The land area is based on the 2023 Barangay Tatalon Profile prepared by the Secretary of Barangay Tatalon.



■ **Figure 1.** Location map of Barangay Tatalon. Data source for the map: OpenStreetMap contributors; NAMRIA and PSA (published by the Humanitarian Data Exchange (HDX); Barangay Tatalon BDRRMP 2024; Fieldwork data from Geog 197 students of the 1st and 2nd semesters AY 2023-2024. Cartography by: Marion Jolo Imperio, BS Geography student from UP Diliman

A joint study conducted by the Earthquakes and Megacities Initiative (EMI) and the Quezon City Government led to the Quezon City Disaster Risk Reduction and Management Plan (QCDRRMP) for 2014 to 2020. It reported that just three years after Tropical Storm Ondoy, severe flooding forced the evacuation of residents from seven areas, including Barangay Tatalon (EMI and QCG 2013). Low-lying barangays like Tatalon, Santo Domingo, Roxas, and Bagong Pag-asa, located downstream from La Mesa Dam, are highly flood-prone during monsoon rains (EMI and QCG 2013). The QCDRRMP 2014-2020 also cited cultural factors like clogged canals, insufficient preparedness, poor urban planning, and illegal settlements as factors that exacerbate flood damage.

Using a 100-year flood event return period (a 1 percent chance of occurring annually) (Water Science School, USGS 2018), EMI simulated the potential impacts of severe flooding on populations, infrastructure, and economy. In 2013, Barangay Tatalon ranked third in expected loss of critical facilities such as fire stations, administrative offices, hospitals, and medical facilities, among other establishments. Tatalon placed second to Batasan Hills in the rank of barangays expected to experience the largest casualties. Substantial economic losses were also a concern. On the other hand, Tatalon was not on the list of top-ranking barangays in the earthquake risk analysis and impact simulation results.

In 2022, the EMI and QCG published the results of the hazard, vulnerability, and risk assessment (HVRA) identifying flood, fire, and earthquake-susceptible areas in Quezon City. According to the report, about 89.45 percent of the barangay would be flooded with waters higher than half a meter in depth. An estimated 4,930 buildings and establishments, mostly one to two stories high, may be reached by flood waters at least half a meter high in Barangay Tatalon—the highest count for all barangays located in District 4.

Adjusting to the impact of climate change,[3] results of the 100-year return period flood simulation (a worst-case scenario) indicate that Tatalon may be the most severely flooded barangay in District 4. About 79.15 percent of the barangay will be submerged in more than half a meter water depth.

3 Scenarios of baseline rainfall values were based on reports published by DOST-PAGASA, the Manila Observatory, and the Ateneo De Manila University in 2021.

The report further situates the scenarios presented by describing the potential displacement of residents in affected areas, with informal settlers facing the highest risk due to their vulnerability. It revealed the potential depth of flood waters higher than 0.5 meters to affect 98 percent or nearly 42,000 informal settler families in District 4 (EMI and QCG 2022). In Barangay Tatalon alone, this entails the possible displacement of 20,921, or nearly 50 percent of the ISFs in District 4.

The 2023 Hazard and Vulnerability Assessment Report of Barangay Tatalon indicated six historic disaster events that caused widespread flooding in the barangay: Tropical Depression Jenny in September 2023, Tropical Storm Lando in October 2015, Tropical Storm Nona in December 2015, Typhoon Mario in September 2014, the southwest monsoon or habagat in August 2012, and Tropical Storm Ondoy in September 2009—the last four of which inundated nearly all households in the most flood-prone areas in the barangay. Regarding fire, eight incidents were identified from 2018 to 2023 that affected at least 20 families in a single incident. As many as 400 families were affected by the fire that occurred on 29 December 2018.

The foregoing discussion underscores the need to enhance disaster preparedness, rehabilitation, response, and mitigation in Barangay Tatalon. In line with ongoing community initiatives of a local organization based in Area 5, the collaborative project of two university-based institutions engaged in research and field-based academic learning, and a collective composed of storytellers and counter-mapping practitioners, a collaboration aiming to support Barangay Tatalon in formulating a community-based disaster risk reduction and management plan ensued in coordination with the barangay local government of Tatalon.

A COMMUNITY-BASED DRRM INITIATIVE

In October 2023, a partnership was launched to map and document the hazard and disaster experiences of residents in Area 5 in Barangay Tatalon. This collaboration involved the Geog 197 Digital Cartography class of the UP Department of Geography, Ulirat PH, and Tatalon Nanay Power. The project was part of the Kubo Bibo initiative of Ulirat Collective, a program designed to empower partner grassroots organizations and local communities through participatory mapping skills and techniques. The goal was to assist local

communities in taking an active role in creating their own local disaster risk reduction and management plans (LDRRMPs).

Findings[4] highlighted key hazards and collective memories and experiences of extreme events of residents in Area 5, and the strategies employed to live in a disaster-prone area. Some community partners were keen on pursuing a community-based plan that they can propose to the Barangay Local Government Unit (BLGU) as a crucial step towards addressing their pressing concerns, such as precarity of livelihood, threat of displacement, and risk of flood, fire, and infectious diseases associated with contaminated water during floods and unsanitary waste disposal practices. The purok leaders are cognizant of the need to organize and initiate activities that can readily address community needs and the gaps in the capacities of the BLGU to take action on the multitude of issues they face.

Recognizing these challenges, the University of the Philippines Center for Integrative and Development Studies Program on Alternative Development (UP CIDS–AltDev), Ulirat Collective, and the Digital Cartography class of the University of the Philippines Department of Geography organized a series of activities, including community situation analysis and a workshop on community-based DRRM, to support the requisites of a comprehensive community-based development plan for Barangay Tatalon.

The Collaborators

Tatalon Nanay Power is an organization of mothers in Barangay Tatalon, Quezon City. It provides humanitarian aid during crises, ensuring access to essentials like food, energy, and livelihoods. They collaborate with civil society, local leaders, churches, and private groups to support their community. During Super Typhoon Carina, they partnered with 350 Pilipinas to set up a solar charging station when power was cut, helping families stay

4 For a detailed discussion, please refer to the full report on the activity, prepared by the Geog 197 Digital Cartography Class of the 1st semester AY 2023-2024: C. Abilay, R. Andaya, J. R. Berja, R. V. Cortez, J. Del Rosario, L. Galzote, M.J. Imperio, T. O. Matavia, J. Molina, Z. A. M. Pimentel, J. Romerosa, N. K. Rondario, A. G. Sambale, B. P. Salvanera, and B. A. Viloria. 2024. Pagtukoy at Pagmamapa ng mga Hazard at Peligro, Naranasang Kalamidad, Mga Hamon sa Pag-unlad, Area 5, Tatalon, Quezon City [Unpublished report].

connected (Limayo 2024). Their efforts highlight the strength of solidarity and community resilience. Tatalon Nanay Power demonstrates the strength and resilience of a community united by the drive to uplift and support one another, even in the most challenging times.

Ulirat Collective consists of social scientists and practitioners from diverse fields who share a passion for critical geography and seek to deepen their understanding of marginalized narratives. Ulirat consists of social scientists who share a passion for critical geography and seek to deepen their understanding of marginalized narratives. As a collective, they recognize the importance of working with people from various fields—mappers, scientists, artists, community organizers, and academics—in interweaving complementary knowledge and perspectives.

The Program on Alternative Development (AltDev) aims to examine paradigms, policies, practices, and projects that remain largely marginalized or excluded from dominant development narratives. These alternative approaches that challenge prevailing frameworks are underrepresented at both national and international discourse. AltDev endeavors to bring these grassroots perspectives into the mainstream, fostering a more equitable playing field in which they can be critically engaged (from the UP CIDS website).

The University of the Philippines Department of Geography is the sole academic institution in the Philippines that offers degree programs in the discipline. It is one of eight departments within the College of Social Sciences and Philosophy at the University of the Philippines Diliman. The unit achieved notable recognition for its contributions to public service and academic excellence. In December 2017, it was honored with the Second Gawad Pangulo for Excellence in Public Service and was also a recipient of the inaugural Gawad Chancellor Para sa Programang Pang-Ekstensyon at UP Diliman in 2016 (UP Media and Public Relations Office 2017; Polotan-Dela Cruz 2018). Digital Cartography students of the second semester of the academic year 2023–24 conducted the Site Situation Analysis field activities in collaboration with volunteers from UP CIDS AltDev and Ulirat Collective, while the faculty members who facilitated the CBDRRM workshop were also members of the Philippine Geographical Society (PGS).

THE CBDRRM PLANNING WORKSHOP

The Community-Based Disaster Risk Reduction Planning Workshop for Barangay Tatalon began on 13 April 2024, ensuring representation from all seven areas of the 63,000-resident barangay. Purok leaders were the primary participants, joined by barangay health workers and council members. The sessions were facilitated by UP Geography professors Emmanuel Garcia and Jake Rom Cadag, both active in the Philippine Geographical Society. Ulirat Collective and UP CIDS–AltDev served as documenters and co-facilitators.

Workshop Objectives and Approach

Before the workshops began, the facilitators provided an overview of contingency planning and emphasized its significance. They explained that contingency plans, introduced as part of the disaster risk reduction mechanisms under RA No. 10121, are rooted in the socioeconomic, physical, political, and administrative context of a locality. As such, the development of a contingency plan should begin with a thorough understanding of the area's context, including:

1. Historical Background: Relevant historical facts that provide insights into the current political and socio-economic status of the area.

2. Geographical Profile: Details on the location, climate, topography, landforms, and nearby bodies of water.

3. Demographics: Data on population distribution, density, and the identification of vulnerable populations.

4. Peace and Order: Information on the area's management systems and institutional capabilities.

Crafting contingency plans is essential for establishing preparedness measures, setting response priorities, and managing crises effectively. To be effective, contingency plans must satisfy three key criteria: they must be barangay-specific, hazard-specific (e.g., typhoon, fire, or flood), and regularly updated.

Workshop Structure and Outputs

Due to the number of participants, the workshop was split into two sessions: the morning for Areas 1, 2, 3, and 6, and the afternoon for Areas 4, 5, and 7. Each session began with an introduction to disaster planning, followed by hands-on exercises that contributed to key sections of the Barangay Tatalon Contingency Plan, including disaster history, disaster analysis, and hazard planning for fire, floods, and earthquakes.

Participants were organized into ten groups per session, with each group assigned specific tasks to ensure diverse perspectives and accurate validation of responses from different areas of Tatalon. The tasks were organized into five main categories: (a) documenting disaster history, (b) planning for flood hazards, (c) planning for fire hazards, (d) planning for earthquake hazards, and (e) conducting hazard analysis. The focus group discussions for the five tasks were conducted simultaneously.

The results of the workshop are useful inputs for the Barangay Tatalon Contingency Plan, equipping the barangay council and its constituents with a framework to address future disasters effectively.

Workshop #1: Disaster History

Documenting disaster history is crucial for contextualizing hazard-specific contingency plans. As a foundational input, disaster history plays a significant role in barangay contingency planning, ensuring the safety of lives, preventing damage to property and the environment, and facilitating effective and well-coordinated response strategies during disaster incidents.

For the groups tasked with creating a disaster history, Batch A (Areas 1, 2, 3, 6) delineated the areas affected by flooding during the August 2023 flooding incident and Tropical Storm Ondoy, as well as the location of the fire that occurred in February 2024. Their analysis highlighted that informal settlers were the most vulnerable population across all three disaster categories—flood, fire, and typhoon. Batch A's focus on spatial mapping provided valuable insights into specific high-risk zones within the barangay. They have identified low-lying areas and specific streets such as portions of Victory Avenue, Araneta Avenue, Agno Extension, and Cadiz Street as areas of the barangay

affected by floods, and Cadiz as prone to fire. Among the means of recovery they identified were the services and assistance of the LGU of Quezon City, District 4 officials, the DSWD, Barangay Tatalon Council, some politicians from higher offices (e.g., the Senate), individuals, and NGOs.

Meanwhile, Batch B (Areas 4, 5, and 7) emphasized the quantitative impacts of disasters, presenting numerical data to effectively communicate the severity of the calamities. In addition to Tropical Storm Ondoy, they identified the COVID-19 pandemic as a large-scale disaster that significantly affected almost the entire barangay. Similar to Batch A, the participants in Batch B also identified fire (February 2024 incident) and floods (September 2023 incident) as historic events that have impacted hundreds of families, even by the thousands with respect to flooding. The participants similarly identified the assistance from NGOs, private individuals, and the LGU of Quezon City in recovering from the disasters they experienced. This broader perspective underscored the multifaceted nature of disaster events and their cascading effects on communities.

Both groups highlighted the critical role of communities of care in the recovery process. They illustrated how support from neighbors, government agencies, civil society organizations, and national government institutions was vital in aiding the recovery of affected individuals and resources. These collective efforts showcased the importance of solidarity and coordinated action in building resilience and fostering recovery following disaster incidents.

Workshop #2: Hazard Analysis

To complement the disaster history analysis conducted by some of the groups, two groups were also asked to analyze the probability and impact of hazards by assigning them ranks. In the sample probability scale shown to the participants, a rating of 1 indicates that the event is most unlikely and may occur only in exceptional cases, 2 means the event is unlikely and could occur at some point, but probably will not, 3 means the event is likely and might occur at some time, probably will, 4 means the event is very likely and will probably occur in most or many cases, and 5 means the event is expected to occur in most or many cases.

The impact scale, on the other hand, is based on the number of people affected by the hazard, relative to the scenario. The participants were shown a sample impact scale, but they were encouraged to create their own. In the sample scale, 1 represents negligible impact or no casualties, 2 means minor impact with some injuries, 3 represents moderate impact, with many injured and some dead or missing, 4 indicates severe impact, with many injured, dead, and missing, and 5 signifies a devastating impact, with more than 50 people injured, more than 21 people dead, and more than 21 people missing.

The probability and impact ratings were then tallied and averaged to determine the overall score for each hazard. The higher the score, the higher the priority for that hazard. Thus, the ranking of hazards is relative to one another, indicating what should be prioritized by the barangay based on past disaster events.

For Batch A, their hazard analysis revealed that typhoons should be prioritized above all other hazards due to their highest probability and impact ratings compared to other hazard categories. Flooding follows as the second-highest priority, followed by fire, and then earthquake hazard events.

Table 1. Hazard Analysis for Batch A: Areas 1, 2, 3, 6

HAZARD	PROBABILITY RATE	REMARKS	IMPACT RATE	REMARKS	P + I AVERAGE ([P + I]/2)	RANKING
Typhoon	5	Informal settlers and residents beside the river are often affected. Low-lying areas	4	Small and medium businesses were affected. Recovery takes in less than a month Property loss	4.5	1
Fire	3	No recorded fire in 2022. About three to four fire incidents in 2023 and 2024	2	Evacuation and recovery happen within the same day	2.5	2
Earthquake	1	Last recorded earthquake in 2023	1	No recorded damages to property, no casualties, and no disruptions to barangay functions	1	3

Batch B considered both flooding and fire incidents of equal priority, whereas Batch A appeared to prioritize one hazard over the other. In Batch B's analysis, flooding received the highest possible probability rating, indicating a belief that it is the most likely hazard to occur. However, its impact rating (2) was slightly lower than the fire-related hazard impact rating (3), suggesting that while flooding is considered more probable, its potential consequences are viewed as somewhat less severe than those of a fire incident.

In contrast, Batch A may have focused more on the immediate and destructive nature of fires, which typically result in higher impact ratings due to the speed and scale of damage they can cause, particularly in areas with combustible materials.

Table 2. Batch B Hazard Analysis: Areas 4, 5, 7

HAZARD	PROBABILITY RATE	REMARKS	IMPACT RATE	REMARKS	P + I AVERAGE ([P + I]/2)	RANKING
Baha (Flood)	5	Kahit mahinang ulan ay bumabaha Isa sa dahilan ang pagtayo ng Skyway	2	May GC ang purok leaders Bangka mula sa barangay Abiso mula sa purok leaders at kapitbahay para mag-evacuate	3.5	1.5
Sunog (Fire)	4	3 fire incidents mula January 2023 hanggang 2024 Every year may fire incident	3	Coordinate with barangay Casualty last year	3.5	1.5
Lindol (Earthquake)	1	From January to present, no earthquake experienced	1	No damage of property	1	3

Hazard to Plan For: Fire (Sunog)

Both Batch A and Batch B provided nearly identical answers to the four key themes of hazard planning in the case of fire hazards. The primary causes include defective electrical wiring, low-cost and combustible housing materials, and unsafe practices like leaving stoves or candles unattended. Overheating appliances, the use of substandard extension cords, and risky behaviors such as youth gang activities with Molotov cocktails also contribute.

Meanwhile, smoke emanating from houses, sparks from wires, or abnormal appliance behavior serve as early indicators. Community members yelling or warning each other are also informal early warning mechanisms. The

triggering factors identified during the workshop include unattended cooking, overused appliances, the use of lighters or fireworks, and behaviors resulting from domestic disputes or substance abuse.

Lastly, existing mitigating measures include barangay seminars, fire extinguisher distributions, Public Adress or PA system alerts, fire and rescue volunteers, fire trucks, and training for first aid and fire safety. Financial and material aid for fire victims and barangay-led initiatives like Tatalon Nanay Power add to community preparedness.

Hazard to Plan For: Earthquake (Lindol)

The earthquake hazard planning data reveals varying levels of awareness and preparedness among residents of Barangay Tatalon. Most participants from the breakout groups had no recollection of a major earthquake occurring in the barangay, although one vividly recalled the effects of the 1990 Luzon earthquake, particularly the bending of electrical posts during the tremor. This event highlighted electrical infrastructure as a key early warning sign.

Participants expressed concerns about the potential hazards posed by old buildings, exposed electrical wires, falling objects (such as posts and wooden structures), and displaced water from nearby rivers during future earthquakes. Some participants also noted unusual animal behavior and movements of light fixtures and posts as early warning signs of seismic activity. Houses made of light materials and substandard infrastructure further exacerbate vulnerabilities, while inadequate consultation with engineers during construction and lack of adherence to building codes were identified as root causes of risk.

Barangay Tatalon has taken proactive steps to prepare for earthquakes. Regular earthquake drills are conducted, albeit primarily centered around the barangay hall. Residents receive updates and alerts through TV news, social media, and the barangay PA system, while purok leaders are equipped with first-aid kits for emergencies. The Barangay LGU also provides go-bags, and building permits are required for new establishments.

Participants suggested several measures to strengthen earthquake preparedness and mitigate risks. These include expanding earthquake drills to all residents per area, evacuation planning through establishing muster

points and creating an evacuation map for the community, and improving and ensuring infrastructure safety through regularly inspecting and reinforcing old buildings, maintaining outdoor wiring, and ensuring the structural integrity of homes and establishments.

Hazard to Plan For: Flood (Baha)

From the responses gathered from batches A and B, flood hazard planning in Barangay Tatalon reveals a combination of community awareness, ongoing initiatives, and areas for improvement to address recurring challenges. Improper waste disposal, particularly garbage clogging canals and waterways, remains a major issue, exacerbating blocked drainage systems. The barangay's topographical vulnerabilities, such as low-lying areas and shallow riverbeds, further intensify the risks of flooding, especially during heavy rainfall. Narrow or blocked waterways, often caused by construction near rivers or debris buildup, and water releases from Angat and La Mesa Dams during heavy rains, are additional contributing factors.

Early warning signs of flooding include rising water levels in rivers, creeks, and canals, prolonged rainfall, and overflow from catch basins or dams. Residents also observe water stagnation and slow drainage, which often precede flooding. Triggering factors include heavy or sustained rainfall, river and creek overflow, and improper urban planning (e.g., presence of structures that restrict waterways).

The barangay has implemented various mitigating measures to address these hazards. Community announcements, siren alarms, and monitoring tools like closed-circuit television (CCTV) cameras and flood gauges provide early warnings to residents. Clean-up drives and drainage declogging activities are regularly conducted to improve water flow, while preventive regulations prohibit waste dumping in rivers and construction near waterways. Barangay-led evacuation plans, supported by communication channels such as group chats, further enhance preparedness.

To strengthen flood resilience, several improvements have been suggested. Enhanced waste management efforts, such as stricter enforcement of anti-littering policies and improved garbage collection, are critical. Infrastructure upgrades, including deepening and widening rivers and canals, improving

drainage systems, and addressing inefficiencies in catch basins, are also necessary. Community education campaigns should be conducted to raise awareness about the impact of waste disposal on flooding. Flood monitoring and warning systems can be expanded with additional flood gauges and real-time updates for residents. Stricter urban planning regulations, particularly in high-risk areas, and the relocation of informal settlements are recommended. Furthermore, coordination with dam operators is essential to ensure controlled water releases, minimizing downstream flooding risks.

While the barangay's current efforts, such as clean-up drives, early warning systems, and evacuation plans, demonstrate a strong foundation for disaster preparedness, addressing persistent issues like waste management, infrastructure deficiencies, and urban planning challenges remains essential. Through coordinated action, enhanced community engagement, and stricter enforcement of preventive measures, Barangay Tatalon can significantly improve its resilience to hazards and ensure the safety of its residents in the face of future disasters.

Additionally, the insights and outputs from the workshop groups, which identified key hazards related to fire, flooding, and earthquakes, can be utilized to develop detailed hazard maps. These visual tools can illustrate the probability and extent of potential hazards, providing a valuable resource for risk assessment, planning, and decision-making at both the community and barangay levels. By combining these efforts, the barangay can foster a more proactive and informed approach to disaster risk reduction and management.

BARANGAY TATALON HAZARD SITUATION ANALYSIS

On 4 May 2024, a series of mapping workshops and situation analyses were held at the Barangay Hall of Tatalon, Quezon City. These workshops aimed to document the community's experiences with hazards and disasters through a collaborative effort involving UP CIDS–AltDev, the Ulirat Collective, and Digital Cartography students from the UP Department of Geography. The event was attended primarily by purok leaders from Areas 1, 2, 3, 4, 6, and 7; barangay health workers; and members of Tatalon Nanay Power. Staff members of the Barangay LGU and three of the Barangay Kagawad were also

present during the event to provide support to the activity. The workshops also sought to generate community-driven recommendations for integration into the Barangay Disaster Risk Reduction and Management Plan (BDRRMP).

■ **Figure 2.** Digital Cartography students join Barangay Tatalon Purok Leaders in a community walk to identify hazard-prone areas and document disaster history. Photo by Eunice Santiago, UP CIDS Program on Alternative Development

■ **Figure 3.** Participants identify and locate response strategies in Barangay Tatalon using the provided maps, based on Google imagery. Photo by Eunice Santiago, UP CIDS Program on Alternative Development

Guided by the workshop design developed by the Digital Cartography class, focus group discussions (FGDs) were aided with basemaps showing Google imagery to facilitate the mapping of spatial features and significant events. Community walks were conducted as these supplementary activities were designed to provide additional depth and context to the situation analysis.

Documenting the Community's Hazard History

The hazard histories of the areas highlight patterns of vulnerability, community resilience, and systemic challenges in disaster management. These patterns reveal the interplay of environmental, social, and infrastructural factors that have influenced the frequency and impact of hazards over time. A detailed account of hazard history based on the FGDs is organized in the table below.

Table 4. Hazard History Matrix

AREA	HAZARDS HISTORY	OBSERVATIONS
1	[2009] Tropical Storm Ondoy: Severe flooding and fires from illegal wiring. Recovery relied heavily on financial assistance of the government and other private companies. [2013] Typhoon Yolanda: Electrical hazards and property damage. [2013 (Kaliraya Area) and 2018 (Purok 5B)]: Fires caused by light materials and illegal electrical wiring, as well as prolonged power outages during intense heat conditions.	Informal settlers face higher vulnerability due to lack of durable housing and resources for recovery. Fires and floods persist, but preparedness efforts like fire extinguishers and utilizing group chats to spread information show improvement.
3	[2009] Flooding: Recurring in specific areas like G. Araneta. [1994, 1997, 2013] Fire: Fire incidents were noted in 1994, 1997, 2013, and more recently in 625-641 and 630 G. Araneta, with some locations experiencing fire multiple times.	Fires and floods persist, but preparedness efforts like fire extinguishers and utilizing group chats to spread information show improvement.
4	[2013] Flooding: Rare occurrence in most parts of Area 4 except for the informal settlements in the 97 Compound and Kubo area, which are prone to flooding. [2013] Fire: Destroyed a significant portion of the Kubo area.	The area's location on elevated ground protects most parts from flooding. However, vulnerable areas like informal settlements face repeated risks, necessitating targeted interventions.

AREA	HAZARDS HISTORY	OBSERVATIONS
6	Incidents of fire were recorded due to sparking wires and overloaded posts. Severe flooding during Tropical Storm Ondoy reached the second floor in some areas of Area 6, and was further worsened by clogged waterways.	Residents of Area 6 agree that fires are their most frequent hazard, while they also acknowledge the damage caused by flooding during Tropical Storm Ondoy. However, they emphasized that lower areas like Area 5 experience more severe flooding issues. Given the recurring problem of fires and live wire explosions, the barangay should account for fire hazard preparedness and response, to allocate more resources in addressing this. Individual efforts by residents are not sufficient to manage these risks.

Based on the matrix, recurring hazards and vulnerabilities need to be underscored. Across the different areas, residents consistently identified fires and flooding as the most recurrent and impactful hazards they face. In Area 6, the primary concern is fires caused by overloaded electrical wires, often resulting in power outages and damage to homes. This has been a long-standing issue, exacerbated by aging infrastructure.

Meanwhile, flooding, particularly during Tropical Storm Ondoy, was highlighted as a significant risk, although the frequency and severity vary by area. Flooding is a more pressing issue in Areas 3 and 5, where residents face severe inundation, leading to widespread damage to homes and loss of property. In contrast, some areas, like Area 4, experience flooding less frequently due to their elevated location, though vulnerable informal settlements remain at risk, with limited access to resources for recovery and rebuilding durable housing, leading to cyclical exposure to hazards.

Barangay and LGU Interventions

The findings from the community responses reveal diverse local government unit (LGU) disaster preparedness, response, and recovery measures across different areas. While there are commendable efforts, the FGD also

underscored ongoing challenges when it comes to BLGU and the Quezon City LGU interventions.

For a more detailed discussion on each area in Barangay Tatalon, readers may request access to the report by Calvario et al. (2024)[5] from the Barangay Local Government of Tatalon.

Preparedness Before Disasters

Disseminating Information

Efficient information dissemination is a vital component of disaster preparedness in all areas. Group chats (GCs), social media posts, and announcements through barangay leaders ensure residents, especially purok leaders, are well-informed about potential hazards and their possible impacts.

Waste Management and Resource Allocation

In some areas, such as Area 4, waste management initiatives complement these efforts. Barangays implement cleaning quotas and schedule declogging activities to mitigate risks associated with flooding. Additionally, proactive measures include the distribution of go-bags and fire extinguishers to purok leaders, equipping them to respond effectively to emergencies like floods and fires.

On the Role of Purok Leaders in BDRRM Interventions

While barangays provide essential resources, purok leaders play a pivotal role in disaster preparedness. Their responsibilities range from notifying their areas about impending hazards to organizing vital supplies, such as medical kits and first aid equipment. The community's involvement ensures a more localized and immediate response to disaster scenarios.

---

5 F. J. Calvario, J. Catabay, L. Cinco, J. K. de Guzman, H. S. Melendrez, D. A. Ngalot, A. M. Nuez, M. W. Nuqui, F. L. Sablay, and R. J. Vibal, 2024, "Kalagayan ang Panganib: Isang Pagsusuri sa Barangay Tatalon, Quezon City" (Unpublished report, Department of Geography, University of the Philippines Diliman, Quezon City, Philippines).

Actions During Disasters

Evacuation and Rescue

Protocols for evacuation are implemented in schools and other designated sites (i.e., multipurpose hall) supported by rescue boats during floods. Barangays coordinate directly with schools and multi-purpose halls around the areas to prepare evacuation centers. Two fire trucks stationed in Area 4 and in Areas 6 and 7 respond promptly to fire emergencies.

Provision of Resources

Food packs and temporary shelters (tents) are prepared for those affected. A stub system facilitates the organized distribution of food packs in evacuation centers.

Live Updates via Group Chat

Real-time updates on flooding levels and other disaster-related information are efficiently communicated through group chats (GCs). This system enables residents to respond promptly to evolving situations, enhancing community safety. Furthermore, GCs serve as a vital tool for tracking missing individuals or identifying affected households, ensuring timely assistance and coordination during emergencies.

Post-disaster Response

Relief Distribution and Recovery

Relief goods are distributed promptly, often involving volunteers. Agencies like DSWD provide additional support, including cash aid. Notably, cash distribution is now equal among affected individuals, regardless of property ownership.

Community recovery efforts include seminars on disaster preparedness and environmental clean-ups, such as river rehabilitation and waste removal (Area 4).

Persistent Challenges

On Infrastructure Vulnerabilities and Safety

In areas like Area 6, the accumulation of electrical and internet wires on utility poles poses significant risks, particularly during typhoons and heavy rains, when these overloaded systems become more vulnerable to damage. Meanwhile, the lack of public toilets and urinals in Area 4 presents serious hygiene challenges during emergencies, especially for evacuees in crowded centers. Moreover, evacuation centers suffer from inadequate space and resources, making it difficult to accommodate all affected residents effectively. Another recurring issue is the resistance among relocatees, particularly those in creek-side areas, who often return to high-risk zones despite previous relocation programs and livelihood assistance. This raises concerns about the long-term sustainability of relocation initiatives implemented by the LGU and the barangay, highlighting the need for improved strategies to address the economic and social factors driving these returns. Aside from economic needs, residents also hold meaningful sentiments toward these spaces.

Waste Management Concerns

Aside from the infrastructure vulnerabilities, residents also raise concerns about waste management. Area 4 leaders suggest better waste management systems and more focused attention on hazard areas, especially those near rivers. Waste buildup in these areas can exacerbate flooding risks, and improving waste collection would contribute to reducing these hazards.

Disaster Preparedness and Mitigation

There is a call for continuous improvement in the barangay's disaster planning, including mitigation strategies and more specific examples of actions taken during past disasters. For example, referencing the lessons learned from Tropical Storm Ondoy could help identify areas where the barangay could have responded more efficiently.

Coordination with Higher LGUs

In Area 1, although the participants acknowledged the active role of their barangay in responding to disasters, they also underscored the limitations they

face, particularly in coordinating with higher LGUs like the local government of Quezon City. They noted that the barangay often steps in when the LGU falls short, but more coordination and timely support from the city government is needed to enhance overall disaster response.

The matrix below summarizes the interventions and actions of residents and the barangay LGU during times of disasters, based on the experiences shared during the hazard situation analysis workshop.

Table 6. Interventions During Disaster Events

CATEGORY	INTERVENTIONS IDENTIFIED	RESPONSIBLE UNIT (BASED ON THE FGD)
Fire preparedness	Distributing fire extinguishers in homes of purok leaders	Barangay
	Barangay fire trucks for emergency response	
	Lowering electrical breakers during fires	
Flood preparedness	Use of ropes for navigation during floods	Residents (self-organized), barangay
	Coordinating the preparation of evacuation centers (schools and multi-purpose halls)	Quezon City LGU and Barangay
	Rooftop evacuations	Residents
	Storage of water, checking go bags, essential supplies, and documents	Residents (self-organized)
Community resilience	Disaster drills	Barangay, Quezon City LGU, Residents
	Knowledge of evacuation points	Barangay, Residents
	Dissemination of protocols before, during, and after hazards	Barangay, Quezon City LGU, Residents
	Bayanihan during emergencies	Residents (self-initiated)
Infrastructure and safety	Addressing wiring issues posing fire risks	Quezon City LGU
Land security and Housing	Awarding land titles to some residents	Quezon City LGU

Academe-CSO-Community Collaboration

As part of the hazard situation analysis workshop, Digital Cartography students from the UP Department of Geography facilitated data collection and spatial documentation efforts. With the help of the UP CIDS Program on Alternative Development, Tatalon Nanay Power, and Ulirat Collective, they

were able to develop research tools, such as base maps, field activity guides, and FGD protocols in enabling participatory methods and engagement with Barangay Tatalon community members and purok leaders. Through FGDs and community walks, the residents were able to identify hazard-prone areas, assess disaster preparedness and response strategies, and collectively map out the history and geography of local disasters. The outputs generated included detailed spatial documentation of community-identified risk areas, location-specific disaster histories, and the collective effort and strategies to address disaster risk -- knowledge contributed directly by purok leaders and community members whose voices are often rendered invisible in conventional mapping practices. These community-driven insights and recommendations are crucial to integrate into the Barangay Disaster Risk Reduction and Management Plan (BDRRMP).

REFLECTIONS ON THE SITUATION ANALYSIS PROCESS

Based on the hazard situation analysis, it is important to underscore why Community-based Disaster Risk Reduction and Management is crucial for several reasons:

1. *Residents are directly familiar with their risks*

   They have a unique and detailed understanding of local hazards and/or disasters. The discussion above reveals not only how familiar the residents are with the local hazards but also the nuances or varying degrees of vulnerability (i.e., flooding, fire, infrastructure gaps, etc.). These experiences and knowledge allow for a more grounded solution that addresses specific threats or risks experienced by each area: this makes DRRM more effective, responsive, and grounded on their lived experience.

2. *Involvement of residents and community resilience*

   The focus group discussions (FGDs) highlight the importance of the community's active involvement in disaster risk reduction and management. Local residents, including purok leaders, barangay health workers (BHWs), and organizations like Tatalon Nanay Power (TNP), play

a crucial role in addressing disasters and their risks. Their involvement is key to community DRRM, as they identify hazards, enhance preparedness, and propose solutions based on experience.

Residents effectively mobilize their areas through informal networks and personal initiatives. Formalizing these efforts with a participatory DRRM enhances effectiveness, empowers leadership, and integrates community voices. This inclusive strategy strengthens community resilience and creates more comprehensive and sustainable disaster management practices.

REALIZING CBDRRM: CHALLENGES AND PROSPECTS

The insights gained from the workshops underscore the significant advantages of fostering collaboration among community members, researchers, students, and barangay LGUs. The integration of diverse perspectives, particularly through participatory approaches, strengthens the collective capacity to address disaster risks. Semi-structured methods such as focus group discussions (FGDs), facilitated with the expertise of practitioners in disaster risk reduction and management, proved instrumental in eliciting detailed insights from the purok leaders of Barangay Tatalon who participated in the activities. These discussions provided valuable information about the community's lived experiences with disasters, coping mechanisms, and practices that contribute to building resilience.

The skills and training of researchers, volunteers, and students play a critical role in transforming raw data into structured and actionable materials. Their skills in data organization, analysis, and visualization enable the production of user-friendly outputs, such as maps and reports, which local planners can readily integrate into DRRM strategies. This collaborative process enhances the quality of local disaster risk reduction and management plans and helps ensure that these plans are grounded in the realities and needs of the communities. Such an approach highlights the importance of capacity building and the co-creation of knowledge in advancing inclusive and community-based disaster resilience efforts.

The observations generated from the activities also emphasize the recurrent nature of destructive events in Barangay Tatalon and the community's heightened vulnerability to disasters. The documented disaster experiences and the flood simulation data published by the Earthquakes and Megacities Initiative (EMI) and the local government of Quezon City point to the significant risk of future disasters impacting the area. These insights reinforce the urgency of proactive and collaborative action to mitigate the community's exposure to such risks. The LGU and the community need to formulate and implement targeted strategies that will address persistent challenges. Key priorities should include the security of residents, particularly those in informal settlements, and ensuring safer living conditions for individuals residing in highly vulnerable zones. Additionally, improved waste management systems are critical to reducing environmental hazards, while infrastructural interventions, such as flood control measures and improved housing conditions, are necessary to protect at-risk populations. Establishing clear, achievable goals and measurable targets is vital for addressing these challenges effectively.

Participant responses during the CBDRRM Planning workshop indicate their reliance on external assistance during recovery efforts in Barangay Tatalon. This situation underlines the systemic vulnerabilities exacerbated by poverty within the community. It is thus important to address the underlying socioeconomic conditions that leave residents ill-equipped to recover independently from disasters. A significant proportion of the barangay's population resides in identified depressed areas, where limited access to resources, infrastructure, and opportunities compounds their exposure to hazards.

To build resilience, interventions must extend beyond merely addressing the immediate impacts of disasters. A broader, more comprehensive approach is required, one that prioritizes capacity building and targets the root causes of vulnerability. As emphasized by Luna (2007), minimizing disaster risks entails a holistic and participatory approach that prioritizes community empowerment by addressing structures that perpetuate inequality and underdevelopment. Central to this strategy is the enhancement of local livelihood sources, ensuring that community members have stable and diversified means of income. Such initiatives could include skills training, access to microfinance, and the development of community-based enterprises tailored to local

contexts and resources. Luna's (2007) third goal of community-based DRRM, the management of community resources, aptly corresponds to this gap. In addition to livelihood enhancement, efforts should focus on improving the availability and quality of local resources, such as safe and adequate housing, reliable infrastructure, and access to essential services. Capacity building must also include empowering residents with knowledge and skills in disaster preparedness, risk reduction, and recovery planning. These recommendations emerged during the workshop activities.

The preparation of the Barangay Disaster Risk Reduction and Management Plan (BDRRMP) represents a critical step in operationalizing the National Disaster Risk Reduction and Management Plan (NDRRMP) at the grassroots level. It serves as a vital mechanism for integrating top-down and bottom-up approaches, ensuring that national directives align with community-specific needs and aspirations. By incorporating participatory processes, the BDRRMP provides an avenue for amplifying community voices and initiatives, and fostering collaborative partnerships with stakeholders, support groups, and institutions. This approach enhances inclusivity and ensures that DRRM planning is responsive to local contexts.

However, while the BDRRMP emphasizes community-based processes and inclusivity, LGUs face significant challenges in its implementation. One major hurdle is the diverse projects and activities in the templates provided by the NDRRMP. This can lead to procedural burdens and resource constraints, particularly for LGUs with limited technical capacity or financial resources.

To address these challenges, it is imperative to streamline planning processes, ensuring that development and DRRM plans are cohesive, pragmatic, and focused on inclusive development. Such plans should prioritize the integration of disaster risk considerations into broader development agendas. Additionally, enhancing the capacity of LGUs to navigate planning requirements and secure adequate funding is crucial for effective implementation.

Equally important is the establishment of robust mechanisms for the monitoring and assessment of both development and DRRM plans. Regular evaluations can ensure that plans remain adaptive to changing risks and community dynamics while also providing accountability for resource allocation and outcomes. Strengthened monitoring frameworks would

enable LGUs to track progress, identify gaps, and refine strategies, ultimately fostering a more resilient and sustainable approach to disaster risk reduction and management at the barangay level.

ACKNOWLEDGMENT

We extend our sincere gratitude to the Ulirat Collective, the Philippine Geographical Society, and the Department of Geography at the University of the Philippines Diliman for providing the opportunity to engage in this meaningful collaboration. We are especially thankful to the members and volunteers of these organizations for their leadership in facilitating the Community-Based Disaster Risk Reduction and Management (CBDRRM) workshop, which was instrumental in the successful implementation of the activity despite the constraints of time and resources.

This opportunity to explore and present a preliminary case study on community-based DRRM would not have been possible without the commitment and efforts of the GEOG 197 (Digital Cartography) students from the first and semester of the Academic Year 2023–2024. We also gratefully acknowledge the Barangay Local Government of Tatalon for their vital support in mobilizing local resources and facilitating the participation of purok leaders, whose involvement was essential in achieving the goals of this initiative. Our deepest appreciation goes to the purok leaders of Barangay Tatalon and the members of Tatalon Nanay Power, who generously shared their time, insights, and lived experiences. Your stories of resilience and collective action continue to inspire us — and others — toward strengthening community capacities and developing alternatives in the face of disaster risks.

REFERENCES

Agsaoay-Saño, Eunice. n.d. Primer on the Disaster Risk Reduction and Management DRRM Act of 2010.

Anttila-Hughes, Jesse and Solomon Hsiang. 2013. "Destruction, Disinvestment, and Death: Economic and Human Losses Following Environmental Disaster." Working paper, Berkeley Public Policy The Goldman School. https://gspp.berkeley.edu/research-and-impact/working-papers/destruction-disinvestment-and-death-economic-and-human-losses-following-env.

Birkmann, J., O. D. Cardona, M.L. Carreno, A. H. Barbat, M. Pelling, S. Schneiderbauer, D. Alexander, P. Zeil, and T. Welle. 2013. "Framing Vulnerability, Risk, and Societal Responses: The MOVE Framework." Natural Hazards 67:193–211. https://doi.org/10.1007/s11069-013-0558-5.

Calvario, F. J., J. Catabay, L. Cinco, J. K. de Guzman, H. S. Melendrez, D. A. Ngalot, A. M. Nuez, M. W. Nuqui, F. L. Sablay, and R. J. Vibal. 2024. "Kalagayan ang Panganib: Isang Pagsusuri sa Barangay Tatalon, Quezon City." Unpublished report, Department of Geography, University of the Philippines Diliman, Quezon City, Philippines.

Tanhueco, Renan Ma., Fouad Berdimerad. Bijan Khazi, Lourdes Tibig, Joshua Dimasaka, and Paul Kenneth Luzon. 2022. Hazard, Vulnerability and Risk Assessment. Deliverable 8: Hazard, Vulnerability and Risks. Maps for all 142 Barangays. Earthquakes and Megacities Initiatives and the Quezon City Government (EMI and QCG).

Earthquakes and Megacities Initiatives and the Quezon City Government (EMI and QCG). 2013. Building a Disaster Resilient Quezon City Project. Disaster Risk Reduction and Management Plan 2014-2020. Part of the deliverables for the Building a Disaster Resilient Quezon City Project by the Earthquakes and Megacities Initiatives.

Heintze, Hans-Joachim, Lotte Kirch, Barbara Kuppers, Holger Mann, Frank Mischo, Peter Mucke, Tanja Padzierny, Ruben Prutz, Katrin Radtke, Friederike Stube, and Daniel Weller. 2018. WorldRiskReport 2018. https://www.unicef.org/guatemala/sites/unicef.org.guatemala/files/2018-11/WorldRiskReport-2018_0.pdf

Housing and Land Use Regulatory Board (HLURB). 2015. Supplemental Guidelines on Mainstreaming Climate Disaster Risks in the Comprehensive Land Use Plan. https://dhsud.gov.ph/wp-content/uploads/Publication/Guidebooks/HLURB_Supplemental_Guidelines.pdf.

Limayo, Kathleen Lei. 2024. “Mothers Powering Hope: Solar Power as a Lifeline in Times of Disaster.” 350 Pilipinas, 4 August 2024. https://world.350.org/philippines/mothers-powering-hope-solar-power-as-a-lifeline-in-times-of-disaster/

Jha, Shikha, Arturo Martinez, Pilipinas Quising, Zemma Ardaniel, and Limin Wang. 2018. “Natural Disasters, Public Spending, and Creative Destruction: A Case Study of the Philippines.” ADBI Working Paper Series. https://www.adb.org/sites/default/files/publication/408351/adbi-wp817.pdf

Luna, Emmanuel. 2007. Mainstreaming Community-Based Disaster Risk Management in Local Development Planning. Paper presented at the Forum on Framework-Building for Investigation of Local Government Settlement Planning Responses to Disaster Mitigation, 17 January 2007.

Luna, Emmanuel. 1997. “Rethinking Community Development.” CSWCD Development Journal 2:15–27. https://cswcd.upd.edu.ph/wp-content/uploads/2022/10/CDJ-1997_02_E.M.-Luna.pdf.

Kelman, Ilan. 2018. “Lost for Words Among Disaster Science Vocabulary.” International Journal of Risk Science 9:281-291. https://doi.org/10.1007/s13753-018-0188-3.

Moga, Josh. 2002. “Disaster Mitigation Planning: The Growth of Local Partnerships for Disaster Reduction.” Paper presented at the Regional Workshop on Best Practices in Disaster Mitigation; ADPC, Bangkok, Thailand. http://www.adpc.net/V2007/IKM/ONLINE%20DOCUMENTS/downloads/ADUMP/MPI.pdf

Office of Civil Defense – Policy Development Planning Service (OCD-PDPS). 2020. National Disaster Risk Reduction and Management Plan 2020-2030. National Disaster Risk Reduction and Management Council (NDRRMC)

Pelling, Mark, Reid Basher, Joern Birkmann, Susan Cutter, Bina Desai, SHM Fakhruddin, Ferruccio Ferrugini, Tom Mitchell, Tony Oliver-Smith, John Rees, Kuniyoshi Takeuchi. 2014. “Issue Brief: Disaster Risk Reduction and Sustainable Development.” https://odi.org/en/publications/disaster-risk-reduction-and-sustainable-development/.

Polotan-De la Cruz, Leonora. 2018. Beyond teaching and research, how can universities and colleges serve the public better? The UP Forum Roundtable Discussion on Public Service. https://up.edu.ph/the-up-forum-roundtable-discussion-on-public-service/

“Quezon City’s Commitment to UNISDR Making Cities Resilient Campaign”. n.d. https://www.unisdr.org/campaign/resilientcities/uploads/city/attachments/2609-9869.pdf

Tanggapan ng Punong Barangay ng Tatalon, 2023. “Barangay Profile Barangay Tatalon, District 4 Quezon City as of March 16, 2023.”

Tanggapan ng Punong Barangay ng Tatalon. 2023. “Hazard and Vulnerability Assessment.”

United Nations International Strategy for Disaster Reduction (UNISDR). 2009. Terminology.

United Nations Office for Disaster Risk Reduction (UNDRR). n.d. Definition: Hazard. Accessed 27 May 2025. https://www.undrr.org/terminology/hazard

United Nations Office for Disaster Risk Reduction (UNDRR). 2019. Disaster Risk Reduction in the Philippines: Status Report 2019.” United Nations Office for Disaster Risk Reduction (UNDRR), Regional Office for Asia and the Pacific. https://www.undrr.org/publication/disaster-risk-reduction-philippines-status-report-2019.

UP CIDS. n.d. “Program on Alternative Development.” https://cids.up.edu.ph/program-on-alternative-development/.

Victoria, Lorna. 2003. “Community-Based Disaster Management in the Philippines: Making a Difference in People’s Lives.” Philippine Sociological Review 51:65–80. https://www.jstor.org/stable/44243073.

Water Science School, USGS. 2018. “The 100-Year Flood.” https://www.usgs.gov/special-topics/water-science-school/science/100-year-flood.

White, Philip, Mark Pelling, Kunal Sen, David Seddon, and Samuel Russell. Disaster Risk Reduction: A Development Concern—A Scoping Study on Links between Disaster Risk Reduction, Poverty and Development. London: Department for International Development (DFID), 2004. https://www.preventionweb.net/files/1070_drrscopingstudy.pdf?startDownload=true

THE UP CIDS DISCUSSION PAPER SERIES

The UP CIDS Discussion Paper Series features preliminary researches that may be subject to further revisions and is circulated to elicit comments and suggestions for enrichment and refinement. They contain findings on issues that are aligned with the core agenda of the research programs under the University of the Philippines Center for Integrative and Development Studies (UP CIDS).

CENTER FOR INTEGRATIVE AND DEVELOPMENT STUDIES

Established in 1985 by University of the Philippines (UP) President Edgardo J. Angara, the UP Center for Integrative and Development Studies (UP CIDS) is the policy research unit of the University that connects disciplines and scholars across the several units of the UP System. It is mandated to encourage collaborative and rigorous research addressing issues of national significance by supporting scholars and securing funding, enabling them to produce outputs and recommendations for public policy.

The UP CIDS currently has twelve research programs that are clustered under the areas of education and capacity building, development, and social, political, and cultural studies. It publishes policy briefs, monographs, webinar/conference/forum proceedings, and the Philippine Journal for Public Policy, all of which can be downloaded free from the UP CIDS website.

THE PROGRAM

The **Program on Alternative Development (AltDev)** aims to look at paradigms, policies, practices, and projects that are largely marginalized and excluded from the mainstream. As they challenge dominant modes, they do not figure prominently in the national and international discourse.

Get your policy papers published. Download open-access articles.

The Philippine Journal of Public Policy: Interdisciplinary Development Perspectives (PJPP), the annual peer-reviewed journal of the UP Center for Integrative and Development Studies (UP CIDS), welcomes submissions in the form of full-length policy-oriented manuscripts, book reviews, essays, and commentaries. The PJPP provides a multidisciplinary forum for examining contemporary social, cultural, economic, and political issues in the Philippines and elsewh ere. Submissions are welcome year-around.

For more information, visit cids.up.edu.ph. All issues/articles of the PJPP can be downloaded for free.

Get news and the latest publications.

Join our mailing list: bit.ly/signup_cids to get our publications delivered straight to your inbox! Also, you'll receive news of upcoming webinars and other updates.

We need your feedback.

Have our publications been useful? Tell us what you think: bit.ly/dearcids.

UNIVERSITY OF THE PHILIPPINES
CENTER FOR INTEGRATIVE AND DEVELOPMENT STUDIES
Lower Ground Floor, Ang Bahay ng Alumni, Magsaysay Avenue
University of the Philippines Diliman, Quezon City 1101

Telephone (02) 8981-8500 loc. 4266 to 4268
(02) 8426-0955

Email cids@up.edu.ph
cidspublications@up.edu.ph

Website cids.up.edu.ph