MUNTING ILOG INTEGRATED
NATIONAL HGH SCHOOL

ASHES TO ACTION: ANALYZING THE IMPACT OF VOLCANIC ERUPTION ON STRATEGIC COMMUNITY DISASTER MANAGEMENT INITIATIVES

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Abstract

This study examines whether Silang, Cavite has improved its strategic community disaster management initiatives against volcanic eruptions or continues to rely on pre-existing disaster plans developed before the Taal Volcano eruption. Using a case-study qualitative research design, the researchers employed purposive sampling to select barangay officials from Barangay Munting Ilog, Tibig, Hukay, San Vicente I and II, Poblacion II and IV, Lalaan I, and Balite IV, along with key agency officers from the Bureau of Fire Protection – Silang and the Philippine Red Cross – Silang Branch of Cavite Chapter. Data were collected through video interviews and transcriptions. Findings revealed notable enhancements, including proactive disaster planning, emergency drills, and community seminars, indicating efforts to strengthen disaster resilience. However, despite these improvements, Silang's overall disaster preparedness still faces challenges, particularly in ensuring continuous program development, adequate budget allocation, and sustained community engagement. Based on these findings, it is recommended that local authorities institutionalize regular disaster preparedness programs, secure funding for emergency response initiatives, and foster active community participation. Strengthening collaboration between local government units and disaster response agencies will also be crucial in enhancing Silang's resilience against volcanic eruptions and other hazards.

Key words: community, disaster management, resilience, preparedness, volcanic eruption

TABLE OF CONTENTS

CHAPTER I

THE PROBLEM AND ITS BACKGROUND

This chapter presents the background of the study, the statement of the problem, the scope and delimitation the significance of the study, and the definition of terms used.

Introduction

The Philippines has always been one of the most disaster-prone countries, particularly in terms of volcanic eruptions. Located along the Pacific Ring of Fire, the country has at least 24 active volcanoes, including Taal Volcano, which is situated in Taal, Batangas, near the town of Silang, Cavite. After its eruption in January 2020, Taal Volcano caused significant damage to Silang, Cavite, posing challenges for the community in addressing the disaster's impact on the town. Silang strategic community disaster management initiatives might be changed because of Taal Volcano's wrath; there is a possible way that some strategic plan will be the same plan used before the eruption in response to such disasters.

Background of the Study

The Philippines is highly vulnerable to earthquakes and volcanic eruptions due to the continuous tectonic activity of the Philippine Sea Plate, Eurasian Plate, and Indo-Australian Plate, resulting in the “Ring of Fire.” The eruption of Taal Volcano affected more than 736,000 people in CALABARZON (Region IV-A), Central Luzon (Region III), and

National Capital Region (NCR) and led to an evacuation of more than 135,000 people, widespread damage to infrastructure and livelihoods, and disruption of essential services, such as water supply and education, based on the final report of the International Federation of Red Cross and Red Crescent Societies(2021). Volcanic eruptions can cause long-term effects like lava flows, pyroclastic flows, and avalanches.

To effectively address these challenges, communities in the Philippines have implemented a range of strategic disaster management initiatives. This study focuses on analyzing the impact of volcanic eruptions on these initiatives. It aims to understand how these initiatives, which are designed to mitigate the risks and consequences of volcanic eruptions, have been implemented and how effective they have been in protecting communities. Philippines is prone to various hazard such a earthquakes, typhoons, floods, landslides, tsunamis, storm surges and volcanic eruption. On June 15, 1991 Mount Pinatubo's eruption was hailed as the second largest volcanic eruption of the 20th century and by far the largest eruption to affect the densely populated area in the past 100 years(Allen, 2021). The Mount Pinatubo eruption serves as a crucial case study for understanding the complex challenges faced by the Philippines in managing volcanic hazards. It also serves as a reminder of the interconnectedness of natural hazards and the importance of a holistic approach to disaster management. Various types of hazards and disasters hold the Philippines since then

and forever, being prone to dangers like earthquakes, tsunamis, typhoons, floods and volcanic eruptions.

The Taal volcano eruption serves as a stark illustration of the challenges faced by the CALABARZON RDRRMC and underscores the critical need for improved disaster preparedness strategies. The CALABARZON Regional Disaster Risk Reduction and Management Council (RDRRMC) is in charge of controlling and lowering the risks of fatalities, injuries, and destruction of physical infrastructure that has a major influence on the local way of life. In view of the fact that various residents from Batangas fled to Cavite during the Taal volcano eruption last January, it resulted in issues including crowded conditions, a shortage of food, and a lack of cozy housing. Furthermore, directing, creating, executing, and coordinating disaster risk management programs that inform locals about safety precautions could be implemented and practiced so that it can have a big impact in the future. One of the example of programs that was implemented was Rehabilitation and Recovery for Taal Volcano Eruptions Affected Areas, where many Philippine officials participated like RDRRMC and especially officials from CALABARZON its goal is to protect the agriculture, fisheries, tourism, other livelihood activities, housing, settlement, social services, and physical infrastructures.

The Harvard Humanitarian Initiative's (HHI) said that the Philippines is a "country with the highest disaster risk in the world",

that's why the country's disaster preparedness efforts must be intensify (Carlos, 2024). Due to its proximity to Tagaytay, the town of Silang in Cavite turned into gray caused by the consistent ash fall following the eruption of Taal Volcano. This research aims to examine the disaster plan established by the Municipality of Silang following the Taal Volcano eruption in January 2020, investigating whether the municipality has made improvements or changes in plans on how to avoid disaster risks to enhance its preparedness and readiness in response to such disasters or if it maintains to rely on the pre-existing disaster plan which is to evacuate and wait for help that is developed beforehand the eruption.

Statement of the Problem

This study tries to investigate how strategic disaster management measures in the municipality of Silang, Cavite, are affected by volcanic eruptions.

It specifically aims to respond to the following queries:

1.What is the current disaster risk management plan of Silang, Cavite focusing on volcanic eruption?

2. What are the challenges faced by the municipality of Silang, Cavite in implementing its current disaster risk management plan?

3. What changes must be made to address the gaps in the implementation of the current disaster risk management plan of Silang, Cavite?

Scope and Delimitation

This study will only include the effects of the Taal Volcanic eruption in the disaster plan of the town of Silang, Cavite. Only three barangays will be part of these barangays: Barangay Munting Ilog, Tibig, Hukay, Iba, Tatiao, Biluso, Ulat, and Lalaan II. Also, three officials from the Silang Municipal Disaster Risk Reduction and Management Office and the Philippine Red Cross Silang Branch of Cavite Chapter. Other Silang participants could also be disallowed, such as citizens, authorities who are not part of Silang DRRMO, Silang Red Cross, and other barangay officials of every barangay that was not named from the eight mentioned barangays.

This study will not include the cause of Taal volcano's eruption and how people cope with their experience after the eruption. Other Silang participants, such as citizens, authorities who are not part of Silang DRRMO, Silang Red Cross, and other barangay officials of every barangay that was not mentioned are not included.

Significance of the Study

This study will help to improve community disaster management strategies for volcanic eruptions. It will achieve this by enhancing understanding of volcanic risks, improving preparedness and evacuation plans.

Specifically, It will benefit the following;

Barangay Officials. This study will help barangay officials strengthen disaster preparedness through improved evacuation plans, regular drills, and better coordination with local government units, enhancing community safety and resilience.

Philippine Red Cross – Silang Branch of Cavite Chapter. The research provides insights to enhance disaster response strategies, strengthen community involvement, and improve early warning systems, leading to more effective crisis management.

Bureau of Fire Protection. This study highlights the BFP's role in disaster preparedness, emphasizing the need for training, resource readiness, and fire safety measures to ensure public safety during volcanic crises.

Community. It promotes disaster awareness and preparedness, encouraging active participation in drills and educational programs to foster cooperation and strengthen community resilience.

Students. This research raises awareness about volcanic hazards, encouraging students to engage in preparedness initiatives, educate their families, and contribute to a disaster-ready community.

Future Researchers. The study serves as a reference for future research on volcanic disaster management, offering data to improve preparedness strategies, response efforts, and policy effectiveness.

Definition of Terms

To facilitate the understanding of this study, the following are with this definition to understand and clarify the terms used in the study.

Ashfall. Eruption plumes of ashes falling from the air emitted by a volcano during eruptions that can cause health problems ("Glossary of Volcanology Terms", 2018).

Community. Silang, Cavite is a community located in the eastern part of Cavite Province with 64 barangays and a land area of 156.41 square kilometers (Cavite.gov.ph, 2023). Its people, Silanguenos, share the same local government, public needs, and interests.

Disaster. Is a serious disruption in a community that exceeds its capability to respond to such problems ("What is a", n.d.). It can be man-made or a natural disaster, such as volcanic eruptions that spew red-hot lava and bring other disasters towards a community.

Earthquake. The release of heat and energy from Earth's core. It is caused by the movement of magma within a volcano ("How are Volcanoes", 2022).

Gas cloud. A suffocating and poisonous gas is released from a fumarole or volcanic vent that contains sulfur dioxide, carbon monoxide, hydrogen sulfide, and carbon dioxide (B. Decker & R. Decker, 2024).

Hazards. Dangerous volcanic activities or processes that put human lives at risk of harm, such as lava flows, ash falls, lahars, landslides, and avalanches ("Volcanic Hazards", n.d.).

Resilience. A characteristic of Silanguenos is their ability to withstand the volcanic eruption of Taal Volcano last January 2020 by knowing its risks and threats that lead them to implement appropriate preventive measures, according to "Volcano Research Resilience"(n.d.).

Strategic Community Disaster Management Initiatives. Preparation of communities to anticipate volcanic eruptions for people to respond accordingly to what is needed and necessary. It is important to effectively anticipate, respond, and recover from the effects of disasters (UNDRR, n.d.).

Taal Volcano. It is one of the active volcanoes of the Philippines, located in Taal, Batangas. Its recent volcanic eruption happened last January 2020 (UNESCO, 2024).

Volcanic Eruption. An event that can cause damages to disastrous loss of life and property. It is the release of hot molten rock and heat from the earth's mantle through a volcano (Decker & Raikar, 2024).

CHAPTER II

REVIEW OF RELATED LITERATURE

This chapter presents the relevant literature and studies that the researchers considered in strengthening the claim and importance of the present study.

Related Literature

Foreign

Volcanic Eruption Cases

Volcanic flank collapses and explosive eruptions are among the most catastrophic natural events on Earth. The 1980 eruption of Mount St. Helens demonstrated how a relatively small (<5 km^3) flank collapse can directly trigger a massive eruption. In contrast, the lateral collapse of volcanic island flanks, such as those in the Canary Islands, can be significantly larger (>300 km^3) and may occur in multiple stages. Research on Tenerife reveals that multistage retrogressive landslides have triggered explosive eruptions, including the Diego Hernandez, Guajara, and Ucanca caldera events. Geochemical analyses of volcanic glass from marine turbidites associated with each collapse stage indicate that explosive eruptions are linked to the final stages of flank failure, which follow large submarine landslide events. The study also highlights extended time lags between collapse stages and between submarine collapse and the onset of eruptions, suggesting a delayed magmatic system response to un-roofing (Hunt, et al., 2018). These findings have significant implications for understanding ocean island

volcanism and disaster preparedness. Volcanic material rapidly deposited into the ocean generates fast-moving, long-runout seafloor currents that can break underwater cables and disrupt communication. These currents, similar to those found around submerged volcanoes, serve as indicators of large eruptions worldwide (Clare, et al., 2023).

The town of Grindavík, located on Iceland's Reykjanes Peninsula, is home to approximately 3,000 residents and is a popular tourism hub. On November 11, 2023, the town was evacuated due to a sharp increase in seismic activity, which geologists feared could signal an impending eruption at the nearby Fagradalsfjall Volcano. Iceland, a country prone to earthquakes and home to multiple active volcanic fields, began experiencing increased seismic activity on October 25. Since then, approximately 22,000 earthquakes have been recorded, with the Reykjanes Peninsula being particularly affected. In the 24 hours before the evacuation, 1,400 earthquakes were reported across Iceland, 880 of which occurred beneath the Reykjanes Peninsula (Bauwens, 2023). In uang Volcano, located off Sulawesi Island, erupted on Tuesday, spewing ash and lava. This event followed an earlier eruption earlier in the month that prompted hundreds of evacuations and led to the closure of a local airport. The country’s Center for Volcanology and Geological Hazard Mitigation (PVMBG) raised the alert level to its highest, warning residents to stay away from the volcano. Ruang Island, home to over 800 residents, had already undergone evacuations following the

previous eruption, though it was unclear how many more were evacuated after Tuesday's event. Social media footage, which could not be independently verified, showed lava flowing from the volcano, located about 100 km from Manado, the provincial capital. Following the earlier eruption, the airport in Manado was temporarily shut down, and falling rocks and ash damaged homes, leading to the evacuation of a nearby hospital. The alert level was downgraded to Level 3 last week before being raised again to Level 4 on Tuesday. Indonesia sits on the Pacific Ring of Fire, an area known for intense seismic activity (Abdullah, 2024).

Fuego Volcano, an active volcano in Guatemala, is known for its nearly constant low-level activity. Its last major eruption, recorded on June 3, 2018, resulted in numerous fatalities, with many others still missing. Fuego releases toxic gases, ash, and pyroclastic flows, which are the primary causes of casualties. These pyroclastic flows consist of a combination of hot rock fragments, superheated air, and volcanic gases. Despite the dangers, many people underestimated the threat and instead took pictures of the visually striking phenomenon (McGarvie & Williams, 2018). Similar to Fuego, Mount Pelée is infamous for the deadliest eruption of the 20th century. It is an active volcano located on the Caribbean island of Martinique. In 1902, Mount Pelée erupted, killing over 29,000 people and completely destroying the city of Saint-Pierre. One of the main causes of the catastrophe was the pyroclastic

current released during the eruption. The last recorded eruption of Mount Pelée was in 1932 (Gueugneau, et al., 2024).

Vesuvius, an active stratovolcano in Italy, is notorious for its catastrophic eruption in AD 79, which completely destroyed the city of Pompeii and killed nearly 2,000 people. Historical records highlight the immense danger posed by the volcano, as each eruption has resulted in significant casualties. Its last eruption occurred in 1944, while its last major eruption was in 1631 (Tondo, 2018). Similarly, Mount St. Helens is known for its violent explosion in 1980, one of the most significant volcanic events in North American history. The 1980 eruption resulted in the classification of the volcano as an unrest zone and led to the deaths of 57 people. The most recent eruption occurred between 2004 and 2008, producing lava domes within the crater (Stopponi, 2020).

Impact of Volcanic Eruption

Volcanic eruptions pose significant risks to communities, often necessitating large-scale evacuations to prevent casualties. The eruption of Mount Ibu, which sent a dense ash cloud into the sky and triggered over a thousand eruptions in January, forced authorities to raise the alert level and evacuate thousands of residents (ABS-CBN News, 2025). However, many villagers resisted leaving due to economic concerns and their familiarity with volcanic activity, highlighting the challenges of disaster response in agricultural communities. Ternate district military commander Adietya Yuni Nurtono noted that the

ongoing harvest season influenced their reluctance, but officials continued efforts to persuade them to evacuate (Gupta, 2025). Delayed evacuations increase the risk of exposure to ash, toxic gases, and pyroclastic flows, underscoring the need for stronger disaster education and support systems to ensure public safety.

Volcanic eruptions significantly impact human health, the environment, and society. After the Mt. St. Helens eruption, one-third of individuals with respiratory disorders experienced worsened conditions, showing how volcanic ash exacerbates pre-existing health issues. The prolonged symptoms lasting up to three months highlight the long-term health burdens of eruptions. Similarly, the 2004 Mount Asama eruption led to higher asthma cases, demonstrating how volcanic pollution disproportionately affects vulnerable populations. PM2.5 particulates in ash are particularly hazardous, as studies show a rise in respiratory diseases in affected areas. Even microscopic ash particles can cause chronic lung conditions like silicosis, emphasizing the severe health risks (Vanzo, 2021). Inhaling volcanic gases and ash can cause immediate and long-term health effects, including eye irritation, respiratory distress, and even death in extreme cases. While short-term exposure may cause temporary discomfort, prolonged inhalation has been linked to severe conditions like lung disease and cancer. In extreme situations, acute exposure to toxic gases can be fatal within minutes, underscoring the urgency of evacuation measures ("Volcanic Air Pollution Effects," n.d.).

Indonesia's tallest volcano, Mount Semeru, erupted due to monsoon rains weakening its lava dome, triggering intense ashfall and lava flows. This highlights how climatic conditions can directly influence volcanic activity. The eruption forced residents to flee, showing the immediate threat to human settlements. The massive ash column that reached 1,500 meters illustrates the scale of the disaster and its potential atmospheric impact ("Mt. Semeru unleashes lava river in new eruption," 2022). Following the eruption, hundreds of rescuers were deployed to affected villages where homes and mosques were buried under volcanic debris, demonstrating the extensive destruction. The collapse of the lava dome led to the destruction of infrastructure, including a bridge previously damaged by an earlier eruption. Semeru's past eruption in 2021 killed 51 people and displaced thousands, emphasizing the recurring danger and long-term consequences of living near active volcanoes ("Mt. Semeru eruption buries homes, damages bridge," 2022).

Volcanic ash has significant effects on humans and the environment, including altering global temperatures. When volcanic ash reaches the stratosphere, it can absorb and reflect solar radiation, leading to temporary climate cooling. The 1815 Mount Tambora eruption released massive debris, reducing global temperatures by up to 3°C, showing how volcanic events can disrupt climate systems. This caused severe weather anomalies worldwide for three years, proving the long-term atmospheric consequences of major eruptions. The "Year Without a Summer" in 1816 led to widespread famine, disease, and

agricultural collapse, demonstrating how volcanic winters can devastate societies (National Geographic Society, 2024).

Super volcanic eruptions have shaped human history by influencing climate and population survival. The Toba eruption 74,000 years ago is believed to have caused a population bottleneck, drastically reducing genetic diversity in modern humans. This suggests that volcanic activity has played a significant role in human evolution by altering survival patterns. While early humans in Africa survived, those in Europe and Asia suffered due to abrupt climate shifts following the eruption, reinforcing the idea that environmental catastrophes shaped migration and adaptation (Bressan, 2021). The impact of the Toba eruption on human survival remains debated, but it is believed to have caused abrupt cooling. Sulfur emissions from the eruption likely triggered a volcanic winter, drastically reducing global temperatures. The idea that only around 10,000 humans survived underscores the severity of the event, although some argue that humans may have adapted and even thrived despite the conditions. African lakebed evidence suggests that the climatic impact may have been less severe than previously thought, showing the complexity of reconstructing historical volcanic effects (Schmidt & Black, 2021).

Volcanic eruptions also have psychological impacts on affected communities. Research suggests that attachment to one's home can increase anxiety and resistance to evacuation, highlighting a psychological barrier to disaster response. Social resilience and strong

community support play a crucial role in coping with displacement and post-eruption recovery. Interventions focusing on mental health support can help mitigate psychological distress and enhance disaster preparedness (Malas & Tolsá, 2024).

DRRM Initiatives during Volcanic Eruption

Tonga has become the first Pacific Island country to implement the WHO's Strategic Toolkit for Assessing Risk (STAR) to enhance health security. This initiative aims to improve the identification and management of health risks, including infectious diseases and natural disasters. With support from the WHO's Pacific Health Office, Tonga benefits from training and resources, showcasing both its commitment to health security and the WHO's efforts to strengthen Pacific health systems ("Tonga becomes first Pacific Island country", 2024). Similarly, digital transformation is being emphasized in Latin America and the Caribbean to improve disaster risk reduction (DRR), particularly in regions vulnerable to hurricanes and earthquakes. Tools like early warning systems and community engagement play a key role, alongside recommendations for systematic DRR policies, infrastructure protection, legal frameworks, and addressing technology access gaps. However, challenges such as corruption and limited technical capacity hinder progress, reinforcing the need for global collaboration and governance to optimize DRR technologies (Runde, et al., 2021).

Volcanic activity remained a significant global concern in 2023, with 77 eruptions occurring across 28 countries. The Fuego volcano in

Guatemala was particularly devastating, claiming 110 lives and displacing thousands, demonstrating the destructive potential of volcanic eruptions (McKenna, 2024). Despite scientific advancements, predicting volcanic eruptions remains highly challenging due to the complex nature of geological activity. This unpredictability often leaves communities vulnerable with little time to prepare, emphasizing the need for improved monitoring and warning systems (Simpson, 2023). Additionally, effective communication about volcanic risks is crucial but remains difficult due to the complexities involved in conveying the potential impacts of an eruption, highlighting a gap in disaster preparedness and response strategies

The 2010 Eyjafjallajökull eruption underscored the far-reaching consequences of volcanic activity when its massive ash cloud disrupted air travel across Northern Europe. This event demonstrated how volcanic eruptions can severely impact human safety, infrastructure, and economies (RM Studio Team, 2018). Currently, Iceland is facing another major eruption in the Bárðarbunga volcanic system, which, while not expected to be as disruptive, poses challenges such as increased sulfur dioxide emissions and the threat of glacial flooding due to melting ice (Andrews, 2024). These events highlight the unpredictable nature of volcanic activity and the ongoing risks posed by geological forces, reinforcing the necessity of continuous monitoring and preparedness measures.

The Cumbre Vieja eruption in September 2021 devastated La Palma, destroying nearly 3,000 buildings and displacing 7,000 residents. The widespread lava coverage of 1,241 hectares posed severe risks to local communities and essential agricultural industries, such as banana plantations, highlighting the economic consequences of volcanic disasters. During the eruption, researcher Sara Osman collaborated with the Instituto Geológico y Minero de España (IGME) to assess structural damage. Her findings revealed that buildings with accumulated tephra experienced roof collapses, while those that cleared the deposits remained intact, emphasizing the importance of proactive maintenance during volcanic events (Osman, 2022). In parallel, a joint mission by Italian and Spanish geologists focused on recovery efforts, including mapping volcanic risks and ensuring the safe restoration of essential infrastructure like water and power systems, demonstrating the necessity of coordinated disaster response (“Protecting emergency workers,” 2021).

Mitigating volcanic eruption risks requires advanced monitoring systems and well-established preparedness strategies. Changes in a volcano’s shape, gas emissions, and surface temperature can serve as early warning signs, allowing scientists to predict eruptions and implement timely evacuation plans (Hermanson, et al, 2023). Monitoring technologies, such as tiltmeters, GPS satellites, and thermal heat sensors, help detect these changes, while seismometers track seismic activity that may indicate magma movement (“Habitat For Humanity”, 2023). While protective measures against lava and ash are

limited, historical examples like Iceland's successful lava cooling efforts in the 1970s demonstrate that proactive intervention can reduce damage. Ultimately, community education, disaster preparedness, and strategic evacuation planning remain critical in minimizing the risks associated with volcanic eruptions (Internet Geography, 2024).

Local

Volcanic Eruption Cases

The eruption of Mount Kanlaon has displaced thousands and forced mass evacuations. At least 45,000 people have been forced to leave their homes on Negros Island due to the volcano's most powerful eruption in recent years. President Ferdinand Marcos Jr. announced that the government aims to evacuate 87, 000 people from the six-kilometer danger zone. The volcano erupted on Monday, releasing ash and gases up to three kilometers into the air, forcing residents to take shelter. Prior to this, Kanlaon had erupted 13 times on Thursday. Marcos emphasized that the safety of residents is the top priority and that various agencies are prepared to assist. On Tuesday, the National Disaster Risk Reduction and Management Council ordered evacuations from a 10-kilometer radius around the volcano. The eruption lasted nearly four minutes, with ash reaching as far as the Antique province, over 200 kilometers away. The Philippines, situated on the Pacific Ring of Fire, is prone to volcanic and seismic activity (Asia Pacific, 2024). The recent eruption of Kanlaon highlights the ongoing threat posed by the country's active volcanoes. The Philippine Institute of Volcanology and

Seismology (PHIVOLCS) has warned of further possible eruptions from Mount Kanlaon. On December 9, the volcano erupted at 3:03 p.m. local time, releasing a column of ash and gas three kilometers into the sky. Pyroclastic density currents, consisting of hot ash and debris, were observed moving down its slopes. Local authorities have urged residents to evacuate within a six-kilometer radius, and the country's civil defense office has started evacuating 87,000 people. PHIVOLCS warned that the volcano could experience further explosive eruptions (Dewan, 2024). Given these warnings, authorities must remain vigilant in monitoring the situation and ensuring public safety.

Taal and Mayon Volcanoes have caused severe destruction and health risks in past eruptions. Before the eruption of Taal Volcano, it first emitted thick smoke and ash, prompting a mandatory evacuation of approximately 500,000 residents. The heavy ashfall led to slippery roads, further complicating evacuation efforts. The eruption also had severe consequences for agriculture, livestock, and homes. Additionally, the inhalation of volcanic ash became a major health concern due to the presence of harmful chemicals (CBS Morning, 2020). Meanwhile, Mayon Volcano, located in Albay province, is one of the most active volcanoes in the Philippines. Authorities raised its alert level to 4 due to magma rising toward the crater. Lava flows on the volcano's slopes pose a serious threat to nearby communities, along with potential ashfall and pyroclastic flows that could endanger public health (Rappler, 2018). These cases demonstrate the widespread impact

of volcanic eruptions, reinforcing the importance of disaster preparedness.

The recent eruption of Mount Kanlaon has led to a large-scale evacuation of affected residents. Around 87,000 people were being evacuated from central Philippines on Tuesday after a brief but powerful eruption sent a towering ash plume and superhot gas and debris down its western slopes. While the eruption did not cause immediate casualties, the alert level was raised, indicating the possibility of further explosions. Volcanic ash spread over a wide area, including Antique province, more than 200 kilometers away, causing poor visibility and health risks. Several flights were canceled or diverted due to the eruption. The mass evacuation focused on towns and villages near the volcano, particularly in La Castellana, where nearly 47,000 people are being evacuated from the six-kilometer danger zone (“Mass evacuation of Philippine villages”, 2024). The government’s response underscores the urgency of protecting communities from further volcanic hazards.

The Philippine government has taken strict measures to protect residents from the hazards of Taal Volcano. A mandatory evacuation order was issued for those living within a 14-kilometer radius of Taal, a region home to approximately 450,000 people, according to the UN Office for the Coordination of Humanitarian Affairs. As of the latest report from the Philippine National Disaster Risk Reduction and Management Council (NDRRMC), over 53,000 people are currently

sheltering in evacuation centers (Tripathy-Lang 2020). These measures highlight the government's efforts to mitigate risks and ensure public safety.

The Philippines' geographical location makes it highly vulnerable to volcanic eruptions. The country is part of the Pacific Ring of Fire, where tectonic plates frequently collide, leading to frequent volcanic eruptions. The Philippines has approximately 300 volcanoes, 24 of which are currently active. Due to the high number of active volcanoes, eruptions often result in widespread destruction, impacting various sectors, including agriculture and the economy. The consequences of volcanic eruptions can be devastating, particularly for those living in affected areas (Novo, 2019). This highlights the need for continuous monitoring, disaster response, and resilience planning to reduce the impact of future eruptions.

Mount Hibok-Hibok has a history of deadly eruptions, underscoring the need for continuous monitoring. It is one of the 24 active volcanoes in the country and the youngest and only historically active one. In 1951, its powerful eruption killed around 3,000 people and destroyed 19 square kilometers of land, particularly in Mambajao. The spewing of hot lava caused severe devastation, leading local officials to prioritize monitoring and disaster preparedness (Arguillas, 2020). Given its history, Hibok-Hibok serves as a reminder of the risks posed by active volcanoes and the importance of early warning systems.

Impact of Volcanic Eruption

Taal Volcano's eruptions have caused widespread displacement and disruption in nearby communities. Taal, the Philippines' second-most active volcano, surprised even volcanologists with its sudden eruption on January 12, 2020, releasing a mile-high plume of ash and causing multiple earthquakes. Living with the constant threat of a natural disaster has numbed some people to the danger, even as communities banded together to care for the 50,000 residents from Cavite and Batangas provinces who were relocated to 200 evacuation camps. Ignoring orders to stay away, some residents returned to their ruined homes to recover whatever they could from the deep muck, including horses, gadgets, and photographs, before the Coast Guard began prohibiting anyone from returning (Gutierrez & Beech, 2020). This event underscores the challenges of enforcing evacuation orders when residents prioritize salvaging belongings over personal safety. On July 1, 2021, a year after the previous eruption of Taal Volcano, its main crater emitted a short-lived phreatomagmatic plume one kilometer high with no associated volcanic earthquake. As a result, the Philippine Institute of Volcanology and Seismology (DOST-PHIVOLCS) elevated the alert level from 2 to 3 (out of a possible 5). An Alert Level 3 indicates that magma is extruding from the main crater, potentially leading to an explosive eruption. Due to the situation, 6,262 families (22,433 people) were displaced in 131 barangays in CALABARZON, as reported by the Department of Social Welfare and Development (DSWD) Disaster Response Operations Monitoring and Information Center

(DROMIC). Out of the displaced families, 1,655 (5,865 people) took temporary shelter in 29 evacuation centers, while others stayed with relatives and friends ("Philippines: Taal Volcano Eruption", 2021). The displacement not only affected people's safety but also disrupted their livelihoods, impacting farming, livestock, fishing, and tourism.

The devastation caused by volcanic eruptions leaves communities struggling to rebuild their lives. Maria Tenerio crawled through ankle-deep mud and trash to reach her house, which had been overwhelmed by thick sludge. The Taal Volcano eruption forced families from Batangas to evacuate from their homes. Heavy charcoal-like ash fell on towns and villages, covering everything, with houses and trees buckling under the weight. Affected areas lacked power and fresh water, making recovery even more difficult. Outside Sarmiento's house, the once-bustling marketplaces were deserted, the fields untended, and the lush trees were gray and dead. When Taal suddenly came to life, thousands of people like her left their homes, caught off guard and seeking safety in temporary evacuation centers with only the clothes they were wearing and little to no belongings (Regan & Jorgio, 2020). The eruption highlighted the vulnerability of residents who lack the resources and preparedness to cope with such disasters. Mayon Volcano's activity has also caused significant displacement, further emphasizing the need for better long-term disaster management. A moderate eruption of the Philippines' most active volcano forced over 18,000 people into emergency shelters, with officials warning that the

situation could last for months. President Ferdinand Marcos Jr. traveled to Albay province to provide comfort and assistance to displaced residents, distributing food and supplies. He later met with local mayors to discuss response efforts. Marcos informed evacuees that it could take up to three months before the volcanic eruption subsides, delaying their return home. Some displaced villagers complained about the heat and overcrowding in evacuation shelters, prompting local officials to promise improvements such as more electric fans and better living conditions (Gomez & Calupitan, 2023). The prolonged displacement of affected communities demonstrates the urgent need for improved disaster relief strategies and sustainable evacuation planning.

DRRM Initiatives during Volcanic Eruption

The Philippines is enhancing its preparedness for disasters by utilizing geospatial technology such as the National Exposure Database (NED) and GeoMapperPH. The nation confronts dangers from natural calamities, including volcanic eruptions, earthquakes, and typhoons. NED gathers vital information on risks and vulnerabilities to assist in emergency planning. GeoMapperPH serves as a tool that delivers real-time data through a mobile and web application, supporting local authorities in evaluating risks and responding to incidents, which includes establishing evacuation routes and overseeing disasters. Obstacles include navigating bureaucracy, ensuring the accuracy of data, and enhancing technological skills among users. Future

objectives include broadening the use of GeoMapperPH and disseminating successful strategies with other Southeast Asian nations. The article emphasizes the significance of leveraging technology and making decisions based on data (Mina, 2021). This shows that advanced geospatial tools play a crucial role in disaster risk reduction by providing real-time hazard assessments. Other than that, the GeoRiskPH initiative is a joint effort focused on minimizing disaster risks through GIS. Orchestrated by the Philippine Institute of Volcanology and Seismology (PHIVOLCS), this initiative offers hazard information via interactive maps to promote comprehension for different stakeholders. It encourages "disaster visualization" to assist in effectively preparing for and responding to hazards. Essential tools consist of the PHIVOLCS FaultFinder and HazardHunterPH, which aim to collect information about land use and susceptibility to facilitate adaptation to climate change (Miller, 2021). These initiatives reflect the growing reliance on technology for proactive disaster management and mitigation.

On December 9, 2024, Mount Kanlaon erupted, causing a large ash cloud and hot gases. About 87,000 people were evacuated from nearby areas. The volcano's alert level was raised due to the risk of more eruptions. The ash affected visibility and health, spreading widely, including to Antique province. Flights were canceled or rerouted, schools closed, and curfews were set in high-risk areas. The text highlights the disruption of daily activities and the importance of disaster preparedness in the Philippines (Gomez, 2024). This event

underscores the widespread consequences of volcanic activity, affecting multiple sectors such as transportation, education, and public health. Additionally, the World Bank is helping the Philippines create a strong disaster risk management (DRM) framework. This framework aims to improve resilience against natural disasters, climate change, and pandemics. The World Bank focuses on moving from reactive to proactive strategies, with initiatives like "Ready to Rebuild," "GeoRiskPH," and "Plan Smart." These programs enhance recovery capabilities, assess hazards, and optimize plans. The article highlights the World Bank's commitment to disaster risk management and provides contact information for their local team ("Towards a comprehensive disaster," n.d.). These efforts emphasize the importance of international support in strengthening disaster resilience.

Efforts in the Philippines and Indonesia aim to improve disaster management and climate adaptation. In the Philippines, the Local Level Disaster Risk Reduction Enhancement Program, supported by the Agence Française de Développement, the Cities Development Initiative for Asia, and the European Union, focuses on integrating disaster risk reduction with regional planning, infrastructure, risk-informed policies, and gender-sensitive approaches from 2024 to 2027 ("PH, EU launch disaster," 2024). This highlights the collaborative nature of disaster preparedness, involving multiple international and local organizations. Meanwhile, Indonesia's National Disaster Management Agency (BNPB), established in 2008, addresses disasters like earthquakes and floods by improving response efforts and community awareness despite

infrastructure challenges. Future plans include advancing early warning systems and climate adaptation, while ongoing funding and proposals for initiatives like sewer overflow disinfection remain critical ("Indonesia's National Disaster Management Authority".org, n.d.). These developments demonstrate the importance of continuous improvements in disaster risk management to mitigate future risks.

A dramatic volcanic eruption in the central Philippines unleashed a towering plume of ash and steam into the night sky. The powerful explosion shook the region, prompting a swift and widespread evacuation (Gomez, 2022). This reflects the urgent need for efficient evacuation strategies to minimize casualties. A volcano in the central Philippines erupted, spewing ash and steam high into the night sky. This powerful explosion caused over 700 people to leave their homes and seek shelter in evacuation camps. Authorities quickly ordered the evacuation of nearby communities, fearing the potential for further eruptions and the dangers of ashfall. The eruption is the latest natural calamity to test the administration of Marcos, who took office in June 2022 in a Southeast Asian nation regarded as one of the most disaster-prone in the world. About 20 typhoons and storms a year lash the Philippines, and the poor archipelago with 23 active volcanoes wrestles with frequent earthquakes (Gomez & Calupitan, 2023). This reiterates the vulnerability of the Philippines to natural disasters and the constant challenge of disaster response.

The findings from a recent FEMA survey reveal significant gaps in preparedness among residents living in areas at risk of volcanic eruptions. Approximately 71% of respondents felt unprepared for a potential eruption, with only 27% expressing confidence in their ability to prepare for such a disaster ("Volcanic eruption preparedness", 2023). The Department of Health (DOH) has advised residents near active volcanoes to stay indoors during ashfall, close windows and doors, wear N95 masks or wet cloths cover the nose and mouth, use safety goggles, and thoroughly wash fruits and vegetables exposed to ash before consumption (Daanoy, 2024). These findings highlight critical knowledge gaps that could increase health risks during volcanic events. This lack of awareness extends to the understanding of property risks associated with eruptions, as many people overlook the potential for damage from ash and subsequent flooding or mudslides. By recognizing these risks and implementing effective preparation strategies, communities can better safeguard their homes and lives in the event of a volcanic eruption.

Volcanic eruptions pose significant risks to communities living near active volcanoes, necessitating thorough preparedness measures. Understanding the potential hazards associated with eruptions is crucial for ensuring safety. For instance, volcanic ash can travel hundreds of miles, leading to severe respiratory issues and contaminating water supplies (Selective, 2022). This demonstrates how far-reaching the effects of volcanic activity can be, extending beyond immediate eruption zones. Additionally, residents should be aware of

their proximity to active volcanoes and the potential for secondary hazards, such as ash fall from neighboring islands (MVO, 2023). These factors emphasize the importance of continuous monitoring and information dissemination. Preparing an emergency supply kit, developing an evacuation plan, and educating oneself about volcanic risks are essential steps that families can take to mitigate the dangers posed by eruptions. Engaging with local disaster management groups and staying informed about volcanic activity can further enhance community resilience and safety in the face of potential eruptions.

The Department of Agriculture (DA) Bulletin No. 2 on the Taal Volcano eruption, issued on January 13, 2020, provides a detailed account of the agricultural impacts and ongoing response efforts to mitigate the disaster's effects. The bulletin highlights the heavy ashfall from Taal's eruptions, which have affected areas including Batangas, Laguna, Cavite, Rizal, Bulacan, and NCR, with earthquakes also being felt in Laguna and Batangas. Among the most significant damages reported are losses to coffee, corn, and livestock, amounting to Php 74.55 million across 752 hectares of land. Coffee is the most impacted commodity, accounting for 99% of the total loss (Department of Agriculture, 2020). This data underscores the severe financial losses that volcanic eruptions can inflict on agricultural industries. Additionally, around 6,000 fish cages are at risk, with an expected loss of 15,033 metric tons of fish, primarily due to the high sulfur content in Taal Lake that is predicted to cause a fish kill. The National Food Authority (NFA) has reassured the public that there are enough rice

stocks in the affected regions to meet the needs of local government units (LGUs), the Department of Social Welfare and Development (DSWD), and other relief agencies. Furthermore, NFA Administrator Judy Dansal confirmed that these stocks are safe for human consumption, stored away from ash fall. Secretary William D. Dar has instructed relevant agencies such as the DA Agribusiness and Marketing Assistance Service (AMAS) and the Bureau of Fisheries and Aquatic Resources (BFAR) to monitor prices and ensure adequate food supply for Metro Manila markets. Through its Disaster Risk Reduction and Management (DRRM) Operations Center, the DA continues to issue updates on the situation to keep the public informed and coordinate relief efforts (Department of Agriculture, 2020). This demonstrates the critical role of government agencies in mitigating the economic impact of volcanic disasters.

Related Studies

Foreign

Volcanic Eruption Cases

Historical records reveal the long-standing threat of volcanic eruptions and their lasting impact on communities and the environment. Historical accounts of Mt. Baekdu (Paektu, Tianchi) volcano document various volcanic phenomena in Chinese historical records, such as rumbling, ash showers, and ash clouds. From November 3, 946 AD, to February 7, 947 AD, at least 90 eruptions

occurred during the Millennium Eruption (Yun, et al., 2023). These records highlight the recurring nature of volcanic disasters, which remain a significant risk today. Similarly, the Bogoslof Volcano has experienced nine periods of eruption since 1976, all exhibiting similar styles (Waythomas, et al., 2020). Since volcanic eruptions are unpredictable, they continue to threaten not only communities but also the entire planet.

Despite the risks, many people continue to live near volcanoes due to the benefits they provide, particularly for agriculture. Although residing near volcanoes presents dangers, many communities settle in these areas because of the fertile volcanic soil that enhances agricultural productivity (Bankoff, 2020). While volcanic eruptions can be hazardous, the nutrient-rich ash contributes to higher crop yields, making these regions ideal for farming. As a result, many people rely on these lands for both food production and income, despite the risks to their safety. Approximately 30 million people live within 100 kilometers of major volcanoes, such as Kendeng (Indonesia) and Laguna Caldera (Philippines) (Burgos, et al., 2022). Additionally, Bayraktar (2024) notes that around 1 billion people across 86 countries reside near active or potentially active volcanoes, illustrating the potential for widespread impact in the event of an eruption.

Communities near active volcanoes must prioritize disaster preparedness to reduce risks and enhance resilience. Despite the

known dangers, many communities have developed disaster preparedness measures to mitigate volcanic hazards. In Nyiragongo and Nyamuragira, the most active volcanoes in Africa, more than 2 million people face continuous exposure to volcanic threats (Macumu, et al., 2023). The residents of Merapi Volcano have strengthened their disaster mitigation efforts by improving people-centered preparedness strategies, which help reduce casualties and property damage. Effective planning and awareness are crucial in minimizing the devastating effects of volcanic eruptions. As Gomez-Zapata, et al. (2020) emphasize, understanding social, physical, and systemic vulnerabilities is essential for populations living in volcanic regions. Although many people continue to live in hazardous areas, those who acknowledge the risks and implement preventive measures are better equipped to withstand potential disasters.

Volcanic eruptions cause widespread destruction, making them a significant threat to human lives and infrastructure. The immediate consequences of volcanic eruptions include loss of life, destruction of property, and disruptions to essential services, leading to prolonged crises (Bayraktar, 2024). These disasters not only affect individuals but also cause economic and infrastructural damage. Among 40 volcanoes studied in Southeast Asia, Mount Merapi in Java, Indonesia, was identified as the highest-threat volcano due to its large tephra dispersal, especially during the rainy season. In addition to Merapi, several other high-threat volcanoes pose risks to their respective countries and

neighboring regions. Since volcanic eruptions are difficult to predict and monitor, they remain one of the most challenging natural disasters to mitigate.

Assessing volcanic hazards on a large scale is complex, particularly in regions with active tourism. Conducting hazard assessments across vast volcanic regions is challenging due to the unpredictable nature of tectonic and magmatic activity. Tourist destinations such as La Poma (Argentina), Toconao (Chile), Antofagasta de la Sierra (Argentina), Socaire (Chile), and Talabre (Chile) are among the most exposed to volcanic hazards (Bertin, et al., 2022). The increasing number of visitors in these areas adds another layer of risk, as volcanic eruptions can occur unexpectedly. In Indonesia, past eruptions at Lokon (1991), Semeru (2000), Bromo (2004), and Marapi (2023) resulted in numerous casualties among both locals and tourists (Kristianto, et al., 2024). The rise in tourism in volcanic regions emphasizes the urgent need for enhanced emergency planning and risk management to protect both visitors and residents.

The impact of a volcanic eruption is extensive and can lead to massive destruction. It affects not only the immediate area but also surrounding regions, disrupting ecosystems and communities. The ash, lava, and gases released can cause long-term environmental damage and pose significant risks to human health;

“Volcanic eruptions pose significant destructive potential, which can materialize without warning. Immediate risks to loss of life occur because of pyroclastic flows from a collapsing ash column, which historically is the greatest threat to local populations. These may occur suddenly during an eruption and move with great speed down the flanks of a volcano. Pyroclastic flows, also known as “glowing avalanches,” contain both ash and toxic gases and move a great distance from the volcano where local populations likely reside. Lahars from snow melt and landslides producing rivers of thick mud are another major cause of mortality and property destruction. Fallout of tephra consists of a spectrum of very small particles that cool quickly to lava bombs, which are well known to ignite roofs and cause head trauma. Fallout of ash occurs both near and far away from an eruption, which can render roads impassable and cause roof collapse. Respirators and N95 or equivalent masks are required to prevent inhalation of small ash particulates capable of penetrating into the lung alveoli. Simple cloth masks have little filtration capacity and are not improved with wetting. Advance planning in disaster response that relies on the historical behavior of past eruptions and the type of volcanic ejecta is required. Disaster plans

> should rely on preemptory evacuations, consultations with volcanologists, and shelter in place recommendations at a greater distance from the eruption. In some instances, toxic gases from active, albeit non-erupting, volcanoes also impact local populations" (Jay, 2024).

In conclusion, volcanic eruptions present significant immediate and long-term dangers, not only to human life but also to global climate systems. Effective disaster preparedness and understanding of the complex relationship between volcanic activity and climate are crucial in mitigating the potentially catastrophic impacts of these unpredictable natural events.

Impact of Volcanic Eruption

Volcanic eruptions significantly disrupt children's education, affecting their academic performance and enrollment rates. Kilauea Volcano's emissions account for the majority of pollution in its region, impacting air quality and student achievement. A study on 150,000 students from 260 schools found that an increase in particulate matter (PM) 2.5 leads to a decrease in test scores, with the most significant effects observed in schools with poor air quality (Inafuku, et al., 2022). Additionally, the 2010 Mount Merapi and 2014 Mount Kelud eruptions reduced school enrollment as families reallocated education expenses to essential needs (Bimardhika & Moorena, 2024). These disruptions

highlight the long-term academic and social challenges children face after volcanic disasters.

Volcanic emissions pose serious health risks, causing both short-term and long-term illnesses. Short-term effects include respiratory pathologies (92%), ophthalmological conditions (23%), and cardiovascular diseases (23%), while long-term exposure can lead to chronic respiratory issues (32%) and cancer (26%) (Stewart, et al., 2022). Volcanic emissions contain harmful substances such as sulfur dioxide (SO_2), carbon monoxide (CO), and hydrochloric acid (HCl), which can worsen health conditions and complicate recovery efforts. These health challenges add to the burden on affected communities, increasing the difficulty of recovery during and after eruptions.

Mental health is also severely impacted by volcanic eruptions, leading to high levels of psychological distress among survivors. Young people exhibit distress rates above 80%, with over 18% experiencing severe symptoms, while adults report moderate to high distress levels at approximately 65%, with depression (4%-24.4%), anxiety (5%-44.6%), and stress (5%-33.9%) (Hastangka & Suprapto, 2023). Psychological recovery is often overlooked for families of deceased victims, as seen in the aftermath of the 2023 Mount Marapi eruption in Indonesia. Alternative mental health approaches, such as Dhikr and Qur'an recitation, have been explored as therapeutic methods to promote patience and self-acceptance (Pohan, et al., 2024). Addressing

the mental health impact of volcanic disasters is crucial to supporting the well-being of affected individuals and communities.

Loss of life remains one of the most devastating consequences of volcanic eruptions, with a significant number of deaths occurring within the first week of activity. A global survey found that 63% of primary deaths happen within seven days of an eruption, with over 44% of casualties occurring when residents return to high-hazard zones (Barclay, et al., 2019). Additionally, volcanic gases can be lethal, as demonstrated by the deaths of two geology students at Piton de la Fournaise, who suffered from asphyxia and pulmonary edema due to exposure to high levels of sulfurous gas (Pefferkorn, 2022). These findings emphasize the importance of evacuation compliance and effective hazard communication to prevent further casualties.

Volcanic eruptions also pose significant challenges to aviation safety and ecological recovery. The 2019 Raikoke eruption released 1.5 teragrams of sulfur dioxide into the stratosphere, increasing aerosol levels to levels not seen since the 1991 Mt. Pinatubo eruption (Vernier, et al., 2024). Flight paths were altered in response to volcanic activity, as airlines implemented avoidance strategies based on volcanic ash advisories (Delbrel, et al., 2024). Additionally, volcanic activity can disrupt ecosystems, as seen in the Canary Islands, where volcanic eruptions and wildfires affect the regeneration of first-year Canary pine seedlings (Wilkens, et al., 2024). These disruptions highlight the need

for coordinated response strategies to mitigate risks to both aviation and environmental recovery.

Sulfate deposition on ice sheets is influenced by various factors, including eruption latitude, SO_2 emissions, and seasonal variations. Ice-core data from eight major eruptions over the past 2,500 years indicate that eruptions with high SO_2 emissions near ice sheets result in greater sulfate deposition, while distant or low-emission eruptions have less impact (Marshall, et al., 2021). Local responses to volcanic eruptions are also shaped by demographic and economic changes. During the 2010 Eyjafjallajökull eruption, authorities noted that while most residents complied with evacuation orders, some refused due to caregiving responsibilities or skepticism about warnings (Bird & Gísladóttir, 2018). These findings emphasize the importance of public trust in disaster management strategies for effective emergency responses.

Volcanic eruptions significantly influence global monsoon patterns, leading to uncertainty in climate predictions and affecting disaster preparedness. Occasional volcanic forcing results in a 10% reduction in global land monsoon (GLM) precipitation over the centennial scale, with a 20% increase in variability compared to non-volcanic scenarios (Man, et al., 2021). Additionally, volcanic activity can delay climate change impacts on monsoon systems, affecting food production and disaster risk planning (Zhang, et al., 2019). Understanding these influences is crucial for improving long-term

climate forecasting and enhancing agricultural and disaster preparedness strategies.

Historical volcanic eruptions provide valuable insights for future disaster preparedness and risk mitigation. While some regions experience frequent but minor eruptions, others face rare but highly destructive events with severe consequences (Riede, 2019). Researchers are integrating archaeological and volcanological data to examine the long-term effects of past eruptions on human societies and ecosystems (Payne & Egan, 2019). Studying these historical events helps improve readiness for future volcanic disasters and minimizes their impact on communities worldwide.

DRRM Initiatives during Volcanic Eruption

The response to natural hazards, such as the 2018 Kilauea eruption and Japan's earthquake and volcanic eruption prediction efforts, highlights the importance of dedicated civil service, preparedness programs, and continuous research in mitigating risks and enhancing disaster resilience. The US Geological Survey (USGS) Hawai'ian Volcano Observatory's (HVO) response to the 2018 Kilauea eruption demonstrated the critical role of dedicated civil servants in hazard mitigation and public safety (Williams, et al., 2020). As the threat of cascading natural disasters increases, volcanoes pose a high potential for catastrophic loss.

Despite Japan's efforts in national earthquake and volcanic eruption prediction programs since the 1960s, these initiatives did not fully prevent the damage caused by the 1995 Kobe earthquake and the 2011 Tōhoku earthquake. This led to the establishment of the Earthquake and Volcano Hazards Observation and Research Program (2019-2023), which focused on enhancing disaster resilience through scientific research and public literacy (Takahashi & Kato, 2024). As a country highly vulnerable to volcanic eruptions and earthquakes, Japan's commitment to continuous research and monitoring has been instrumental in improving disaster preparedness and response strategies.

In Indonesia, improving disaster risk reduction (DRR) initiatives requires addressing both local and global consequences of volcanic eruptions while strengthening community awareness and preparedness to reduce casualties. Research indicates that DRR programs often overlook global impacts, limiting their effectiveness in broader hazard mitigation (Malawani, et al., 2021). A more comprehensive DRR framework that considers both local and global influences could enhance Indonesia's resilience to volcanic disasters. Given the high volcanic activity in the country, public understanding of eruptions is crucial for preparedness. The national average score for disaster preparedness related to volcanic hazards is 64.72, indicating an "almost ready" condition (Indah, et al., 2022). Improving public knowledge and preparedness can significantly lower casualty rates during eruptions.

Successfully addressing volcanic hazards in at-risk regions requires developing multi-hazard models and strengthening community resilience through proactive mindsets, continuous preparedness efforts, and coordinated governmental actions. Communities near Mount Meru in Tanzania face significant volcanic risks, necessitating multi-hazard models that incorporate various threats such as ashfall, lahars, and gas emissions, rather than focusing on a single hazard (Cosme, et al., 2022). Additionally, disaster risk mitigation should integrate long-term resilience strategies, emphasizing the role of community awareness and adaptive behaviors. Research highlights that fostering a constructive mindset and behavioral mastery enhances preparedness, while government-led mitigation initiatives improve compliance with disaster response plans (German, et al., 2022). Regular reassessment of preparedness strategies is essential to ensure sustained community resilience against future volcanic eruptions. Effective hazard mitigation requires collaborative efforts, emphasizing the importance of integrating scientific research, policy implementation, and community engagement in disaster preparedness and response.

Local

Volcanic Eruption Cases

Taal Volcano's frequent activity in the Philippines highlights the need to understand its eruption history and impact, with asset damage and preparedness playing a crucial role in shaping how severe

eruptions are perceived. The country sits on the Pacific Ring of Fire, making it prone to volcanic eruptions. Taal, the second most active volcano in the country, has erupted 33 times in recorded history. Examining its past eruptions helps address gaps in understanding its eruptive behavior, processes, and impacts, which is critical for improving hazard and risk assessments for future eruptions (Delos Reyes, et al., 2018). Among key factors studied using Structural Equation Modeling (SEM), asset damage had the strongest influence on perceived severity, followed by eruption characteristics and evacuation readiness during the 2020 eruption. In contrast, past disaster experiences and socio-demographic factors had little impact (Prasetyo, et al., 2021).

Taal and Kanlaon volcanoes, though dormant at times, continue to show signs of activity through earthquakes and eruptions, reminding nearby communities of the constant risks they pose. Taal's 2020 eruption caused tephra fall, damaged crops, worsened air quality, collapsed roofs, and created traffic congestion (Balangue-Tariella, et al., 2022). From April 2010 to March 2011, Taal recorded numerous earthquakes, signaling a potential evolution of phreatic explosions (Zlotnicki, et al., 2018). Despite being dormant for 33 years at that time, Taal continued to show activity, warning of future eruptions. Similarly, Kanlaon Volcano recorded 251 local earthquakes in 2014 at depths of 23-26 kilometers, indicating a potential eruption at any time (Sevilla, et al., 2020).

Impact of Volcanic Eruption

The narrative situation and coping mechanisms of the people of the Philippines following the Taal volcano eruption. Perceived risk proximity, media, and hazard knowledge had a substantial impact on perceived severity and vulnerability. Attitudes toward the action, risk avoidance norms, and perceived behavioral control are all positively impacted by perceived vulnerability and severity. These were found to be directly related to preparedness practices, beliefs, and evacuation intention. With a focus on a single community (a barangay) in Talisay, Batangas, modeled evacuation behavior and logistics planning (Lim, et al., 2022). The primary components of evacuation logistics were the type and decision of evacuation, the timing of evacuation, the mode of evacuation, and the destination.

The Taal Volcano eruption deeply impacted affected communities, particularly mothers, who faced struggles like displacement, hunger, and health issues, while evacuees, especially vulnerable groups, dealt with worsened conditions due to respiratory diseases and overcrowded shelters. Volcanic eruptions often have a profound impact on affected communities, with women, especially mothers, facing significant struggles. When Taal Volcano erupted, families' displacement from Talisay, Batangas suffered from hunger, social inequalities, mental health issues, and livelihood interruptions. In addition, mothers that were displaced struggle as they lack permanent shelter during the disaster (Ancheta & Gamayo, 2022). Taal

Volcano affected several families, yet they don't have a choice because of their situation. The Department of Health (DOH) recorded 1,729 cases of respiratory infections linked to Taal Volcano's ashfall, with the majority of cases resulting from exposure to volcanic ash, which severely impacted evacuees, particularly those in overcrowded shelters, and vulnerable groups like the elderly, children, and individuals with pre-existing conditions (Esguerra, 2020). Affected civilians' condition worsened their situation and made it even harder for them to address the issue.

During the 2014 Mayon eruption, evacuation decisions were influenced by the community's past experiences and cultural factors. Trust in leadership, daily life disruptions, and the urgency of the situation all shaped their actions. People's responses were based not only on the available information but also on their personal values, expectations, and experiences, demonstrating how individual interpretations of risks guide decision-making in crises (Martinez-Villegas, et al., 2021). Residents near the Mayon Volcano had several ways of responding to its eruption in 2014. Some of them did not evacuate because they thought they were safe, while some of them evacuated because of fear (Martinez-Villegas, et al., 2021). This highlights the importance of disaster knowledge of people in responding to disasters.

DRRM Initiatives during Volcanic Eruption

Republic Act NO. 10121 was implemented in 2010. Republic Act No. 10121, or the Philippine Disaster Risk Reduction and Management Act of 2010, sets up a system for managing disaster risks in the country, focusing on proactive actions like preparedness, response, and recovery to reduce disaster impacts with the involvement of local government and communities. The law creates the NDRRMC to manage these efforts (Republic of the Philippines, 2010). In times of volcanic eruption, its importance can be seen through implementing effective strategies to reduce the negative impacts of such disasters. 21 communities within a 14-kilometer danger zone of Mount Kanlaon are implementing preventive measures in case of a volcanic eruption by having an evacuation plan, evacuation centers, and identified routes to it in order to rescue and save residents of their community, including PWDs, senior citizens, children, etc. (Alipo-on & Mejica, 2022). The leadership of government and authorities is important in managing and ensuring their communities are safe. Despite the implementation of RA 10121, delayed preparedness and response in the country can be seen most of the time when there is a crisis. Before Taal Volcano erupted, early signs of increased volcanic activity. However, official alerts were raised only on the day of the eruption, starting with Alert Level 2 and quickly escalating to Level 4 (Lagmay, 2020). This event highlighted gaps in disaster preparedness, including slow response times and the challenges in predicting volcanic behavior, calling for improved early warning systems and communication strategies.

There are various tools that can help everyone in identifying hazards and developing precautionary measures in response to them. Using Strategic Intervention Material (SIM), students' performance in interpreting hazard maps increased and became consistent. Using SIM, the average scores of the students' increased from 8.95 to 13.7. Additionally, both lower-performing students and higher-performing students showed improvements, indicating that SIM enhances students' education regarding hazard map interpreting skills (Anero, 2024). Teaching hazard mapping is an important contribution to the society, as disasters and dangers can happen anytime and anywhere. Through media (such as televisions, radio, and social media), people were able to know the volcanic activity, relative to Taal Volcano and Mount Bulusan, and establish significant precautions in response before an eruption began (German, et al., 2022). Advancement of technology in the Philippines helps Filipinos in preparing before an eruption began.

Relationship of the Previous Studies to the Present Study

Foreign and local studies show that the problem of volcanic eruptions towards the safety of humanities is existing, and the need for a disaster management plan of a community must be enhanced. These studies discussed the volcanic eruption cases, its impacts, and the initiatives of Disaster Risk Reduction and Management (DRRM), including its recovery response strategies and preparedness of a community that will help in determining the development of the current

study, focused in Silang, Cavite. It suggests important insights towards strategic community disaster management initiatives behind the risks of Taal Volcano eruption.

CHAPTER III

METHODOLOGY

This chapter reveals the methods of research to be employed by the researcher in conducting the study which includes the research design, research locale, research instrument, population and sampling, data construction procedure, analysis of information, and ethical considerations.

Research Design

This research employed a qualitative case study design, a method of inquiry that involves an in-depth investigation of an event within its real-world context (Hecker & Kalpokas, n.d.). Case studies are commonly used in qualitative research to explore and understand issues within real-life settings. This research design is widely applied in various fields, including education, medicine, political science, and social science. Given that this study examines the Taal Volcano eruption—a real-life event—it is well-suited for assessing the current disaster management strategies implemented in Silang, Cavite, in response to its impact.

Research Locale

This research is conducted in Silang, Cavite, an agricultural community that blends both rural and urban characteristics. Located approximately 45–50 km south of Manila, Silang serves as the study area. The research focuses on several barangay, including Lalaan 1,

Balite 1, San Vicente 1, San Vicente 2, Poblacion 2, Poblacion 4, Tatiao, Munting Ilog, Hukay, and Tibig. Additionally, two key institutions—the Philippine Red Cross Cavite Chapter (Silang Branch) and the Bureau of Fire Protection (BFP) Silang—were included due to their significant contributions to disaster response and management.

Population and Sample

The population for this research consists of all officials in Silang, Cavite, who were within the range of the Taal Volcano eruption, including those living in areas prone to ashfall, lava flow, and other volcanic hazards that influenced their decisions to adapt or remain unchanged.

From this population, the researchers selected a sample of 12 individuals, as this number was deemed sufficient to ensure credibility and completeness of the study (Gerin, 2017.) The sample includes one councilor each from Munting Ilog and Balite 1, barangay captains from Hukay and Poblacion 2, secretaries from San Vicente 1 and Tatiao, and councilors from San Vicente 2 and Lalaan 1. Additionally, the study includes the Sangguniang Kabataan Chairman from Poblacion 4, a councilor from Barangay Tibig, a disaster manager from the Philippine Red Cross, and a senior fire officer from the Bureau of Fire Protection.

Sampling Technique

The researcher employed purposive sampling, also known as judgment sampling, a method commonly used in qualitative and mixed-methods research. Unlike probability sampling, which relies on a predetermined sampling frame, purposive sampling selects participants based on specific criteria (Robinson, 2024.) In this study, the researcher carefully identified target participants who met the criteria—barangay officials and agencies responsible for and experienced in disaster risk reduction (DRR) in the context of the Taal Volcano eruption, specifically within Silang, Cavite.

Research Instrument

The research utilized a structured interview consisting of a total of eighteen open-ended questions divided into three main sections. The first six questions aim to understand Silang, Cavite's current risk management plan for volcanic eruptions. This section gathers information on how the municipality manages volcanic risks, assessing its preparedness and existing strategies. The second section focuses on the challenges faced by Silang, Cavite in implementing its disaster management plan. It explores the difficulties and obstacles encountered in applying the plan, helping to identify weaknesses in the system. The final section addresses the changes needed to fill gaps in the current disaster plan's implementation. This part examines potential modifications and solutions to enhance disaster risk management, strengthening the overall strategy. These questions aim to analyze the

impact of the Taal Volcano eruption on Silang's disaster management strategies, particularly its effects on preparedness, response, and recovery.

Data Construction Procedure

This section provides a detailed overview of the interview procedure, including the steps taken before, during, and after the interview. The process was designed to ensure accuracy, professionalism, and respect for participants' privacy and comfort.

In preparation for the interview, the researchers ensured that all questions were well-structured and that each interviewer fully understood their responsibilities. This step helped maintain consistency and clarity throughout the process.

Before the interview began, introductions were made to establish rapport, and informed consent was obtained from the participants. To allow them time to review the topics to be discussed, the interview questions were provided in advance.

During the interview, the structure, expectations, and format were explained to the participants. They were encouraged to provide detailed responses, including real-life examples where applicable. Interviewers employed techniques such as summarizing, paraphrasing, and reflecting to ensure clarity and accuracy in capturing responses.

At the conclusion of the interview, participants were given the opportunity to ask questions or seek clarification regarding their role in the study. Interviewers also asked if they had any final thoughts before expressing gratitude for their time and insights.

Following the interviews, the collected data was coded and organized based on recurring themes and common responses to facilitate analysis.

Analysis of Information

Thematic analysis was used to process the qualitative data gathered from various barangay officials and officers from different agencies in Silang, Cavite, who are involved in disaster-related matters, particularly volcanic eruptions.

The researchers began by preparing and organizing the data through transcription of participants' responses. They then carefully reviewed the data to gain a deeper understanding of each participants' answers. Thematic analysis was applied to code and process the transcribed data, allowing for the identification of key patterns and themes. To facilitate coding, colored markers were used to categorize information into distinct topics, such as disaster response strategies and challenges encountered during the Taal Volcano eruption. Common responses among participants included references to

seminars, drills, donations, and issues related to inadequate communication. Related themes were identified and categorized based on the study's research questions. Once the initial coding was completed, the researchers reviewed, refined, and collated the coded data. Finally, they synthesized the themes to derive meaningful insights and findings that aligned with the study's objectives.

Ethical Considerations

This study adheres to ethical guidelines to ensure ethical research conduct, protect participants' rights, and maintain the study's integrity. Participants were provided with informed consent, which outlined the study's purpose and procedures. Since the participants were barangay officials, consent was obtained in advance to allow them to plan their schedules accordingly.

To ensure confidentiality, participants were assured of their security and anonymity. All collected data was securely stored in encrypted files, accessible only to authorized researchers. To minimize discomfort, they were given the option to participate without showing their faces on camera. The researchers upheld objectivity throughout data collection and analysis, ensuring that no biases influenced the study's findings. By following these ethical principles, the study maintained the highest standards of research integrity and participant protection.

CHAPTER IV

RESULTS AND DISCUSSION

This chapter comprises the analysis, presentation and interpretation of the findings resulting from this study. Discussions are also provided to give a comprehensive explanation of the themes that were generated in response to the objectives set in this study.

Research Findings

SOP 1: What is the current disaster risk management plan of Silang, Cavite focusing on volcanic eruption?

A current disaster risk management plan for Silang, Cavite, focusing on volcanic eruption preparedness, is discussed. Preparedness is the state of being ready, equipped, and able to respond to challenges. Based on research findings, one interviewee stated, "*Bago pa lang pumutok ang bulkan dapat nakahanda na... kung saan lilikas, kung gaano kadaming pagkain ang kailangan.*" (Even before the volcano erupts, one should already be prepared, knowing where to evacuate and how much food is needed.) This statement emphasizes the need for preparedness before a Taal Volcano eruption. Another interviewee stated, "*Meron din kaming nakahandang evacuation center, prepared naman kasi.*" (We have an evacuation center ready, as we are well-prepared.) This suggests that the community is prepared for potential emergencies, having a designated evacuation center in place. Additionally, "In preparedness, residents can help identify volcano-prone areas, and residents can participate in increasing evacuation

routes and shelters." This means that residents can help identify safe routes for people to evacuate quickly and safely in case of an eruption.

Volcanic eruptions pose significant threats to human life and infrastructure, making effective planning crucial for mitigating risks and ensuring community resilience. One interviewee stated, "A comprehensive and multi-stakeholder approach that aims to reduce the risk associated with volcanic eruptions and promote community resilience." This highlights the need for a collaborative plan involving all stakeholders to minimize volcanic eruption risks and aid community recovery. Another interviewee emphasized, "Public safety, protecting workers, emergency responders, and nearby communities from exposure to toxic chemicals and hazards," underscoring the importance of keeping people safe during and after a volcanic eruption. Furthermore, another interviewee noted, "I believe that the current plans appear to be comprehensive and well-coordinated. Key strengths of the plans include the following: established emergency response systems, evacuation and evacuation plans, and partnerships." This statement highlights that the plans are thorough, well-structured, and include essential elements such as emergency response systems, evacuation plans, and partnerships to ensure community protection during volcanic eruptions.

The implementation of assessments in Silang, Cavite, has significantly improved the efficiency of aid distribution and resource

management during disasters. One interviewee explained, "*Role ng community, usually 'pag may announcement… Tumanggap ng evacuees from Tagaytay and Alfonso. Nagbibigay sila ng donations, food, clothes.*" (The role of the community, usually when there is an announcement, is to receive evacuees from Tagaytay and Alfonso. They also provide donations, including food and clothing.) With proper assessment, the distribution of food and other necessities has become more organized, ensuring that the specific needs of evacuees are met. Another interviewee stated, "*Parang wala akong ano, parang may nagbibigay sa amin, mga taga-Batangas at Laguna.*" (It is like we don't have anything, like people from Batangas and Laguna are the ones giving to us.) This reflects the importance of assessing available resources, as it allows the community to identify gaps in supply and recognize external support from nearby provinces. Additionally, another interviewee mentioned, "*Yung sa recovery efforts nila, naging taga-supply kami sa mga area, electricity, water supplies at paglilinis ng mga kalsada.*" (In their recovery efforts, we became suppliers to the affected areas, providing electricity, water supplies, and road clearing.) Through proper assessment, the allocation of resources and manpower was effectively managed, ensuring that infrastructure restoration and essential services were prioritized. Overall, assessments have played a crucial role in Silang, Cavite, allowing for a more systematic approach to aid distribution, resource management, and community support.

The implementation of disaster preparedness drills in Silang, Cavite, has helped the community understand the necessary steps to take during emergencies, particularly volcanic eruptions. One interviewee stated, "*Nasali kami sa drills. Halimbawa, sa mga na-injury, sumasali kami sa mga disaster program.*" (We got involved in drills. For example, in cases of injuries, we participate in disaster programs.) This is beneficial because it encourages community participation in drills for their safety and promotes the development of disaster risk reduction programs. Another interviewee explained, "*Sumali sa drills ng ano ba 'toh, ng munisipyo para magkaroon tayo ng idea.*" (Joining the drills of the municipality to give us an idea.) Through these drills, residents gain a better understanding of disaster preparedness, particularly for volcanic eruptions, ensuring their safety. Additionally, one interviewee mentioned, "*Ipaliwanag sa kanila nang mahusay kung tungkol saan ang pag-uusapan sa drills. Siyempre, kailangan nila makinig para mailigtas nila ang kanilang mga sarili at pamilya rito.*" (Explain to them clearly what the drills are about. Of course, they need to listen so they can protect themselves and their families.) Proper explanation ensures that people are well-informed, allowing them to make the necessary preparations in case of another volcanic eruption. Overall, these assessments and drills have strengthened disaster preparedness in Silang, Cavite, equipping the community with the knowledge and skills needed to protect themselves and their families.

The current disaster risk management plan of Silang, Cavite, focusing on volcanic eruptions, emphasizes conducting seminars. This is evident from the statements of the interviewees. One interviewee stated, "*Oo, talagang nakikipag-cooperate, eh minsan nga nagpapaano sila ng seminar, anytime na mangyari muli eh lagi silang handa.*" (Yes, they really cooperate. In fact, they even organize seminars sometimes. Whenever it happens again, they are always ready.) This highlights the community's willingness to participate and their proactive approach to preparedness. Another interviewee shared, "*Isa sa mga lesson na natutunan namin don pagkatapos pumutok ng Bulkang Taal ay magkaroon talaga ng pakikipagkooperasyon, pagbibigay ng seminars.*" (One of the lessons we learned after the Taal Volcano eruption is the importance of cooperation in conducting seminars.) This underscores the crucial role of cooperation in disaster preparedness efforts. Lastly, another interviewee mentioned, "*Nagkaroon ng seminars ang DRRMO sa lahat ng barangay… Contact ng DRRMO just in case na may sakuna eh maagapan.*" (The DRRMO conducted seminars in all barangays… Contact the DRRMO in case of a disaster so that it can be addressed immediately.) This statement reinforces the importance of educational initiatives and accessible communication channels for quick disaster response. Overall, the disaster risk management strategy in Silang prioritizes community education and cooperation through regular seminars, ensuring residents are well-prepared in the event of another volcanic eruption.

Apart from conducting seminars, they also coordinate with different offices. According to one interviewee, "*Iyan ang coordination namin sa DRRM at other offices, nagkakaroon kami ng meeting coordination.*" (We have coordination meetings with DRRM and other offices—that is how we coordinate.) This ensures collaboration and cooperation between the barangays and these offices, strengthening disaster preparedness efforts. Another interviewee also stated, "*Cellphone… pakikipag-usap kung anong dapat paghandaan pagdating ng sakuna.*" (Cellphone… communicating about what needs to be prepared for when a disaster occurs.) This shows that coordination continues even through mobile communication, ensuring a quick and organized response. Lastly, another interviewee mentioned, "*Ahh, una-una, ang ating munisipal hindi nagkukulang. Hinihipo naman nila ang mga barangay, sila ang lumalapit sa barangay.*" (First and foremost, our municipality never falls short—they reach out to the barangay instead of waiting for them to coordinate.) This highlights that coordination is not solely the responsibility of the barangay; the municipal government also takes an active role in ensuring disaster preparedness.

SOP 2: What are the challenges faced by the municipality of Silang, Cavite in implementing its current disaster risk management plan?

In order to provide the basic services, maintain infrastructure, and guarantee the welfare of nearby populations, municipalities are needed. A government official's first statement declares that "*Eh nung*

may kakulangan ehh… ahm.. meron pero ho hindi naman gaano kalala dahil nung pumutok bulkan e nagtulungan naman kahit papaano sila o sa pakikipag-usap sa aming barangay." (There was not really an impact, but they still helped each other by coordinating with the barangay). The government official states that there is a lack of something, but there is not really an impact because of the coordination. "*Ang municipality naman natin ay naglalaan ng pera para matugunan kung ano ang kailangan ng kanilang nasasakupan*" (Our municipality is the one who provides the budget so the needs are solved) says the second statement. Government officials need the municipality to provide money for future disasters. The last statement states that "*Dito sa amin e… ah… maliit lang aming budget dito samin.*" (there is not much budget here). The community or government officials state that there is not enough budget to accommodate the needs of the community. This highlights the crucial role of municipalities in disaster management, as their ability to allocate sufficient funds and coordinate with local barangay directly impacts the effectiveness of response efforts and the overall welfare of the community.

Plans for disaster risk management rely on available assets to respond quickly and support both individuals' physical well-being and the community as a whole. One government official stated, "*Anong question? Ano naman pag may paganyan sa atin, may nangyayari, humihingi pa din kami ng tulong sa… BDRRM para sa… matulungan kami sa ah… pag-iwas sa sakuna.*" (When disasters happen, BDRRM is

the one that the community will go to.), emphasizing that the BDRRM plays a crucial role in assisting the community in disaster preparedness and response. Another government official explained the initial lack of planning, stating, "*Kasi dati kami walang plan. Ang first step ng BFP ang eh mga public vehicles kasi wala silanh makitang ah…*" (There were not any plans at first; vehicles are needed.), highlighting the difficulty in evacuation due to the absence of a pre-established plan and insufficient public vehicles. The lack of preparation was further reinforced by another official who admitted, "*Wala, wala talaga… wala kasi kami talagang contingency plan. Hindi namin talaga alam. Hindi namin alam mangyayari.*" (We do not have plans because we do not know what is going to happen.), indicating that the community was unprepared for the sudden situation. The unexpected eruption of Taal Volcano caught everyone off guard, leaving government officials struggling to respond quickly due to the lack of warning signs, public vehicles, and a proper contingency plan, which resulted in panic, evacuation challenges, and livelihood losses. This situation underscored the urgent need for better coordination and disaster preparedness to ensure a more effective and timely response in the future.

Silang, Cavite, faces challenges in disaster risk management, including communication gaps, logistical concerns, and inconsistent collaboration with nearby localities. One government official stated, "*Sa tingin ko wala naman, ahh, bukod den sa mga matitigas nga talagang*

mga ulo ng residente, na nasabihan muna umalis… Ayos parin, yun lang na naging problema kasi sa plano naman namin is… Meron namang.. fund kaya sa tingin ko wala naman and prepared naman yung mga tao namin." (I think there is nothing much, ahh, except for some really stubborn residents who were already told to leave… But it is still okay. That was the only problem because, in our plan… there are enough funds, so I think there is no problem, and our people are prepared.) This statement emphasizes that the main issue was the refusal of some residents to evacuate despite prior warnings, while the official also noted that their team was well-prepared with sufficient funding for disaster plans. Another government official stressed the importance of proper fund allocation, stating, "*Ilalagay natin sa tama ang pagbigay ng pondo sa ganitong disaster.*" (We will ensure that the funds for this kind of disaster are properly allocated.), reinforcing their commitment to efficiently using resources for disaster response. Additionally, past challenges included the increasing reluctance of residents to comply with evacuation orders. As another government official explained, "*Nagiging pangunahing problema noon uhm… Mas nagiging matigas ang ating residente.*" (The main problem before was that our residents became more stubborn,) highlighting that community resistance has been a recurring obstacle in implementing disaster management plans. In summary, while Silang, Cavite, has the necessary resources for disaster response, issues such as resident reluctance, communication gaps, and coordination difficulties continue to pose significant challenges.

SOP 3: What changes must be made to address the gaps in the implementation of the current disaster risk management plan of Silang, Cavite?

Rescue and response efforts must improve to save more lives, reduce harm, and provide quick assistance to those in need. "*Mas in-improve, mas mabilis sila rumesponde.*" (They improve the strategic initiatives for disaster risk management, enabling them to respond more quickly to disasters.) This emphasizes the need to enhance strategic initiatives to ensure the effective implementation of plans and minimize risks for the community. "*Dito kase yung kumpleto tayo sa evacuation area, kumpleto tayo pagdating sa mga ganyan.*" (We have a well-equipped evacuation area and are fully prepared for such situations.) This highlights their efforts to enhance disaster preparedness by setting up a fully equipped evacuation area, ensuring a safe and organized space for those affected during emergencies. "*Kailangan po ay kung ano man ang seminar nung nakaraan ay mas lalong husayan pa natin.*" (They need to enhance their previous seminar and make it even better to strengthen their strategic initiatives for effective disaster management.) Well-structured seminars serve as a bridge to achieving efficient emergency responses by enhancing coordination and strengthening strategic initiatives. By continuously improving strategic initiatives, infrastructure, and preparedness programs, the community can ensure a more effective response to disasters, minimizing risks and protecting lives.

When disaster strikes and destroys livelihoods, people rely on relief goods for survival. The distribution of these goods is guided by data and responses from interviewees who share their experiences and knowledge. One government official stated, "*Nagbigay agad ng relief goods sa mga nasalanta ng Taal Volcano.*" (Relief goods were immediately given to the people affected by the Taal Volcano.), highlighting the local government's prompt response in aiding those in need. Another government official emphasized the prioritization of essential supplies, saying, "*Prior na pagbibigay ng mga kakaining bigas at delata sa mga pamilyang naapektuhan ng volcanic eruption.*" (The priority is to give rice and canned goods to families affected by the volcanic eruption.) This underscores that local authorities focus on providing food essentials before distributing other forms of aid. Additionally, an interviewee affirmed, "*Ahhmmm…pagbibigay natin ng relief goods sa nasalanta.*" (Ahhmmm…giving relief goods to those who are affected,) further aligning with previous statements that relief goods are distributed to those in need. Another statement, "*Sa pagputok ng mga kwan eh ang mga relief goods.*" (The volcanic eruption increases the demand for relief goods,) reinforces the idea that disasters heighten the necessity for such aid. In conclusion, relief goods play a vital role in disaster response, with local governments ensuring that the most vulnerable receive immediate assistance based on their urgent needs.

Infrastructure development plays a crucial role in improving disaster resilience and community safety, particularly in areas prone to natural disasters. Improvements in road construction will help vehicles pass smoothly, with one government official noting, "*Sa pagkakapansin ko may street lights na. May mga project din na ginagawa, stop light, roads tulad ng CALAX. May possibility na establishment na pwedeng tumulong at maapektuhan.*" (As far as I can see, there are street lights. There are also projects being done, stop lights, roads like CALAX. There is a possibility of establishments that can jump in and be affected.) Various infrastructure projects, including the installation of street lights, stop lights, and the expansion of roads like CALAX, are being implemented, potentially leading to significant changes in the area, such as increased establishments and their impact on the local community. Another government official emphasized the devastating consequences of recent disasters, stating, "*Malaki epekto nito iho dahil… napakalaking pinsala nito sa mga tao at sa mga estructura ng aming barangay marami ang nasira.*" (Its effect is huge, son, because… it caused massive damage to the people and structures in our barangay; many were destroyed.) Because of the severe damage inflicted on the people and structures in the barangay, the need for a strong disaster response system became clearer, leading to improvements such as strengthening disaster preparedness programs and enhancing coordination between the local government and residents. Additionally, another government official highlighted the importance of resilient infrastructure, saying, "*Mas ma-iimprove nila ang mga gusali kung saan*

kapag nagkaroon ng volcanic eruption ay hindi madaling masisira ang gusali." (They can better test buildings where, if there is a volcanic eruption, the building will not be easily destroyed.) To enhance disaster preparedness, stricter building regulations and the use of more durable materials can be implemented to reinforce structures against the impact of volcanic eruptions, ensuring that buildings are not easily destroyed, thereby increasing residents' safety and minimizing infrastructure damage. Ultimately, these initiatives contribute to a safer, more resilient community capable of withstanding future disasters.

Discussion

The 2020 Taal Volcano eruption exposed significant gaps in Silang, Cavite's disaster preparedness, highlighting the town's lack of a structured response plan and adequate resources. Prior to the eruption, disaster planning was not a priority, leaving the barangay and local agencies unprepared for its effects. When the eruption occurred, response teams struggled due to limited equipment, inadequate knowledge, and a lack of clear protocols for managing hazards such as ash fall and earthquakes. This experience served as a wake-up call, prompting efforts to strengthen disaster preparedness through seminars, training sessions, drills, and risk assessments. While these initiatives aim to address previous shortcomings, challenges persist, including budget constraints, insufficient equipment, and the need for stronger community engagement. Moreover, despite these adjustments,

their effectiveness remains uncertain, as they have yet to be tested in another volcanic eruption. Without sustained improvements and proactive measures, Silang's disaster preparedness remains fragile. While progress has been made in strengthening disaster preparedness, Silang's long-term resilience will depend on continuous improvements, sustained funding, and active community participation.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This chapter presents the summary of the study, conclusions, and recommendations of the study based on the data analyzed from the previous chapter.

Summary

This study examines how disaster management strategies for Taal Volcano eruptions have evolved, focusing on preparedness, rescue operations, and mitigation. Through interviews with local authorities, it highlights challenges faced by communities, particularly in Silang, Cavite where barangays develop unique DRRM plans. The study emphasizes the need for tailored disaster preparedness and stronger community.

Findings on the super-ordinate themes, subordinate themes and subcategories that emerged from the analysis of data are as follows:

1. The current disaster management plan if Silang, Cavite focusing on volcanic eruption.
    1.1. Preparedness
    1.2. Planning
    1.3. Assessments
    1.4. Drills
    1.5. Seminars
    1.6. Coordination

2. The challenges faced by the municipality of Silang, Cavite in implementing its current disaster risk management.
    2.1. Budget
    2.2. Lack of planning
    2.3. Cooperation
3. Changes that must be made to address the gaps in the implementation of the current disaster risk management plan of Silang, Cavite.
    3.1. Immediate response
    3.2. Relief goods
    3.3. Infrastructure development

Conclusions

This study, Ashes to Action: Analyzing the Impact of Volcanic Eruption on Strategic Community Disaster Management Initiatives, provides a comprehensive analysis of how communities near Taal Volcano have adapted their Disaster Risk Management (DRM) strategies in response to volcanic eruptions. It highlights significant variations in preparedness, rescue operations, and mitigation efforts across different barangays in Silang, Cavite, underscoring the need for tailored approaches that consider unique local contexts and the dynamic nature of disaster management in volcanically active regions.

The findings offer crucial insights into the effectiveness of existing DRM plans, identifying both successful strategies and areas requiring

improvement. By examining challenges encountered alongside best practices, the study provides valuable data for policymakers, local authorities, and disaster response agencies. These insights can inform the development of more adaptive, community-centered DRM strategies, ultimately enhancing the resilience and safety of populations living in high-risk volcanic zones.

Ultimately, Ashes to Action emphasizes the critical role of community-driven adaptation and the importance of context-specific disaster planning. The research advocates for more flexible and responsive DRM frameworks that empower communities to mitigate risks proactively and strengthen resilience against future eruptions and other natural hazards. By analyzing local responses, this study offers a valuable model for both future research and practical disaster risk reduction efforts globally.

Recommendations

Based on the study findings on the disaster preparedness plan in Silang, Cavite, several recommendations are proposed to enhance disaster awareness, response, and early warning systems. The results emphasize key areas for improvement, including community awareness, emergency response, resource allocation, and early warning mechanisms. The following recommendations aim to provide practical strategies for officials and community members to strengthen their disaster preparedness efforts.

To Barangay Officials. Based on the findings of this study, it is recommended that each barangay implement a comprehensive disaster preparedness plan that includes regular drills, thorough risk assessments, and continuous educational programs. These initiatives should be periodically reviewed and updated to ensure their effectiveness in addressing evolving risks. Strong coordination between local government units and barangay officials is essential to support and sustain disaster preparedness efforts. Additionally, barangays should be equipped with complete emergency response tools and establish well-structured evacuation procedures to ensure swift and organized responses during crises. By implementing these recommendations, barangay officials can enhance community safety, minimize risks, and strengthen overall disaster resilience in volcanically active regions.

To Philippine Red Cross – Silang Branch of Cavite Chapter. The Red Cross, in implementing its Disaster Preparedness Program in Silang, Cavite, aims to adopt a well-structured, research-driven approach to address the gaps highlighted by the 2020 Taal Volcano eruption. A comprehensive study of community vulnerabilities, response effectiveness, and resource limitations will serve as a foundation for enhancing disaster preparedness strategies. Strengthening community involvement through targeted training, awareness programs, and improved access to early warning systems

will empower residents to respond more effectively during crises. By focusing on these areas, the Red Cross can better mitigate risks and improve emergency response efforts in the future.

To the Bureau of Fire Protection. Based on the findings of this study, it is recommended that regular training, coordination with the municipality and barangays, equipment preparedness, and community education on fire threats should be undertaken by the BFP prior to an eruption. Firefighters lead efforts in road cleaning, evacuations, and preventing ash contamination in water supplies during a volcanic eruption. Public safety and concerns will be enhanced by strengthening these measures.

To the Community. This study highlights the impact of strategic plans on the community. As members of the community, individuals must actively participate in various disaster preparedness initiatives, such as attending drills, seminars, and barangay activities. Their cooperation enhances safety and readiness, ultimately reducing the impact of disasters. Additionally, fostering discipline and adherence to authorities' regulations is crucial for effective disaster management.

To Students. This study highlights the importance of disaster preparedness, particularly during volcanic eruptions. Students should

take an active role by learning about the risks, attending training sessions, joining seminars, and raising awareness in their communities. They can encourage their families and peers to create emergency plans, prepare survival kits, and stay updated on government safety protocols. By being proactive and responsible, students can contribute to building a community that is better prepared for disasters.

To the Future Researchers. Future researchers should explore the long-term effects of volcanic eruptions on community resilience and recovery efforts. Expanding the study to multiple affected areas can provide a broader perspective on disaster management strategies. Incorporating technological advancements, such as early waning systems and can enhance preparedness and response. Engaging with local stakeholders, including barangay officials and disaster response teams, can offer valuable insights into the effectiveness of current initiatives. Lastly, assessing policy implementation and community adaptation can help improve future disaster management frameworks.

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APPENDIXES

APPENDIX A

Republic of the Philippines
Department of Education
REGION IV-A
DIVISION OF CAVITE PROVINCE
MUNTING ILOG INTEGRATED NATIONAL HIGH SCHOOL

Informed Consent

Dear Sir/Madam:

I hope this letter finds you in good health and high spirits. We are Grade 11 STEM students from Munting Ilog Integrated National High School. I am writing to you to seek your voluntary participation in a research study that we are conducting entitled "***Ashes to Action: Analyzing the Impact of Volcanic Eruption on Strategic Community Disaster Management Initiatives"***. The purpose of this study is to investigate how the Taal Volcano eruption affected the strategic community disaster management initiatives of Silang, Cavite, regarding its improvements towards the safety of Silangueños.

Your participation in this research study is entirely voluntary, and you have the right to refuse to participate or withdraw your consent at any time without any negative consequences. Your decision to participate or decline will not affect your current or future relationship with our school or fellow researchers.

Here are some important details about the research study:

Study Procedures: If you agree to participate, you will be asked to answer our interviews and it includes eighteen (18) questions. The estimated duration of your participation will be approximately 30 minutes to one (1) hour.

Confidentiality: We will maintain strict confidentiality of all the information collected during the research study. Your data will be coded and stored securely, and only authorized researchers will have access to it. Any information published or presented will in an aggregated and anonymized form, ensuring your identity remains confidential.

Voluntary Participation: Participation in this research study is entirely voluntary. If you decide to participate, you are free to withdraw your consent or discontinue your involvement at any point without providing a reason and without any penalty or loss of benefits.

By signing below, you indicate that you have read this consent letter, understood the information provided, and voluntarily agree to participate in the research study. You also acknowledge that you have received a copy of this letter for your records.

Thank you so much for your cooperation on this study and God bless!

Sincerely,

The Researchers: _____

Participant's Signature: _____

Participant's Name: _____

Date of Interview: _____

Purok 3, Munting Ilog, Silang, Cavite
0917-315-5152
epedcavite.muntingilognhsmain@gmail.com
DepEd Tayo Munting Ilog Integrated National High School - Cavite

APPENDIX B

Republic of the Philippines
Department of Education
REGION IV-A
DIVISION OF CAVITE PROVINCE
MUNTING ILOG INTEGRATED NATIONAL HIGH SCHOOL

Interviewee's Profile

Name: _____

Age: _____

Sex: _____

Date of Birth: _____

Place of Birth: _____

Address: _____

Educational Background: _____

Current Employment: _____

Contact Information: _____

DRRMO designation: _____

Name of office: _____

_____

Signature of Interviewee over Printed Name

Purok 3, Munting Ilog, Silang, Cavite
0917-315-5152
epedcavite.muntingilognhsmain@gmail.com
DepEd Tayo Munting Ilog Integrated National High School - Cavite

APPENDIX C

Republic of the Philippines
Department of Education
REGION IV-A
DIVISION OF CAVITE PROVINCE
MUNTING ILOG INTEGRATED NATIONAL HIGH SCHOOL

Interview Questions

1. Can you describe the current disaster risk management plan for volcanic eruptions in Silang, Cavite in detail? What are its key components and strategies?

2. What are the identified vulnerabilities of Silang, Cavite to volcanic eruptions based on the current risk assessment? How were these vulnerabilities determined?

3. What role does community participation play in the disaster risk management plan? How are residents involved in preparedness, response, and recovery efforts?

4. Prior to Taal Volcano eruption on January 12, 2020, what contingency plans did the municipality have in place to address an unexpected volcanic eruption?

5. How effective do you believe the current plan is in mitigating the risks posed by volcanic eruptions? What evidence supports your assessment? (This question focuses on the plan's effectiveness and requires justification.)

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DepEd Tayo Munting Ilog Integrated National High School - Cavite

6. What are the major challenges in implementing the disaster risk management plan, particularly regarding volcanic eruptions? Are there resource constraints, communication barrier, or other obstacles?

7. How does the municipality ensure the plan if regularly reviewed and updated to reflect changes in volcanic activity or lessons learned from past events?

8. How have the residents of Silang, or Silangueños, collaborated with community responders in municipal activities such as drills, evacuations, and disaster preparedness promotions?

9. How does your locale coordinate with the Silang Disaster Risk Reduction Management Office (DRRMO), the Philippine Red Cross Silang Branch of the Cavite Chapter, and various barangays in implementing the disaster risk management plan?

10. What knowledge or understanding do you have regarding the importance of a disaster risk management plan and the hazards associated with a volcanic eruption?

11. How does the municipal government support disaster preparedness and response initiatives for the community, such as budget allocation and the designation of personnel to assist civilians?

12. Which strategic community disaster management initiatives demonstrate greater effectiveness—those implemented before the Taal Volcano eruption or the current plans established after the eruption? Explain your answer.

13. How smoothly is the current strategic community disaster management initiative/disaster risk management plan being implemented in your barangay or in the town of Silang?

14. To further enhance preparedness for volcanic hazards, what modifications have been made to the community's strategic community disaster management initiatives, such as rescue operations, evacuations, drills, training, and recovery efforts?

15. How have funds and resources been allocated for the development and implementation of the strategic community disaster management initiatives to address the impact of the Taal Volcano eruption on safety the economy, and the other aspects of community life?

16. What improvements have been made, are currently being implemented, or are planned regarding condition among different barangays and the Municipality of Silang, Cavite?

17. How can Community members be encouraged to actively participate and cooperate in activities related to disaster preparedness and response?

18. How has the volcanic eruption influenced subsequent community projects, such as the construction of buildings and roads, as well as the implementation of disaster management strategies?

Name and Signature of Interviewee

Name and Signature of Interviewer

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0917-315-5152
epedcavite.muntingilognhsmain@gmail.com
DepEd Tayo Munting Ilog Integrated National High School - Cavite

CURRICULUM

VITAE

PRINCESS MARY KEIGHT BAYACAL

09923884088
princessbelandres8@gmail.com
Ilaya St., Brgy. Munting Ilog,
Silang, Cavite, 4118

PERSONAL INFORMATION

Birthday	August 8, 2008
Birthplace	Munting Ilog, Silang, Cavite
Age	16 Years old
Father's Name	N/A
Mother's Name	Ayris Joy H. Belandres
Nationality	Filipino
Religion	Roman Catholic
Civil Status	Single
Language Spoken	English and Tagalog
Hobbies	Editing, Listening to music, watching documentaries

REFERENCE

Christianne Roie A. Carabeo, MACDDS
Munting Ilog Integrated National High School
Research Teacher
09171452217

Rochelle Legazpi, Munting Ilog Integrated National High School
English Teacher
09656254454

Gervi Destura,Munting Ilog Integrated National High School
Araling Panlipunan Teacher / SSLG Adviser
09182612509

CAREER OBJECTIVE

A STEM student with a passion for editing, and language, combining with a strong personality and dedication towards a specific task. Having a positive mind on what's ahead of me. SSLG officer for 3 S.Y

EDUCATION

- ***SENIOR HIGH SCHOOL***
  Munting Ilog Integrated National High School (2024-Present)
  Munting Ilog, Silang, Cavite
  With Honors
- ***JUNIOR HIGH SCHOOL***
  Munting Ilog Integrated National High School (2020-2024)
  Munting Ilog, Silang, Cavite
  With Honors
- ***ELEMELENTARY SCHOOL***
  Munting Ilog Elementary School (2014-2020)
  Munting Ilog, Silang, Cavite
  Academic Achiever

SKILLS

- Leadership
- Technical Skills
- Time Management
- Professionalism

Princess Mary Keight Bayacal
GRADE 11- STEM STUDENT

VINCE KRISTAN U. BAYACAL

09771272761
vinxkuriztan@gmail.com
103 Halfway St., Brgy. Munting Ilog,
Silang, Cavite, 4118

PERSONAL INFORMATION

Birthday	February 2, 2008
Birthplace	Munting Ilog, Silang, Cavite
Age	17 years old
Father's Name	Hervin R. Bayacal
Mother's Name	Kristine B. Umandap
Nationality	Filipino
Religion	Christian-Born Again
Civil Status	Single
Language Spoken	English and Tagalog
Hobbies	Reading, playing online games, and basketball

REFERENCE

Christianne Roie A. Carabeo, MACDDS
Munting Ilog Integrated National High School
Research Teacher
09171452217

Efren B. Reyes, LPT Munting Ilog Integrated National High School
Teacher III
09266966516

Clarice A. Toledo, LPT Munting Ilog Integrated National High School
Teacher III
09542733667

CAREER OBJECTIVE

To secure a research position where I can apply my analytical skills, problem-solving abilities, and passion for innovation to contribute to impactful projects. Eager to collaborate with a dynamic team and drive advancements through scientific inquiry and data-driven insights.

EDUCATION

- ***SENIOR HIGH SCHOOL***
  Munting Ilog Integrated National High School (2024-Present)
  Munting Ilog, Silang, Cavite
  With Honors
- ***JUNIOR HIGH SCHOOL***
  Munting Ilog Integrated National High School (2020-2024)
  Munting Ilog, Silang, Cavite
  With Honors
- ***ELEMELENTARY SCHOOL***
  Munting Ilog Elementary School (2014-2020)
  Munting Ilog, Silang, Cavite
  With Honors

SKILLS

- Problem solving
- Adaptability
- Fast worker
- Good listener

Vince Kristan U. Bayacal
GRADE 11- STEM STUDENT

MARIEL AUBREY G. DAÑOS

09940991406
marielaubreydanos@gmail.com
Matro St., Brgy. Tibig,
Silang, Cavite, 4118

PERSONAL INFORMATION

Birthday	December 05 2007
Birthplace	Tibig, Silang, Cavite
Age	17 years old
Father's Name	Eldie D. Daños
Mother's Name	Marife S. Guerrero
Nationality	Filipino
Religion	Roman Catholic
Civil Status	Single
Language Spoken	English and Filipino
Hobbies	Watching movies, dancing, cooking

REFERENCE

Christianne Roie A. Carabeo, MACDDS
Munting Ilog Integrated National High School
Research Teacher
09171452217

Christine M. Cordero, Munting Ilog Integrated National Highschool
Teacher II
09280030277

Cathlea R. Ventura, Munting Ilog Integrated National Highschool
Teacher I
09305310651

CAREER OBJECTIVE

I aspire to be a successful nurse, not for the salary, but to share my knowledge and compassion while helping those in need. While I may not be the best, I am committed to fulfilling my responsibilities with dedication and professionalism. I promise to care for my patients with the respect and quality treatment they deserve.

EDUCATION

- ***SENIOR HIGH SCHOOL***
  Munting Ilog Integrated National High School (2024-Present)
  Munting Ilog Silang, Cavite

- ***JUNIOR HIGH SCHOOL***
  Munting Ilog Integrated National High School (2023-2024)
  Munting Ilog, Silang, Cavite
  With Honors

- ***ELEMELENTARY SCHOOL***
  Tibig Elementary School (2018-2020)
  Tibig, Silang, Cavite
  With Honors

SKILLS

- Work Professionally
- Adaptability
- Time Management
- Active Listening

Mariel Aubrey G. Daños
GRADE 11- STEM STUDENT

ARIEL M. FELISILDA

09669515973
arielfelisilda07@gmail.com
Iba, Ibaba Purok 1,
Silang, Cavite, 4118

PERSONAL INFORMATION

Birthday	April 7, 2006
Birthplace	Fvr, Gma , Cavite
Age	18 years old
Father's Name	Albreths L. Felisilda
Mother's Name	Arlene S. Montebon
Nationality	Filipino
Religion	Christian-Born Again
Civil Status	Single
Language Spoken	English and Tagalog
Hobbies	Instrument, playing games, playing sports and Drawing

REFERENCE

Christianne Roie A. Carabeo, MACDDS
Munting Ilog Integrated National High School
Research Teacher
09171452217

Efren B. Reyes, Munting Ilog Integrated National High School
Teacher III
09266966516

Lendl Kay T. Manzanilla, Munting Ilog Integrated National High school
Teach II
09675910069

CAREER OBJECTIVE

To obtain a career as a pilot where I can travel various country and meet other people with different culture

EDUCATION

- ***SENIOR HIGH SCHOOL***

  Munting Ilog Integrated National High School (2024-Present)

  Munting Ilog, Silang, Cavite

- ***JUNIOR HIGH SCHOOL***

  Munting Ilog Integrated National High School (2020-2024)

  Munting Ilog, Silang, Cavite

  With Honors

- ***ELEMELENTARY SCHOOL***

  Silang Central Elementary School (2014-2020)

  P. Montoya Street, Poblacion, Silang, Cavite

  With High Honors

SKILLS

- Leadership skills
- Logical Thingking
- Critical Thinking

Ariel M. Felisilda
GRADE 11- STEM STUDENT

EIRENE JEZIEL L. MARGES

09560983211
ejmarges23@gmail.com
Brgy. Munting Ilog,
Silang, Cavite, 4118

PERSONAL INFORMATION

Birthday	May 04, 2007
Birthplace	Munting Ilog, Silang, Cavite
Age	17 years old
Father's Name	Ronnel A. Marges
Mother's Name	Jhoan L. Marges
Nationality	Filipino
Religion	Christian
Civil Status	Single
Language Spoken	English and Tagalog
Hobbies	Playing Badminton, Drawing, Traveling

REFERENCE

Christianne Roie A. Carabeo, MACDDS
Munting Ilog Integrated National High School
Research Teacher
09171452217

Kim Ezekiel Del Mundo, Launchpad,
Sheridan St. cor. Reliance St.
Brgy. Highway Hills, Mandaluyong City,
Metro Manila,1552
Senior Software Engineering Specialist
09480082524

Michelle Ollamina, Bendita Kurios
Christan College Foundation
Teacher
09998196546

CAREER OBJECTIVE

I want to be a skilled software developer while still making time for my passion for badminton. Building innovative solutions and growing in the tech industry is important to me, but so is staying active and continuing to improve in the sport. Whether I compete or just play for personal growth, badminton helps me stay balanced both physically and mentally. With dedication and good time management, I believe I can succeed in both areas and enjoy the best of both worlds.

EDUCATION

- ***SENIOR HIGH SCHOOL***

  Munting Ilog Integrated National High School (2024-Present)

  Munting Ilog, Silang, Cavite

- ***JUNIOR HIGH SCHOOL***

  Kurios Christian College foundation (2020-2024)

  Bendita, Magallanes, Cavite

  With Honors

- ***ELEMELENTARY SCHOOL***

  Kurios Christian College Foundation (2014-2020)

  Bendita, Magallanes, Cavite

  With Honors

SKILLS

- Time management
- Programming
- Agility and Footwork
- Game Strategy

Eirene Jeziel L. Marges
GRADE 11- STEM STUDENT

LEE ANDREI L. PAGLINAWAN

09983476473
leeandreipaglinawan1@gmail.com
Ilaya St., Brgy. Munting Ilog,
Silang, Cavite, 4118

PERSONAL INFORMATION

Birthday	January 16, 2008
Birthplace	Munting Ilog, Silang, Cavite
Age	17 years old
Father's Name	Bernardo M. Paglinawan Jr.
Mother's Name	Karen E. Layague
Nationality	Filipino
Religion	Roman Catholic
Civil Status	Single
Language Spoken	English and Tagalog
Hobbies	Reading, Playing online games, and Drawing

REFERENCE

Christianne Roie A. Carabeo, MACDDS
Munting Ilog Integrated National High School
Research Teacher
09171452217

Edith Buklatin Velazco, LPT Munting Ilog Integrated National High School
Teacher I
edith.velazco@deped.gov.ph

Clarice A. Toledo, LPT Munting Ilog Integrated National High School
Teacher III
09542733667

CAREER OBJECTIVE

I want to succeed in the field of Electronics and Communications Engineering by excelling in calculus while still expressing myself through art as a hobby. Contributing to society, especially in today's fast-paced technological world would be an honor, and I hope to use my skills to creat a meaningful impact.

EDUCATION

- ***SENIOR HIGH SCHOOL***

  Munting Ilog Integrated National High School (2024-Present)

  Munting Ilog, Silang, Cavite

  With High Honors

- ***JUNIOR HIGH SCHOOL***

  Munting Ilog Integrated National High School (2020-2024)

  Munting Ilog, Silang, Cavite

  With Highest Honors

- ***ELEMELENTARY SCHOOL***

  Munting Ilog Elementary School (2014-2020)

  Munting Ilog, Silang, Cavite

  With Honors

SKILLS

- Proficient in oral communication
- Skilled in editorial cartooning
- Experienced in editorial writing
- Great in layout design
- Effective leadership
- Adept at critical thinking
- Proficient in Mathematics
- Knowledgeable in science
- Easy to interact with
- Proficient in artistic expression

Lee Andrei L. Paglinawan
GRADE 11- STEM STUDENT

LIAN REIGN D. PORLAJE

09369467101
dejesusliana12@gmail.com
Ibaba St., Brgy. Tibig
Silang, Cavite, 4118

PERSONAL INFORMATION

Birthday	January 8, 2008
Birthplace	Tibig, Silang, Cavite
Age	17 years old
Father's Name	Ronald A. Porlaje
Mother's Name	Gemma D. Porlaje
Nationality	Filipino
Religion	Roman Catholic
Civil Status	Single
Language Spoken	English and Tagalog
Hobbies	Watching documentaries, Reading bible

REFERENCE

Christianne Roie A. Carabeo, MACDDS
Munting Ilog Integrated National High School
Research Teacher
09171452217

Gervi Destura, LPT Munting Ilog Integrated National High School
Teacher I
09182612509

Clarice A. Toledo, LPT Munting Ilog Integrated National High School
Teacher III
09542733667

CAREER OBJECTIVE

To obtain a position as a Medical Technologist where I can apply my laboratory expertise, multitasking abilities, and problem-solving skills to deliver high-quality healthcare. Committed to maintaining the highest standards in clinical laboratory procedures while continuously enhancing my skills in medical technology and contributing to the improvement of healthcare services.

EDUCATION

- ***SENIOR HIGH SCHOOL***
  Munting Ilog Integrated National High School (2024-Present)
  Munting Ilog, Silang, Cavite
  With Honors
- ***JUNIOR HIGH SCHOOL***
  Munting Ilog Integrated National High School (2020-2024)
  Munting Ilog, Silang, Cavite
  With High Honors
- ***ELEMELENTARY SCHOOL***
  Tibig Elementary School (2014-2020)
  Tibig, Silang, Cavite
  With Honors

SKILLS

- Leadership skills
- Attention to detail
- Time Management
- Active Listening
- Communication Skills

Lian Reign D. Porlaje
GRADE 11- STEM STUDENT

JAYNARD ZYRUS M. RAMOS

09958491035
jaynardzyrus@gmail.com
Purok 4 Malaking Tatyao
Silang, Cavite, 4118

PERSONAL INFORMATION

Birthday	October 25 2007
Birthplace	Malaking Tatyao, Silang, Cavite
Age	17 years old
Father's Name	Bernard Allan C. Ramos
Mother's Name	Kersten M. Ramos
Nationality	Filipino
Religion	Roman Catholic
Civil Status	Single
Language Spoken	English and Tagalog
Hobbies	Playing Basketball, Sing, Dancing, Playing Volleyball

REFERENCE

Christianne Roie A. Carabeo, MACDDS
Munting Ilog Integrated National High School
Research Teacher
09171452217

Roy Ordoño, LPT Munting Ilog Integrated National High School
Teacher II
09755987326

Rhey Mark V. Cabalsa, LPT Munting Ilog Integrated National High School
Teacher I
09053188546

CAREER OBJECTIVE

Dedicated and hardworking seaman with a strong commitment to safety and operational excellence, seeking a position onboard a reputable vessel where I can apply my maritime skills, knowledge of navigation, and teamwork abilities to contribute to smooth and efficient ship operations. Committed to upholding industry standards and maintaining a safe working environment while continuously enhancing my professional competencies.

EDUCATION

- ***SENIOR HIGH SCHOOL***

  Munting Ilog Integrated National High School (2024-Present)

  Munting Ilog, Silang, Cavite

- ***JUNIOR HIGH SCHOOL***

  Munting Ilog Integrated National High School (2020-2024)

  Munting Ilog, Silang, Cavite

- ***ELEMELENTARY SCHOOL***

  Malaking Tatyao Elementary School (2014-2020)

  Malaking Tatyao, Silang, Cavite

  With Honors

SKILLS

- Adaptability
- Time Management
- Active Listening
- (Serving) Restaurant
- (Barista) Restaurant
- (Bartender) Restaurant

Jaynard Zyrus M. Ramos
GRADE 11- STEM STUDENT

MARK ANTHONY O. REGANIT

09318759067
reganitmark497@gmail.com
Purok 6, Brgy. Munting Ilog,
Silang, Cavite, 4118

PERSONAL INFORMATION

Birthday	October 14 2007
Birthplace	Munting Ilog, Silang, Cavite
Age	17 years old
Father's Name	Richard D. Reganit
Mother's Name	Delia M. Ornido
Nationality	Filipino
Religion	Roman Catholic
Civil Status	Single
Language Spoken	English and Tagalog
Hobbies	Portrait drawing, Playing online games, and drawing

REFERENCE

Christianne Roie A. Carabeo, MACDDS
Munting Ilog Integrated National High School
Research Teacher
09171452217

Clarice A. Toledo, LPT Munting Ilog Integrated National High School
Teacher III
09542733667

Christine M. Cordero, Munting Ilog Integrated National Highschool
Teacher II
09280030277

CAREER OBJECTIVE

To obtain an entry level position in a refutable company where i can apply my skills and knowledge gained from my senior high school education

EDUCATION

- ***SENIOR HIGH SCHOOL***
  Munting Ilog Integrated National High School (2024-Present)
  Munting Ilog, Silang, Cavite
- ***JUNIOR HIGH SCHOOL***
  Munting Ilog Integrated National High School (2020-2024)
  Munting Ilog, Silang, Cavite
- ***ELEMELENTARY SCHOOL***
  Munting Ilog Elementary School (2014-2020)
  Munting Ilog, Silang, Cavite

SKILLS

- Practiced in various artistic disciplines
- Proficient in creating visually compelling designs
- Skilled in rendering detailed and expressive portraits
- Experienced in developing sequential visual narratives
- Trained in vocal performance and musical expression
- Versatile creative with a passion for artistic expression

Mark Anthony O Reganit
GRADE 11- STEM STUDENT

KHATE CATHERINE B. SINAG

09641970268
sinagkhate@gmail.com
Hukay Road, Purok 6,
Silang, Cavite, 4118

PERSONAL INFORMATION

Birthday	October 9, 2008
Birthplace	Aga, Sitio, Kaybibisaya, Nasugbu, Batangas
Age	16 years old
Father's Name	Reynaldo A. Sinag
Mother's Name	Leizel B. Sinag
Nationality	Filipino
Religion	Catholic
Civil Status	Single
Language Spoken	Filipino and English
Hobbies	Writing poem, Baking, Watching K-Drama, Singing and Dancing

REFERENCE

Christianne Roie A. Carabeo, MACDDS
Munting Ilog Integrated National High School
Research Teacher
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Melisa R. Magbago, Doctor of Philosophy
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Efren Reyes, LPT Munting Ilog Integrated National High School
Teacher III
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CAREER OBJECTIVE

I want to succeed in the field of civil engineering by contributing my problem-solving abilities and technical skills to create sustainable and efficient infrastructure solutions.

EDUCATION

- ***SENIOR HIGH SCHOOL***
  Munting Ilog Integrated National High School (2024-Present)
  Munting Ilog, Silang, Cavite
  With Honors
- ***JUNIOR HIGH SCHOOL***
  Banilad National High School (2020-2024)
  Banilad, Nasugbu, Batangas
  With Honors
- ***ELEMELENTARY SCHOOL***
  Bayabasan Elementary School (2014-2020)
  Sitio Bayabasan, Barangay Aga, Nasugbu, Batangas
  With Honors

SKILLS

- Critical thinking and creativity
- Communication and teamwork
- Problem solving
- Understanding of rhythm
- Ability to find inspiration in everyday life

Khate Catherine B. Sinag
GRADE 11- STEM STUDENT