COMPARATIVE ANALYSIS ON THE NATURAL DISASTER MANAGEMENT AND RESILIENCE OF COLOMBIA AND THE PHILIPPINES.

Análisis comparativo sobre la gestión de desastres naturales y la resiliencia de Colombia y Filipinas.

Pauline Dinise David, Giselle Vergara, Laura Sofia Jojhana Peña, Malaika Singh & Julia Camille Vencer, Andrés Gil.

Abstract

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Keywords: Comparative analysis, Community participation, Natural disasters, Resilience, Vulnerabilities.

Resumen

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análisis comparativo que ha arrojado resultados sobre que ambos países comparten vulnerabilidades similares a las calamidades naturales, pero difieren en el desarrollo y la gestión de la resiliencia después de los desastres. Si bien existen políticas y programas tanto en Colombia como en Filipinas, su implementación debe implicar un enfoque más inclusivo y proactivo que fomente la participación comunitaria, el liderazgo y los esfuerzos de colaboración entre actores e instituciones públicas y privadas. Los servicios de resiliencia y gestión también deben abarcar aspectos socioculturales de la religión y los sistemas de creencias, ya que desempeñan un papel clave en la influencia del comportamiento comunitario durante los desastres.

Palabras claves: Análisis comparativo, Participación comunitaria, Desastres naturales, Resiliencia, Vulnerabilidades.

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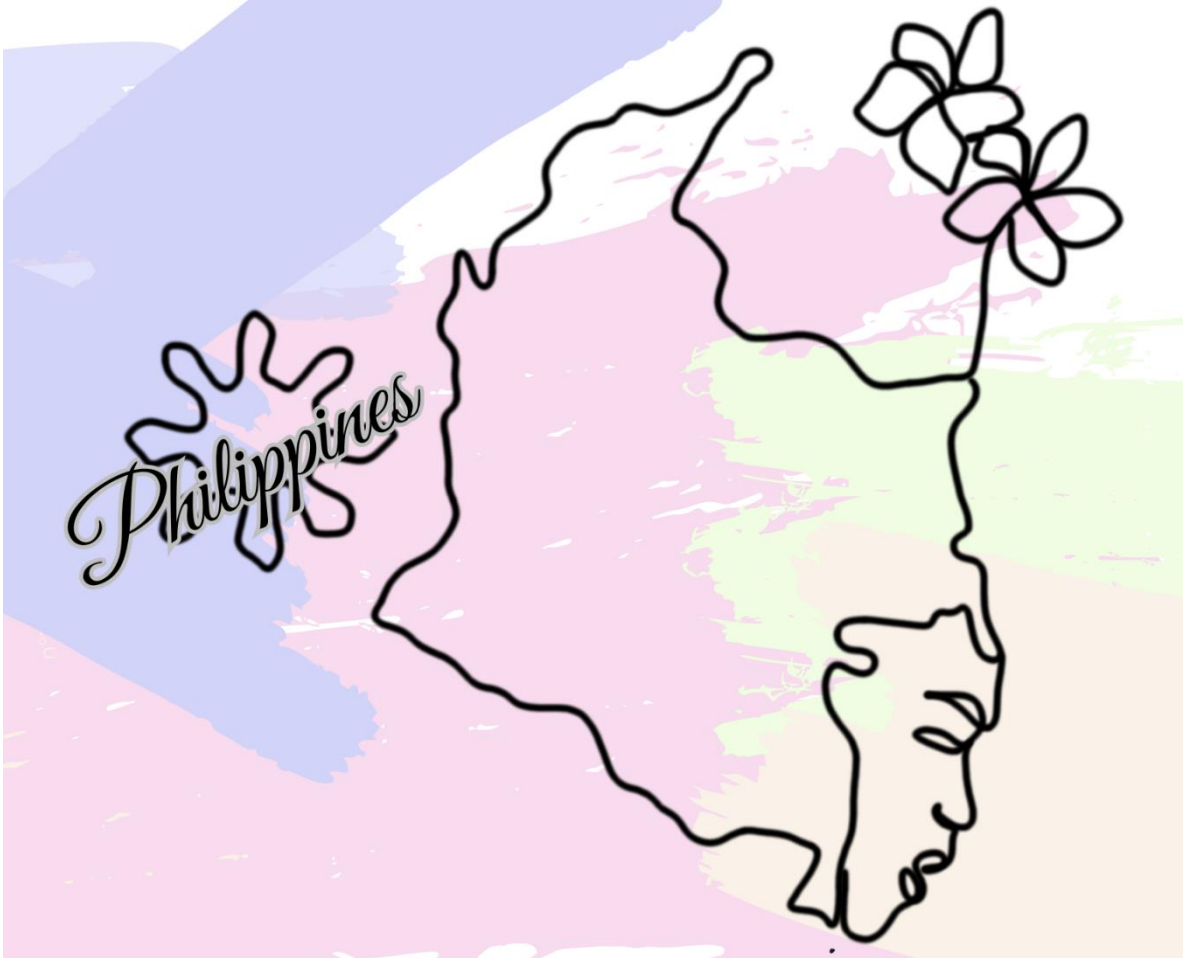

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Palabras claves: Análisis comparativo, Participación comunitaria, Desastres naturales, Resiliencia, Vulnerabilidades.

Resumo

Além dos paralelos culturais e linguísticos entre a Colômbia e as Filipinas, ambos os estados também partilham uma experiência semelhante com catástrofes naturais e são instados a estar preparados antes e depois das calamidades. Para avaliar adequadamente a prontidão e o nível de gestão e resiliência de desastres naturais de ambos os estados, analisamos as semelhanças, disparidades e importância dos níveis de gestão e resiliência das áreas afectadas, especialmente ciclones pós-tropicais. Foi utilizada uma análise comparativa que revelou que ambos os países partilham vulnerabilidades semelhantes às calamidades naturais, mas variam na construção e gestão de resiliência pós-catástrofe. Embora existam políticas e programas em vigor tanto na Colômbia como nas Filipinas, a sua implementação deve envolver uma abordagem mais

inclusiva e proactiva que incentive a participação comunitária, a liderança e os esforços de colaboração entre actores e instituições públicas e privadas. Os serviços de resiliência e gestão também devem abranger aspectos socioculturais da religião e dos sistemas de crenças, uma vez que desempenham um papel fundamental na influência do comportamento comunitário durante catástrofes.

Palavras-chave: Análise comparativa, Participação comunitária, Desastres naturais, Resiliência, Vulnerabilidades.

Introduction

One of the nations with the highest risk of natural disasters, and one of the countries surrounded by the Ring of Fire, is the Philippines. Belonging to the top three countries in the world at risk of climate-related disasters, the Philippines and its islands are frequently hit by floods, typhoons, and other natural disasters (Alcayna et al., 2016; Bollentino et al., 2018). Among the many outcomes of disasters are losses, specifically environmental, economic, and welfare losses. According to Alcayna et al. (2016), the Philippine government takes the risks of natural disasters seriously. To counter such risks, the Philippines has invested a lot of resources in reducing welfare losses and vulnerability to disasters, both nationally and locally. Comparably, natural disasters are just as common in Colombia, with persistent downpours and mountainous terrain commonly causing avalanches (Daniels, J. P. 2017). Díaz-Tamayo (2021) reports that these natural disasters have accounted for significant numbers of fatalities and economic damages. Similar to the government of the Philippines, the Colombian government has worked to put in place policies, strategies, rules, and regulations that permit the country to develop risk management thoroughly for over 20 years.

Although both countries' governments have made significant

efforts in natural disaster risk reduction and natural disaster risk resilience, there are pertinent gaps in disaster management capacities, that is, the ability of the country and its regions to use its policies and techniques for reducing disaster losses, increasing disaster resilience, and preventing new disaster risks. Both countries experience difficulties in implementing such measures across different regions of their country, consequently resulting in the widening gap of preparedness and knowledge in natural disaster resilience among sectors, thus leaving communities vulnerable in the wake of natural calamities. This paper aims to analyse the governments of both the Philippines and Colombia with regard to their institutional and policy processes for natural disaster management and resilience in an effort to reduce such disaster risks. The aftermath of natural disasters reveals the adaptability and exposes vulnerability of the post-disaster management and resilience of Colombia and the Philippines and how the way both states have directed their efforts to address these natural disasters is related to the Sustainable Development Goals of the 2030 agenda.

For the purpose of this study, the researchers shall define the following terms in order to provide a comprehensive understanding of the elements of the paper: natural disaster resilience, natural disaster risk reduction and management, and post-disaster risk management. Natural disaster resilience, as defined by Harrison and Williams (2016), is used to describe a city or community's capacity to recover from natural or technological disasters. This term is most often tied to the socioeconomic sphere, which pertains to the capacity of an economy to minimize welfare losses as a result of asset losses brought by natural disasters (Yonson & Noy, 2019). Disaster risk reduction is the practice of lessening vulnerabilities and disaster risks in order to prevent or reduce the negative effects brought by natural calamities (Hagelsteen & Becker, 2013), disaster risk reduction management (DRRM) therefore refers to the ability of a government to implement such practices into policies to ensure that its people are aware of or knowledgeable about disaster preparedness and resilience (Alcayna et al., 2016). Post-disaster risk management or post-disaster recovery is distinctly explained by Rouhanizadeh et al. (2020) in three concepts: (1) According to Smith and Wegner, recovery is the restoration, rebuilding and reshaping process of the physical, economic, social, and natural environment through "pre-event planning and post-event actions" (Rouhanizadeh et al., 2020, p. 1); (2) Schwab et al. elucidate that recovery involves the restoration of housing,

public services, and transportation, as well as restarting economic activity, and promoting community redevelopment for the long-term; (3) The UN Office of Disaster Risk Reduction (UNDRR) interprets disaster recovery as decisions and measures focused on the restoration or improvement of livelihoods, economic, physical, social, cultural, and environmental assets of a community affected by calamities in accordance with the "principles of sustainable development, including build back better to avoid or reduce future disaster risk" (Rouhanizadeh et al., 2020, p. 1).

The aim of the study would be to determine the advantages and disadvantages of various natural resilience strategies. Comparing and contrasting would allow for a better understanding of relative performance and identify areas where one strategy may outperform the other. Comparative analyses would also assist experts in making educated selections about which technique to employ. It allows for the optimal strategy for sustainable development goals to serve as a guide of various approaches such as goal number 13 on climate action, goal 11 on sustainable cities and communities, and even goal number 10 on reducing inequalities (UN, 2018). Since the largest populations affected in both Colombia and the Philippines are people with lower economic resources and in conditions of poverty in disaster-prone areas, it would also help to learn from experiences. By analysing the successes and failures of different strategies, it becomes easier to identify patterns and trends that can inform one's decision-making in the future.

Background of the study

The track record of disaster response of Colombia and the Philippines is evident in some resilience projects on disaster risk and significant natural calamities in both states. According to the World Bank (2023), Colombia has a high rate of disasters caused by natural catastrophes such as floods, volcanic eruptions, and earthquakes; these problems even cause recurrent land displacements. These impact the economic development of the country and the vast majority of the country's poor and vulnerable population. An average of 160 deaths and more than 2,000 homes destroyed are recorded per year. As a result of the impact of the La Niña phenomenon that occurred in 2010, the country's vulnerabilities came to light, especially with families that are highly exposed to these disasters. Globally, efforts have been ineffective to implement

regulations that lead to the destruction of homes, highlight the need to strengthen Disaster Risk Management (DRM) established by the UN at the United Nations Office for Disaster Risk Reduction (UNDRR) and reduce the magnitude of catastrophes besides preventing it. That being said, the second Disaster Risk Management Development Policy Loan with Catastrophe Deferred Disbursement Option (Cat DDO II) enabled Colombia's resilience to be strengthened in the face of possible natural disasters. It is an evident intention of the government's determination to carry out a comprehensive DRM system at the national level. Through this project, the World Bank promoted coordination between the national, regional, and local levels of government to manage the risks more efficiently and reinforce the role of the Ministry of Finance and Public Credit in the fiscal management of disasters. Similar to this, it also provided advisory and analytical support funded through the Global Facility for Disaster Reduction and Recovery (GFDRR) Fund for Disaster Reduction and Recovery. The project achieved results such as (1) the improved efficiency in the response time for financing after declaring the national disaster, (2) the reformation of public policy that supported and strengthened Colombia's resilience to disasters and climate risks, and (3) the strengthening of institutional and planning capacity for DRM from 2012 to 2021.

The natural disasters that impacted and enforced developments in the disaster response of Colombia are the follows:

Armero Tragedy (November 1985): According to de C (2004), this occurred as a result of the eruption of the Nevado del Ruiz Volcano that affected the departments of Caldas and Tolima. As the volcano has been inactive for 69 years, the sudden eruption caught the residents by surprise, even though the government had received warnings from multiple volcanological organizations since the appearance of activity in September of that same year. The most shocking aspect of this event was that the city of Armero (located 50 km from the volcano) disappeared as a result of the mud, earth, and debris produced by volcanic activity, causing rescue reinforcements to be hampered by the mud that prevented them from moving freely. The government's negligence was astounding that by the time rescuers reached Armero after 12 hours since the volcano erupted, it already caused the lives of several injured victims. A record of more than 20,000 deaths in the area was documented, with 23,000 more from other towns also affected by the eruption of the Volcano. Contestations on the supposed

disaster response to prevent such a gruesome death toll had risen, given that geologists and various other experts warned the authorities and the media about the danger weeks and days before the tragedy. Risk maps were prepared for the vicinity, but they did not have sufficient visibility. On the day of the eruption, many evacuation attempts were made, but there was a storm that jammed the signal and restricted communications. As such, many of the victims stayed in their homes as advised by the authorities during the day, and the downplaying of volcanic ash falling in the city led the residents to believe that the eruption was over. The noise from the storm may also have prevented them from hearing the sound coming from the Ruiz.

To alleviate the effects of the catastrophe and provide relief to the victims, the Colombian government created the Directorate for Disaster Prevention and Attention, a specialized entity in charge of raising awareness among the population about natural threats. Some cities in the country have their own programs to raise awareness about this. Relief efforts were coordinated from Ibagué, Bogotá, and Cali. According to Arboleda, Wilches, García Mancilla, Ramirez and Marulanda (2004), the estimated damage in millions of pesos was 34,940 and the investment for reconstruction was 51,120. The most impressive aspect is the percentage of investment in reconstruction compared to damage, this was more than 100% (146.3%). Mendez (2021), also iterates that on September 1, 1989, 4 years after the incident, the Nevado del Ruiz Volcano erupted again. This time, however, volcanic monitoring was more successful together with the management of volcanic risk in Colombia. This is due to the fact that weeks prior to the event, warnings were given by the authorities to the community of a possible eruption in the following days or weeks, The volcanic progress was verified on August 31, 1989, and the relevant actors made up the Regional Emergency Committee took the necessary measures to avoid repeat history again.

Cúcuta Earthquake (May 1875): According to Redacción El Tiempo (2002), the tragedy occurred on May 18, 1875, at 11:15 AM, as marked on the Cúcuta church clock. The earthquake was a magnitude of 7.5 to 8.5 Mb, and it not only affected cities near Cúcuta, Colombia, but tremors were also felt in the neighbouring Venezuelan state of Táchira. This led to the total destruction of cities and the remains of infrastructures like the Historic Temple of Villa del Rosario can still be seen. The houses of that time in the area were of the Spanish colonial style, with clay tiles, mud walls, interior patios

and there were about 5,000 victims. The local economy collapsed, but donations were pouring in with the help of the Venezuelan general, who was rescuing victims and controlling looting.

Earthquake of the Coffee Area (January 1999): On one afternoon in January 1999, an earthquake with a magnitude of 6.2 affected areas of Quindío and Risaralda. In just a matter of hours, a second round of ground shaking with a magnitude of 5.4 occurred again. According to the Economic Commission for Latin America and the Caribbean, the earthquake left 1,171 people dead and 4,765 injured, of which 800 deaths and 2,300 injuries were in Armenia (Ramírez, 2019). As for infrastructural damage, the UN Commission reported about 45,019 buildings having suffered total or partial damage throughout the region, which is equivalent to a loss of 2.7 trillion pesos. Prior to the earthquake, there was already an occurring issue in the health sector, so the structures of many hospitals were affected, and not enough supplies to care for all the victims. As a consequence, care for the victims was insufficient and the healthcare system is on the brink of a breakdown, especially since about 4,000 people suffered various degrees of injury. The economic effects of this natural disaster were apparent as well, especially with the farms destroyed, companies becoming temporarily or permanently inactive, and the banks illiquid.

According to Ramírez (2019), for the reconstruction of the city of Armenia, the national government implemented resurfaced programs such as the Fund for the Reconstruction and Social Development of the Coffee Region (Forec). Moreover, to rebuild the other municipalities that were impacted, the government allocated 1.6 trillion pesos. The Inter-American Development Bank (IDB) explained that “the homes of some 130,000 families have been repaired or rebuilt. 16,700 new homes have been built for previously renting families in areas of high seismic risk” (Ramirez, 2019). Besides rebuilding Armenia, the poorest population was able to obtain their own home under the Land Management Plan. According to Arboleda, Wilches, García, Mancilla, Ramirez, and Marulanda (2004), the estimated damage in millions of pesos was 2,795,043 and the investment for reconstruction was 1,505,262, the percentage of investment in reconstruction compared to damage was more than half (53.9%).

In the case of the Philippines, as it lies in the Pacific Ring of Fire, it is vulnerable to earthquakes, eruptions, and typhoons (Plan International, 2021). According to Deutsche Welle (2021), the Philippines sits in an area of great seismic and

volcanic activity that is shaken by some 7,000 tremors a year, most of them moderate. Typhoons occur about 20 times a year. Disaster risk reduction programs have been created to strengthen the strategy of attention, prevention, and agility in response to natural catastrophes in schools and communities and build the capacity of resilience to protect the residents, especially children. The program aims to train and provide information in preparation for natural disasters, teaching them survival skills such as first aid. In addition, it also seeks to create educational institutions that are conducive to children and analyze the spaces that need improvement in case of shelter during natural disasters. Lastly, the program aims to manage offices and optimal response and emergency teams (e.g., performed by teachers and trained students).

The following natural disasters that impacted and enforced developments in the disaster response of the Philippines are as follows:

Moro Gulf Earthquake and Tsunami (August 1976): According to La Verdad (2020), the island of Mindanao was hit by a 7.9 plus or minus earthquake and gave rise to a tsunami. Unfortunately, thousands of victims were dragged into the sea. The population was reported to have been unaware of the tsunami and did not have enough time to go to high areas in order to survive. A record of more or less 5,000 people died, with more than 2,000 disappearing and 90,000 people being left homeless.

Bohol Earthquake (October 2013): An earthquake struck the island of Bohol in the Philippines with a magnitude of 7.2 on the Richter scale, leaving nearly 100 dead and numerous injured. As lessons were learned in the past of how an earthquake could generate a tsunami and with the warning of the Japan Meteorological Agency, those who lived near the coast were evacuated to higher areas. There have been several aftershocks with a magnitude greater than 6.0, and Former President Aquino postponed his visit to South Korea to go to the affected areas (e.g., Bohol and Cebu) and ordered the government agencies to start the rescue and aid work (Ambrós, 2013).

The Post-Disaster Risk Management and Resilience of the Philippines in Tropical Cyclones.

Among the natural disasters, tropical cyclones are rampant in the Philippines and are the source of floods and landslides. Alcayna et al. (2016) express that the government of the Philippines has recognized the crucial role of disaster risk management and has consequently invested a significant

amount of resources in reducing the likelihood for populations to be exposed or unprotected during times of such crises both nationally and locally. Annually, it is reported that the Philippines garners an average loss of USD 7.8 million, which is an estimated 69% of the country's social expenditure (Alcayna et al., 2016). These economic losses, paired with environmental, infrastructural, and social damages further urge the Philippine government for a more comprehensive program for disaster risk management.

Beginning with the catastrophes brought by Typhoon Ondoy of 2009, which hit the Philippines National Capital Region (NCR), and the subsequent Typhoon Pepeng of the same year and flooded NCR's neighboring provinces, both typhoons resulted in a loss of USD 4.38 billion. As a response and a motion to begin the development of disaster risk reduction (DRR), the Philippine government approved RA 10121, or the Philippine Disaster Risk Reduction and Management Act of 2010. This law would accordingly appoint local committees to perform duties similar to that of the National Disaster Risk Reduction and Management Council (NDRRMC). This law would outline the responsibilities of each local council to determine its efficacy, to amass support from the local government and residents on disaster risk management, to attain funds for training and education of the people, and support from the national government. Such a law focused on disaster risk resilience, that is, the ability of a country to minimize casualties or deaths and the ability of the country's government to reduce asset losses (Yonson & Noy, 2019).

In early November 2013, Typhoon Haiyan devastated the Philippines and killed more than 600 people, with almost 3 million people being displaced. While disaster responses were delivered to victims in a number of regions, some areas had to stand by longer for such humanitarian assistance. Despite the presence of the Philippine Disaster Risk Reduction and Management Act, as well as the largely welcomed international humanitarian assistance, it was still evident that the Philippine government lacked strength in its disaster mitigation and resilience capacities. This called for the attention of government responsibility to reform the inconsistencies of the law, and thus opened the doors for research and analysis on the Philippines' disaster resilience. Alcayna et al. (2016) depict the operations present in the country in relation to disaster resilience and DRR, this research divided such executed efforts into six categories: hazards, vulnerability and risk assessments, early warning systems and evacuations, risk transfer mechanisms, capacity building for disaster preparedness,

response and relief operations, and rehabilitation, recovery and reconstruction. These categories emphasize both the strengths and weaknesses of the Philippine government as it navigates through disaster resilience. Such categories also provide the government with conceptualizations on the needed measures to successfully achieve minimal losses during disasters.

The first category refers to the dissemination of information regarding disaster risk management and strategies for resilience. Post-Haiyan assessments found an absence of knowledge on the definition of storm surge areas among the public, in response, several non-government organizations (NGOs), including the Philippine Red Cross, carried out vulnerability assessments among the public to enhance community awareness. Projects on hazard sensitization and increased awareness of natural disasters were acknowledged as a necessity.

The second category covers the subject of public awareness of risks and possible endangerment that could be brought about by natural disasters, to impart strategies on disaster preparedness. The Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA) produced a program that introduced community-based surveillance for early signs of disasters in numerous regions and demonstrated that these were useful additions to conventional centralized early warning systems as the program was more localized, hence empowered those in the suitable position to assume preparation and sustainability. Evacuation planning has been found to be effective even in high-risk locations, as general communities have been compliant in such measures to reduce disaster risks.

The third category touches on the emotional resilience of Filipinos, in that strong communities or familial connections have been found to relieve stress from post-disaster losses. Communities and linkages of support post-disaster must be restructured to develop stronger community bonds and to provide coping mechanisms for those in need.

The fourth category explicates that in the Philippines, capacity building is taking place at all scales, but putting emphasis on the local level. A variety of networks and actors are working with local communities to distinguish existing capacities and to provide a leeway for infrastructure construction, which could lessen the effects of a disaster. The government is also making a considerable contribution to the capacity building of local government units (LGUs) through the creation of a checklist that includes actions to be taken, supplies to

purchase, and crucial resources along with offering disaster preparedness templates for communications and emergencies.

The fifth category expounds on the country's efforts to recover from an economic or geographical scale of destruction as well as recuperation from infrastructure, housing, communication, and livelihood damages. During the post-Typhoon Haiyan, the government was crucial to the success of the response initiatives with the international UN cluster collaborating with the national government. The coordination led to far lower morbidity and mortality rates than in prior post-disaster scenarios. Although such measures have been identified to contain issues, the efforts during the aftermath of Typhoon Haiyan will expectantly improve the national response and humanitarian aid as policymakers increasingly place an emphasis on disaster risk management and DRR methods.

The last category expounds on the programs for rehabilitation, recovery, and reconstruction in the Philippines. It was found that such initiatives are challenged by recurrent disasters, the lack of funds, and the politicization of such actions. Post-disaster evaluation for the long term highlights the many gaps and obstacles that must be addressed. However, optimism remains key for coping capacity; hence, it is the responsibility of governments at all levels to uphold their pledges to ensure optimism among those affected by disasters on the road to recovery.

This is how the objectives set forth by the Philippines align directly with the Sustainable Development Goals, more specifically Goal 13; Climate Action, Target 13.1 (UN,2018) "Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries"(p.60). And it also applies to the target 13.3 "Improve education, awareness raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning" (p.61). since the creation of PAGASA is a tool that enhances the indicator 13.3.2 "Number of countries that have communicated the strengthening of institutional, systemic and individual capacity-building to implement adaptation, mitigation and technology transfer, and development actions" (p.61).

At present, the World Bank has been aiding the Philippine government in disaster resiliency through the formulation of policy financing, investment activities, technical support, information exchange, and policy discussions. The World Bank's support of disaster risk management in the Philippines also outlines support to improve policies to ensure the physical, social, and financial resilience of communities. The

"Ready to Rebuild: Disaster Rehabilitation and Recovery Program" has been made with the partnership of the NDRRMC, the Office of the Civil Defence, and the World Bank. This project shall improve the ability of local and national governments to recover from disasters quickly and effectively. This shall include both pre-and post-disaster tasks such as the creation of a recovery plan, funding, bolstering emergency appropriation and implementation, and creating monitoring and evaluation systems. A reported 325 local governments have taken part in the training to prepare for risk-informed recovery plans and risk financing prior to disasters (The World Bank, 2023).

Other efforts to deal with and improve post-disaster risk management strategies in the Philippines include the creation of the GeoRiskPH, a platform for accurate and efficient risk management. From 2018 to 2020, it was headed by the Philippine Institute of Volcanology and Seismology (PHIVOLCS), sponsored by DOST, and overseen by the Philippine Council for Industry, Energy, and Emerging Technologies Research and Development (PCIEERD). Since 2021, it has been formalized in DOST-PHIVOLCS, It encourages the use of science-based risk and hazard information in the planning and prioritizing of public infrastructure initiatives. It also intends to create methods and platforms for sharing hazards, exposure, and other risk information to assist people, communities, local governments, and national agencies in preparing for and planning for natural disasters. In the early stages of the launch,450 technical employees from 150 provinces and cities were taught in the early stages of the launch to use the GeoRiskPH platform for their DRM strategies.

Similarly, in collaboration with the World Bank and the Office of Civil Defense, The Department of Science and Technology-Philippine Institute of Volcanology and Seismology also created the web application entitled 'Plan Smart'. It is an automated planning tool that will build rehabilitation and recovery plans methodically using science-based data from the GeoRiskPH integrated system and pro forma templates. This specific web application is also prepared to receive baseline data from local governments, which is required for planning. A series of Plan smart training sessions are currently being held to equip provinces and cities. Participants are learning how to gather, manage, and integrate baseline data into the GeoRiskPH platform to create a risk-informed rehabilitation and recovery plan (The World Bank, 2023).

The Post-Disaster Risk Management and Resilience of Colombia in Tropical Cyclones.

In Latin America, Colombia has been a pioneer in creating a thorough understanding of risk and emergency preparedness, which has led to a comparative drop in fatalities. However, disasters are not naturally occurring phenomena, as evidenced by the increasing damage to property, infrastructure, and livelihoods, but the outcome of using ineffective models of development without taking into account the interaction between society and nature (Campos et al., 2011). According to Campos et al. (2011), the damages brought by disasters have resulted in a loss of USD 7.1 billion for Colombia over the past 40 years, with a major economic loss prompted by the La Niña event of 2010-2011. Hoyos et al. (2013) describe La Niña as a climate pattern that is associated with cold phases, mudslides, and flooding consequent to heavy rainfall. According to DANE, as cited by the Banco de la República (2014), the La Niña Phenomenon of 2010- 2011 left a total of 2,350,207 displaced persons and 869,032 affected individuals across 1,061 Colombian municipalities, a combined figure equivalent to 7% of the national population.

In early 2011, such significant losses urged the government to assess its risk management policies with the help of the World Bank through the National Planning Department (DNP) for the creation of the Analysis of Disaster Risk Management in Colombia, a report that would examine the development of regions in Colombia to carefully gather data on disasters and respective responses (Campos et al., 2011). The purpose of such a measure became a significant effort of the government to not only review Colombia's risk management strategies and make suggestions to help assist the government in establishing short and longterm public policies but also to push forward initiatives for the recovery and reconstruction process associated with the occurrence of La Niña. The report was a result of intersectoral and interinstitutional efforts between the Colombian government, the DNP, and the National Unit for Disaster Risk Management (UNGRD) in connection with a joint grant by the World Bank with the Global Facility for Disaster Reduction and Recovery (GFDRR).

The *Analysis of Disaster Risk Management in Colombia* identified four aspects by which risk growth increases, as well as the increase of state responsibility. The first factor reviews that the theoretical developments on the connection between risk management and development have yet to be brought forward to the level of public policy, and neither has this been integrated as a crucial component inside the public

administrations, thereby promoting the increase of risk factors. Secondly, risk has been found to increase permanently in urban areas and cities as a result of the lack of control and execution of planning strategies and instruments as well as "inadequate watershed management" (Campos et al., 2011, p. 5). The third factor discusses the deficiencies in the subject of disaster risk reduction and sectoral plans that endanger the longterm viability of investments in both the productivity and service sectors, consequently increasing rates of risks to exposure and vulnerability. The fourth factor acknowledges the lack of a clearly defined policy which is typically affiliated to state responsibility deters the public and private sectors from cooperating with risk reduction management plans, ultimately leading to higher financial costs.

Subsequently, the report provides six strategies for improving disaster risk management governance in accordance with the four factors of risk increase as stated above. These recommendations should be considered to enhance local capacity for land administration, identify the several entities in charge of watershed management, outlining the duties of different development sectors, and fostering the participation of both public and private stakeholders, hence lowering the financial susceptibility to catastrophes of the state. The first strategy recommends the incorporation of risk management as a public policy and resolving existing inequities in the system through the modification and coordination of administrative and institutional guidelines. The second approach suggests that through strategic planning, cooperation between territorial scales, and monitoring and management, levels of efficiency and effectiveness of disaster risk management would increase. The third strategy involves the improvement of local territorial management capacities to diminish the causes and development of disaster losses. The fourth scheme considers the importance of proper planning, investing, monitoring, and controlling, and the representation of the various agencies reliable for watershed management would reduce the likelihood of flooding and landslides brought by tropical cyclones. The fifth strategy recommends the effectiveness of policies and sectoral plans of action to reduce the emergence of disaster risks and disaster impacts. The sixth and last approach considers the delineation of public and private responsibilities in risk reduction in order to strengthen the state's fiscal susceptibility regulations for disasters.

Despite the extensive scope of the study, the report serves as an effective material for the Colombian government to address the gaps in its present disaster risk management and resilience.

The analysis provides an overview of key issues that must be tackled together with respective proposals. These findings, therefore, have been recognized as an excellent start to the sustainable improvement of disaster risk management, proposing ways to ensure continuity of the ongoing efforts that have been expanding in the country in the last few years.

Similarities and Disparities in the Post-Disaster Response of Colombia and the Philippines

As Colombia and the Philippines experience the same dire effects of El Niño and especially La Niña phonemenom, we identify the similarities and disparities in the post-disaster responses of both countries through their resilience efforts and management actions. We account for the similarities and differences between both countries in their post-disaster response by comparing the Mocoa landslide in Colombia and Typhoon Haiyan in the Philippines.

Rescue Efforts and First-Aid Response: When a mudslide occurred in Manizales, Colombia after a series of heavy rainfall in the mountainous landscape, 17 people passed away. Although these natural disasters often occur, the medical response to such unfortunate events always comes with risk. The Colombian Red Cross performed missions in a National Crisis Room and deployed 47 medical workers composed of nurses, doctors, psychologists, and relief workers in the area. The operation began with 1,400 soldiers, 800 policemen, and medical workers from Doctors Without Borders. The initial and primary goal was to search for survivors (Daniels, 2017). Moreover, in response to the shortage of water and electricity, the health department provided approximately 3000 gallons of fuel to give power to the hospital's generators and continue providing healthcare for the victims. In one of the strongest typhoons recorded in history, impacted areas in the Philippines recorded thousands of death tolls reaching up to 3,796 and, 1598 missing individuals. Although 87 medical teams from both local and foreign clusters were deployed in affected regions like Leyte and Samar, the prevention of further deaths postHaiyan was difficult as necessities (e.g. potable and drinking water) were in shortage. Records have shown that 18,000 people were injured and up to 4 million people were relocated (Chiu, 2013).

Rehabilitation, Relocation, and Resilience Efforts. After clearing the land and air transport routes for better relief logistics, the reconstruction of damaged houses and commercial infrastructure became a priority in the region as they aim to return to normal. That being said, those whose

residences are impacted and have the means were either relocated to other cities or moved to rented lodgings in Mocoa, while the others stayed at The El Pepino shelter house that accommodated approximately 247 individuals (Daniels, 2017). In the case of the Philippines, the assistance received was also assisted by the local government. However, the Filipino population feels that they could not rely much on the assistance provided by their friends, neighbours, or even NGOs. They see themselves as self-efficient in disaster preparedness and recovery, as they have already experienced past typhoons. In terms of livelihood and house properties, issues of insurance and rehabilitation are astounding in the gap and should be paid attention to by both the government and the private sector. (Alcayna, Bollettino, Enriquez, & Vinck, 2018). Moreover, due to a lack of funds and politicization, rehabilitation and renovation programs are often delayed or impeded (Alcayna, Bollettino, Dy, & Vinck, 2016).

Chronic Mental Disorders Response. According to the World Health Organization estimates about 90% of the people who experience violence and severe natural calamities go through shock and stress, and about 5% to 10% actually acquire chronic mental illnesses like Post-Traumatic Stress Disorder (PTSD). In the Mocoa tragedy, 18 psychologists were assigned to the hospital to debrief and support the whole community regardless of age, gender, and occupation (Daniels, 2017). In the Philippines, about 18% of disaster survivors frequently go through depression or a certain level of trauma, and 79% feel dejected by the catastrophe. However, only 1% have confirmed receiving medical attention for their mental health through therapy. This is evident in regions with the lowest disaster resilience like Visayas, Negros Regions, SOCCKSARGEN, and MIMAROPA, which frequently report struggles in trauma recovery (Alcayna, Bollettino, Enriquez, & Vinck, 2018). Healthcare System. While the Colombian government has been commended for its disaster response, the inequality of the healthcare system and its privatization posed a significant dilemma in the recovery of the victims, especially those who could not afford one. Mocoa was not equipped with proper healthcare facilities and was at risk of a system collapse. The waiting time to see a specialist would take 2 or 3 months after being sent to the emergency room. As such, they would often transfer patients who require serious or complex medical attention to other regions by air or land (Daniels, 2017). In the post-Typhoon Haiyan recovery, health was also severely overlooked. The Philippines struggled with several recovery processes, which was reflected in the receipt of only half of the

needed funds to recover, that took as long as six months to retrieve (Alcayna, Bollettino, Dy, & Vinck, 2016). The health sector of the affected areas is on the brink of a collapse as infrastructures like hospitals and clinics are severely wrecked. In Tacloban, only one hospital remained operational then and has struggled to be of service to the few workers and many victims in need of medical attention (Chiu, 2013).

The Significance of Natural Disaster Resilience in Post-Calamity Development

The importance of vulnerability assessment is an essential approach to disaster risk management that should address the economic, institutional, physical, environmental, ecological, technological, cultural, and other aspects of the community. At present, there is also a need to prioritize the decrease of mortality rate and overall heritage during natural disasters. However, the challenge of invoking a higher level of resilience throughout and after the calamity impacts the response of the people when a natural disaster warning occurs. We focus on the sociocultural aspect of resilience and how it affects the behavior of the community in the face of a disaster. An example of this is the case of Manati, Colombia from 2010 to 2011 where the flood level rose higher than the residences and only certain facets necessary for survival are saved. Although the Colombian Government assisted the area with necessities like food and clean water, it was short-term, and the community reported hostile environmental conditions (e.g. soil erosion from deforestation, damaged roads, and lack of jobs in the agricultural sector) in the aftermath of the flood. Even though Manati experienced a depletion in resources, it was characterized as a community with high solidarity and commitment, translated with a high scale of resilience post-disaster due to sociocultural aspects.

The social vulnerability indicators that impact resilience are associated with philosophies and values related to religion, which consequently translates to their attitude when there is a natural disaster. The behaviours of communities in response to natural disasters are usually based on a belief that all events on earth are determined by God (high vulnerability), that all events are beyond the control of humans and their will (medium vulnerability), or how humans are co-responsible with God in surmounting problems (low vulnerability). Colombians towns like Armero, Manati, and San Marcos experience a medium to high vulnerability during natural disasters as influenced by the providential culture in their religion. These towns practice a religious tradition that makes them assume a non-critical outlook and response to dangerous

or problematic situations they must get through. In these populations, patronage festivals connect them to God in a close, self-regarding relationship, and praying to God is independent of human deeds. In Manati, although they believe that God controls the circumstances that impact their lives, he is not instrumental in disasters as they are confident in His being as a kind-hearted God who will look out for the people so they don't perish. As such, the town is subjected to high vulnerability when it comes to natural disaster response (De Plaza-Solorzano, Gonzales-Mendez, Gonzales-Salazar, Ramos-Cañon, & Villegas-Gonzalez, 2017).

The Philippines experiences similar weather conditions to Colombia when it comes to El Niño and La Niña. In fact, Typhoon Haiyan, the strongest typhoon ever recorded, hit the country in November 2018, heavily affected Eastern Visayas. With more than 6,000 people dead and about 3 million relocated, organizations and states around the world gathered and extended relief missions to the victims. However, discrepancies in fund allocation and aid allocation were among the challenges of the post-disaster recovery, much of it perpetuated by the political conflict between the national and the Tacloban local government. For the national government, the subject matter of resilience and the framework surrounding it does not necessarily produce poverty amelioration programs that could have been the key to an improved disaster response among the people. This is where we need to address goal number 10, "reduced inequalities," as the populations most affected by natural events leading to natural disasters are predominantly people with low economic resources and in poverty. Therefore, the promotion of goal 10.4 is essential (UN, 2018): "10.4 Adopt policies, especially fiscal, wage, and social protection policies, and progressively achieve greater equality."

The approach of the national government on resilience-centered recovery is more focused on the outsourcing the state responsibility for supposed post-disaster recuperation. The local government units of affected regions turned to blame the informal settlers and migrants for not immediately evacuating the area despite the warnings of the upcoming typhoon, but even in the recovery phase, they were ignored and left behind. Even as the Philippines received aid from the international community, the root cause of the astounding amount of casualties was not addressed and would most likely result in a revert to the original state of affairs that preceded the disparity, displacement, and lack of stability that primarily made the regions vulnerable to disasters. Although many believed that

early evacuation would have mitigated casualties from the super typhoon, the residents, especially those who are illegal settlers, felt they would be more vulnerable to eviction post-disaster if they do not stay behind and guard their properties. Therefore, resilience programs in the Philippines are only effective when they also protect the poor and marginalized, especially in addressing the inequities and power dynamics that commonly concentrate on the technical processes and official provisions (Walch, 2017).

The post-disaster resilience of Colombia and the Philippines highlights the different facets of resilience building and attitude response. In the case of Colombia, there is a need to improve local leadership and community cohesion, especially in strengthening the significance of localities that are vulnerable to natural calamities. A revitalized culture of people participation and pre-emptive initiatives in pre-disaster and post-disaster response should be carried out. The Philippines, on the other hand, faces the challenge of having an inclusive post-disaster response and resilience building that should also be preventive. That being said, the significance of resilience, especially when executed in a collaborative aid action among public institutions, can ease the burden of the people and encourage a proactive culture of nation-building and protection.

Conclusion

Effective disaster risk management is especially critical in developing nations with limited infrastructure and resources. Effective disaster risk management in these situations can assist in alleviating poverty and promote sustainable development by making communities better prepared to withstand and recover from disasters (Autor position). Overall, good disaster risk management is critical for improving public safety, safeguarding property and infrastructure, and fostering long-term growth. It necessitates a comprehensive approach involving coordination among governments, nongovernmental organizations, communities, and other stakeholders. In dealing with natural disasters and climate calamities, it is of utmost importance that countries have a look and draw inspiration from each other's development cooperation strategies and work towards the shared goal of natural disaster resilience.

According to indicator 1.5.3 of the 2030 agenda, to advance in the lagging indicators on disaster prevention, both Colombia and the Philippines have participated by implementing what is established within the Sendai framework, making their policies

for natural disaster prevention aligned with this initiative (UNGRD, 2022).

The Philippines and Colombia share similar vulnerabilities to natural disasters, but they face different challenges in building resilience and responding to these crises. Despite the implementation of policies and strategies aimed at reducing disaster risks and increasing resilience, both countries still have gaps in disaster management capacities that need to be addressed. Disaster risk reduction and management policies and practices are critical in mitigating the negative effects of calamities. Post-disaster recovery or risk management is also a critical aspect that involves the restoration and improvement of livelihoods, and economic, physical, social, cultural, and environmental assets of affected communities. While Colombia has made progress in improving its resilience to natural disasters, the Philippines still faces many challenges in this regard. Colombia has implemented policies such as the Disaster Risk Management Development Policy Loan with Catastrophe Deferred Disbursement Option to strengthen its resilience to natural disasters. In contrast, the Philippines has experienced many natural disasters over the years, and its disaster resilience is still limited due to various challenges such as poor infrastructure, inadequate funding, and weak governance despite the RA 10121 or the Philippine Disaster Reduction and Management Act.

Both countries need to prioritize inclusive and proactive measures in disaster risk management, including community participation, leadership, and collaborative efforts among public institutions. The importance of resilience in disaster risk management cannot be overstated enough, and it is crucial to adopt a comprehensive approach that addresses all aspects of community life. Sociocultural aspects, including religion and belief systems, influence the attitudes and behaviour of communities in the face of disasters. It is also essential to address the root causes of vulnerability, including inequities and power dynamics, to ensure that resilience-building efforts protect the poor and marginalized. Overall, it is essential for governments and private sectors to prioritize disaster preparedness and allocate resources toward ensuring a prompt and effective response to natural disasters.

The author's position, which advocates for a more inclusive and efficient disaster risk management, could be strengthened by proposing concrete solutions. For example, by suggesting the implementation of more integrated policies between the public and private sectors, or by highlighting successful cases in other countries that could serve as a reference for Colombia and the

Philippines. It would also be useful to further explore how decentralization of risk management or increased community participation can overcome current challenges and improve disaster response capacity.

Possible different points of view that the article could cover

The article highlights the role of government policies in reducing disaster risks. However, some people think relying too much on the government can limit how well local communities adapt. Local groups might be quicker to respond to their own needs than government programs, which can be slow and complicated.

The article calls for including communities in disaster management. Still, critics say too much focus on community input can slow down important decisions when quick expert action is needed. There's also a concern that only well-organized groups might get to influence decisions, leaving others out. The article discusses how culture and religion shape how communities react to disasters. Some might argue that linking attitudes to religion oversimplifies the issue. Critics could say that focusing too much on cultural aspects might distract from serious problems like bad infrastructure or corruption, which have a bigger effect on disaster outcomes.

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