PROJECTING FIRE OCCURRENCES IN NEGROS ORIENTAL

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ABSTRACT*: Fire incidents pose significant threats to lives, property, and community stability, making accurate forecasting and proactive mitigation crucial for effective disaster preparedness. This study addresses the escalating concern of fire occurrences in Negros Oriental, Philippines, by analyzing historical data to predict future trends and their potential impact. The primary objectives were to analyze fire occurrences and their consequences, predict future fire incidents and the number of displaced families, and project corresponding damages. Methodologically, the research mined data on fire accidents, damages, dislocated families, and casualties from the Bureau of Fire Protection (BFP) and the Department of Interior and Local Government (DILG) in Negros Oriental. Statistical analysis, including correlation coefficients and linear regression models, was applied to identify relationships between years and fire occurrences, electrical fires, and dislocated families. Poisson probability distribution was employed to estimate future occurrences at a specific level of significance, assuming no interventions. Results indicate a strong positive linear relationship in the increase of electrical fires, total fire occurrences, and dislocated families over the study period. Projections suggest a continued upward trend in these metrics if no interventions are implemented. In conclusion, the increasing trend of fire incidents and their consequences in Negros Oriental necessitates immediate attention. This study recommends that local government policymakers in Negros Oriental utilize these findings as a foundational basis for formulating ordinances related to fire prevention, risk reduction, and urban planning to mitigate or eliminate future fire accidents.*

Keywords: Fire Occurrences, Disaster Management, Public Safety, Predictive Modeling

1. INTRODUCTION

Fire-related incidents continue to pose serious threats to life, property, and community safety. While advancements in science and technology have enhanced daily living through the use of appliances and electrical systems, these innovations also present significant risks when misused. The U.S. Fire Administration [1] reported that electrical fires in homes claim approximately 700 lives and injure 3,000 individuals annually. Such incidents are often the result of system failures, inadequate maintenance, the use of substandard materials, or the improper use of electrical appliances.

In the Philippines, faulty electrical connections and appliances have been identified as the leading causes of fire incidents, accounting for 39% of cases in 2011 [2]. Negros Oriental is among the provinces with considerable fire-related damages and casualties reported each year. This situation underscores the need for a comprehensive understanding of fire incident trends and their implications for community safety.

This study analyzed the patterns of fire incidents in Negros Oriental from 2010 to 2014. It aimed to determine whether the frequency of fires, particularly those caused by electrical faults, has been increasing over time. Furthermore, it projected the number of future fire incidents, estimated associated property damages, and forecasted the number of families likely to be displaced using statistical models. The findings of the study are intended to support policymakers in designing and implementing effective fire prevention and disaster risk reduction strategies.

2. REVIEW OF RELATED LITERATURE

Fire safety and prevention have long been central concerns in public safety discourse, particularly in contexts where urbanization and electrical dependence are increasing. Several studies emphasize that electrical fires represent a significant portion of fire incidents and are often attributed to faulty wiring, substandard appliances, and improper usage. The U.S. Fire Administration [1] reported that electrical fires in homes claim hundreds of lives and cause thousands of injuries annually, with causes ranging from system failures to overloading of circuits and the misuse of electrical devices.

In the Philippine context, Villarino [3], citing Ferno [4], identified electricity as a major cause of fires in urban centers like Metro Cebu. The Department of the Interior and Local Government [2] likewise reported that electrical-related issues accounted for 39% of fire incidents in 2011, highlighting a persistent national problem. Tajanlangit [5] underscored the vulnerability of Philippine residential structures, particularly in informal settlements, due to the use of light, combustible materials and the proximity of houses to one another.

Several researchers have explored the role of preventive strategies and the importance of institutional intervention. Salinas [6] and Acero [7] highlighted that many fire incidents result from insufficient public awareness and inadequate maintenance of fixed wiring systems. Cole et al. [8] and Mapile [9] recommended routine inspection of electrical systems and proper handling of appliances as essential components of fire prevention. Their works, including the *Juvenile Firesetting Handbook*, emphasize early education and community engagement to reduce fire risks.

Legislation has also been a focal point in the literature. Republic Act No. 9514, known as the Fire Code of the Philippines of 2008 [10], mandates comprehensive fire safety inspections and requires all buildings to observe fire prevention measures. The earlier Presidential Decree 1185 and Republic Act No. 7920, the Electrical Engineering Law [11], reinforce these requirements by regulating electrical engineering practice and ensuring compliance with safety standards.

The significance of timely, localized data analysis in formulating preventive strategies has been noted by others [12-14], who found that community-based inspections, hazard identification, and proactive governance are key to mitigating fire hazards. Mulacany [15] further emphasized that fire prevention education should aim not just to inform but to instill behavioral change, promoting responsibility among citizens.

Collectively, these studies affirm that fire prevention is not solely a technical matter but a multi-dimensional issue requiring policy enforcement, education, infrastructure regulation, and public engagement. The literature underscores the need for evidence-based strategies, particularly at the local government level, to reduce the frequency and impact of fire-related disasters.

3. METHODOLOGY

The study employed a quantitative research design to analyze and project fire occurrences in Negros Oriental. This design enabled the systematic investigation of numerical data to identify trends and generate forecasts based on historical records [16]. Data were obtained from official records of the Bureau of Fire Protection (BFP) and the Department of the Interior and Local Government (DILG) in Negros Oriental, covering the five-year period from 2010 to 2014. The variables collected included the annual number of fire incidents, estimated property damage, number of dislocated families, and recorded casualties across the province's cities and municipalities. Access to these datasets was secured through formal requests, ensuring both data accuracy and reliability.

Several statistical techniques were applied during the data analysis phase. Pearson correlation coefficients were computed to assess the strength and direction of the relationships between time (year) and key variables such as total fire occurrences, electrical fires, and number of dislocated families [17]. Linear regression models were used to establish predictive equations and determine whether these variables followed linear trends [18]. To estimate future probabilities of fire occurrences, the study utilized the Poisson probability distribution, which is appropriate for modeling the likelihood of discrete events occurring independently within a fixed interval [19].

All statistical tests and inferences were conducted at a 5% level of significance ($\alpha = 0.05$). Projections were made under the assumption that no major interventions or changes in fire prevention strategies would occur, thereby establishing a neutral baseline from which to evaluate trend continuity.

4. RESULTS AND DISCUSSION

A. Data Mined From the Bureau of Fire Protection

In this section, we present some data regarding fire accidents, the corresponding damage, and the number of families dislocated due to these fires and the number of casualties.

Table 1a presents the frequency of fire accidents and its corresponding damages in every city and municipality of Negros Oriental in the years 2010, 2011 and 2012. **Table 1b** shows the frequency of fire accidents and its corresponding damages in every city and municipality of Negros Oriental in the years 2013 and 2014.

Table 1a. Summary Table of Fire and Electrical Fire Occurrences in the Cities and Municipalities of Negros Oriental and Its Extent of Damage to Property for Years 2010, 2011, and 2012

Location	Calendar Year					
	2010		2011		2012	
	f	Damage (₱)	f	Damage (₱)	f	Damage (₱)
Basay	1	50,000	1	350,000	5	350,000
Bayawan City	6	250,000	6	1,803,500	5	311,000
Sta. Catalina	7	405,000	7	1,500,000	2	2,395,000
Siaton			1	120,000	2	326,000
Zamboanguita			2	70,000	2	22,000
Dauin	5	300,000			2	75,000
Bacong			2	500,000	5	52,000
Dumaguete	1	37,161,500	13	5,200,000	16	6,240,650
Valencia	5	245,000	6	635,000	5	764,800
Sibulan			6	840,000	4	20,600
San Jose	1	100,000	5	260,000	4	112,200
Amlan			2	190,000	7	926,000
Tanjay City	5	2,500,000	5	1,600,000	7	370,500
Pamplona	1	50,000	1	75,000		
Bais City	12	714,110	4	1,800,000	2	27,000
Mabinay	5	1,500,000	2	500,000	4	7,850,000
Manjuyod			1	20,000	1	15,000
Bindoy			2	200,000		
Ayungon	4	280,000	1	50,000	1	6,750
Tayasan	1	55,000			1	300,000
Jimalalud	2	108,000	2	165,000	2	20,000
La Libertad					3	292,000
Guihulngan			1	25,000	1	530,000
Vallehermoso			1	500,000	1	1,000,000
Canlaon City	1	100,000	1	380,000	1	550,000
TOTAL	57	43,964,500	71	16,783,500	82	22,556,500
ELECTRICAL FIRES	3	37,269,500	24	5,706,500	24	6,600,031

Table 1b. Summary Table of Fire and Electrical Fire Occurrences in the Cities and Municipalities of Negros Oriental and Its Extent of Damage to Property for Years 2013 and 2014

Location	Calendar Year			
	2013		2014	
	f	Damage (₱)	f	Damage (₱)
Basay	3	750,000	4	100,000
Bayawan City			8	314,000
Sta. Catalina	14	10,092,000	5	80,500
Siaton	2	20,000	5	388,000
Zamboanguita	2	21,389	2	70,000
Dauin	2	20,000		
Bacong	2	15,000	1	820,000
Dumaguete City	47	10,350,000	103	10,241,700
Valencia	2	50,000	8	155,000
Sibulan	10	5,500,000	7	1,951,100
San Jose	4	120,000	6	117,200
Amlan			7	560,000
Tanjay City	1	265,000	10	330,000
Pamplona	3	60,000	3	609,000
Bais City	2	50,000	16	833,550

Mabinay	4	3,950,000	12	2,114,200
Manjuyod			2	350,000
Bindoy			1	50,000
Ayungon				
Tayasan	3	920,000	1	750,000
Jimalalud				
La Libertad				
Guihulngan City	1	60,000	4	640,000
Vallehermoso				
Canlaon City			1	90,000
TOTAL	92	32,243,389	206	20,564,250
ELECTRICAL FIRES	37	14,525,657	63	6,664,250

Table 2 presents the summary of fire accidents, including electrical fires, in Negros Oriental from calendar year 2010 to 2014. In 2010, a total of 57 fire incidents were recorded, 3 of which were electrical in nature. These incidents caused an estimated property damage of ₱43,964,500.00 and displaced 8 families. In 2011, there were 71 fire incidents, including 24 electrical fires, resulting in ₱16,783,500.00 worth of property damage, one fatality, one injury, and 41 dislocated families.

Table 2. Summary Table on the Occurrences of Fires and Electrical Fires in Negros Oriental from Calendar Year 2010-2014

Year	Electrical Fires	Accidental and other Fires	Damage to Property (₱)	No. of Casualties	No. of Full & Partial Disability	No. of Families Dislocated
2010	3	57	43,964,500	2	3	8
2011	24	71	16,783,500	1	1	41
2012	24	82	22,556,500	1	1	46
2013	37	102	32,243,389	0	2	52
2014	63	206	20,564,250	0	1	72
Total	151	518	136,112,139	2	8	219
Annual Average	30	103	27,222,427	0.4	1	43

In 2012, the number of electrical fires remained at 24 out of 82 total fire incidents. The damages amounted to ₱22,556,500.00, with one death, one injury, and 46 families displaced. In 2013, 102 fire incidents were recorded, 37 of which were electrical, leading to ₱32,243,389.00 in property losses, 2 injuries, and 52 dislocated families. By 2014, the total number of fire incidents had surged to 206, including 63 electrical fires, causing an estimated ₱20,564,250.00 in property damage, 1 injury, and 72 families displaced.

Over the five-year period, there were 151 recorded electrical fire incidents out of 518 total fire cases, averaging 30 electrical fires annually. The cumulative property damage from all fire incidents was estimated at ₱136,112,139.00, with an annual average of ₱27,222,427.80. The incidents also resulted in 4 deaths and a total of 219 families rendered homeless—an average of 43 families displaced per year.

To estimate the likely number of fire occurrences in future years, this study applied the Poisson probability distribution. This model is appropriate because it assumes that events (in this case, fire incidents) occur independently and at a constant average rate over a fixed period—conditions that reasonably describe the data gathered from 2010 to 2014 [19]. Fire incidents are discrete and countable events and tend to occur randomly throughout the year. Furthermore, they are relatively rare in short time intervals, which aligns with one of the key properties of a Poisson process [20]. The study used the annual running average of fire occurrences as an estimate of the mean rate (λ) in the Poisson distribution. This approach is widely adopted in fire risk modeling and other disaster forecasting contexts [21, 22], making it suitable for projecting electrical fire incidents, total fire occurrences, and displaced families in Negros Oriental.

B. Estimating the Number of Electrical Fire Accidents in the Years 2015 to 2019

Table 3 provides a summary of the number of electrical fire occurrences in Negros Oriental from 2010 to 2014, extracted from Tables 1a and 1b. The primary objective is to examine the trend in the number of electrical fire incidents over time and determine whether this trend is increasing. Additionally, the study sought to identify the nature of the relationship—whether it follows a linear, exponential, or polynomial pattern [23].

To analyze this, the variable x is assigned to represent the year, while y represents the corresponding number of electrical fire occurrences. A correlation coefficient was then calculated to evaluate the strength and direction of the relationship between these two variables.

Table 3. Summary Table of Electrical Fire Occurrences of Negros Oriental

Year (x)	2010	2011	2012	2013	2014
Electrical fire occurrences (y)	3	24	24	37	63

The correlation coefficient computed for the variables x (representing the year) and y (representing the number of electrical fire occurrences) was 0.8784, indicating a strong positive linear relationship [18]. Assuming that the variables x and y have positive linear relationship, let $y = \alpha_1 + \beta_1 x$ be the model defining the linear relationship. By this model, the value of y given a value of x was predicted. However, this equation was not easy to find. Since deriving the exact equation is complex, a practical alternative was to use the best-fitting line, or regression line, as an estimator. Based on the computations, the regression equation obtained was:

$y = -26729.4 + 13.3x$. Although this equation is not ideal for years earlier than 2010—since it may yield negative values—it is considered appropriate for estimating the relationship between x and y within the range $2010 \le x \le 2019$.

Using the regression model, the number of electrical fire occurrences was projected for each year from 2015 to 2019. The resulting values were then used to compute the **r**unning averages (μ_x) from 2010 to each respective projection year (x = 5, 6, 7, 8, 9). These averages are presented in **Table 4.** The running averages were selected as the basis for estimating the probabilities of future fire occurrences, as they provide a more stable measure of central tendency for small time series data and are often preferred in probabilistic models for rare events [19].

Table 4. Projected Number of Electrical Fire Occurrences Using the Model $y = -26729.4 + 13.3x$ in 2015, 2016, 2017, 2018 and 2019

Year	2015	2016	2017	2018	2019
Estimated no. of electrical fire occurrences	71	83	97	110	123

Itis important to note that the occurrence of fires each year is treated as a Poisson random experiment, where events are assumed to occur independently and at a constant average rate. The use of the running average is considered more appropriate for the statistical design applied in this study.

Table 5. Running Averages Based on the Estimates in Table 4

Year (x)	2015	2016	2017	2018	2019
Average electrical fire occurrences from 2010 to year x	37	43	50	57	63

At the 5% level of significance, the Poisson probability distribution provides estimated minimum numbers of electrical fire occurrences in Negros Oriental from 2015 to 2019, as shown in **Table 6**. Assuming no interventions are introduced and that the running mean serves as a valid approximation of the true mean, the projections indicate a steadily increasing trend. In 2015, there is a 95% probability that at least 28 electrical fires will occur. This minimum estimate rises to 33 in 2016, followed by 39 in 2017, 45 in 2018, and 50 in 2019. These projections reflect a consistent upward trend in electrical fire incidents and underscore the urgency for implementing preventive measures to address the growing risk [20, 19].

Table 6. Estimated Number of Electrical Fire Occurrences (at 5% level of significance) in Negros Oriental in the Years 2015 to 2019

Year	2015	2016	2017	2018	2019
Electrical fires occurrences (at least)	28	33	39	45	50

C. Estimating the Number of Fire Accidents in the Year 2015 to 2019

Table 7 provides a summary of the total number of fire occurrences in Negros Oriental from 2010 to 2014, based on data previously presented in Table 1. The objective is to examine the trend in the frequency of fire incidents over time and to determine whether the trend is increasing. Additionally, the analysis sought to identify the nature of this relationship—whether it is linear, exponential, polynomial, or follows another pattern. To conduct this analysis, the variable x was assigned to represent the year, while v denoted the number of fire occurrences. The correlation coefficient between x and v was then calculated to assess the strength and direction of their relationship.

Table 7. Summary Table of Total Fire Occurrences in Negros Oriental

Year (x)	2010	2011	2012	2013	2014
Total fire occurrences (v)	57	71	82	92	206

The computed correlation coefficient between the variables x (year) and v (total number of fire occurrences) is 0.8844, indicating a strong positive linear relationship [18]. Assuming that the variables exhibit a positive linear association, a model can be defined to predict the value of v based on a given value of x ($v = \alpha_2 + \beta_2 x$). Since deriving the exact functional model may be complex, the study employs the best-fitting line, or regression line, as a practical estimation tool. Based on the computations, the regression equation for the relationship between x and v is: $v = -66091.2 + 32.9x$. Although this equation may yield negative values when applied to years earlier than 2010, it is suitable for estimating the number of fire occurrences within the time frame 2010 to 2019. This model serves as the basis for projecting future fire incidents in the absence of intervention measures.

Table 8. Projected Number of Fire Occurrences Using the Model $v = -66091.2 + 32.9x$ in 2015, 2016, 2017, 2018 and 2019

Year	2015	2016	2017	2018	2019
Projected no. of fire occurrences	202	235	268	301	334

Using the regression model, the number of total fire occurrences was projected for each year from 2015 to 2019. The projected values were then used to calculate the running average from 2010 to each respective year, denoted as x = 5, 6, 7, 8, 9. These running averages are presented in **Table 9**. The running average was selected as the basis for estimating the probability of fire occurrences, as it provides a more stable approximation of the expected value over time. The occurrence of fire incidents each year is treated as a Poisson random experiment, which assumes that events occur independently and at a constant average rate [20]. Within this framework, the running average is considered an appropriate estimate of the Poisson mean (λ), providing a statistically valid input for modeling rare event probabilities [21].

Table 9. Running Averages Based on the Projection in Table 8

Year (x)	2015	2016	2017	2018	2019
Average fire occurrences from 2010 to year x	118	135	152	168	185

At the 5% level of significance, the Poisson probability distribution provides the estimated minimum number of fire occurrences in Negros Oriental from 2015 to 2019, as shown in **Table 10**. Assuming that no interventions are implemented and that the running average is a reliable approximation of the true mean, the projections indicate an increasing trend in fire incidents. Specifically, there is a 95% probability that there will be at least 101 fire incidents in 2015, 117 in 2016, 133 in 2017, 147 in 2018, and 163 in 2019. These estimates highlight the potential escalation of fire risks in the absence of preventive measures and provide a statistical basis for policy and planning interventions.

Table 10. Estimated Number of Fire Occurrences (at 5% level of Significance) in Negros Oriental in the Years 2015 to 2019

Year	2015	2016	2017	2018	2019
Fires occurrences (at least)	101	117	133	147	163

D. Estimating the Number Families which will be dislocated Due to Fire Accidents in the Year 2015 to 2019

Table 11 summarizes data from Table 1, focusing exclusively on the number of families dislocated due to fire incidents in Negros Oriental from 2010 to 2014. The objective of this analysis is to determine whether the number of displaced families has increased over time and to examine

the nature of the trend—whether it follows a linear, exponential, or polynomial pattern.

Table 11. Summary Table of the Number of Families Dislocated Due to Fire Accidents in Negros Oriental from 2010 to 2014

Year (x)	2010	2011	2012	2013	2014
Number of families dislocated due to fire accidents (w)	8	41	46	52	72

To conduct this analysis, the variable x is assigned to represent the year, and w is used to denote the number of families dislocated due to fire accidents. The computed correlation coefficient between x and w is 0.9464, indicating a very strong positive linear relationship. This suggests that the number of families displaced by fire incidents has been increasing steadily over the years [18].

Assuming a linear relationship, a model can be used to predict the value of w for any given year x. Although deriving the exact equation may be complex, the best-fitting line, or regression line, serves as a practical substitute. Based on computations, the regression equation for x and w is: $w = -27923 + 13.9x$. This equation may yield negative values when applied to years prior to 2010, but it is appropriate for estimating the number of dislocated families for years in the range of 2010 to 2019. This model is used to forecast future displacement trends and support preparedness planning.

Table 12. Projected Number of Families Dislocated Using the Model $w = -27923 + 13.9x$ in 2015, 2016, 2017, 2018 and 2019.

Year	2015	2016	2017	2018	2019
Projected no. of families dislocated	86	99	113	127	141

Using the regression model $w = 13.9x - 27{,}923$, the projected number of families dislocated due to fire incidents in Negros Oriental for the years 2015 to 2019 is shown in **Table 12**. The projections indicate a consistent increase, with 86 families estimated to be displaced in 2015, rising to 141 by 2019.

Table 13. Running Averages Based on the Projection in Table 12

Year (x)	2015	2016	2017	2018	2019
Average no. of families dislocated due to fire accidents from 2010 to year x	37	43	50	57	63

To enhance the reliability of these projections in a probabilistic context, running averages were computed from 2010 through each projection year (x = 5, 6, 7, 8, 9). These values, presented in **Table 13**, were used as estimates of the Poisson distribution mean (λ) for each corresponding year. The use of running averages provides a smoothed estimate of central tendency, especially effective when working with limited data over a short time span [19].

Table 14. Estimated Number of Families Dislocated Due to Fire Accidents (at 5% level of significance) in Negros Oriental in the Years 2015 to 2019

Year	2015	2016	2017	2018	2019
Estimated number of families dislocated due to fire accidents (at least)	40	46	52	58	65

At the 5% level of significance, the Poisson probability distribution provides the estimates presented in **Table 14** for the projected number of families dislocated annually. Assuming that no fire prevention interventions are introduced and that the running mean is a valid approximation of the true mean, the results indicate the following:

There is a 95% probability that at least 28 families will be dislocated in 2015, at least 33 families in 2016, 39 in 2017, 45 in 2018, and 50 in 2019. These estimates are derived using the lower bounds of the Poisson distribution based on the projected running averages [20, 21]. The findings underscore the escalating impact of fire incidents on affected households and emphasize the need for evidence-based fire risk reduction strategies and targeted policy interventions.

E. Practical Implications for Local Governance and Fire Risk Management.

F. The upward trends in fire occurrences, electrical fire incidents, and displaced families projected in this study highlight critical areas for proactive intervention by local government units (LGUs) in Negros Oriental. The projections suggest that without effective mitigation, communities will increasingly face property loss, displacement, and risk to life. Therefore, these data-driven forecasts should serve as the foundation for integrated fire prevention and disaster preparedness strategies.

Specifically, LGUs are encouraged to:

1. Strengthen Fire Safety Regulations and Enforcement.
   Enact and enforce localized ordinances that mandate the inspection and maintenance of electrical systems in both residential and commercial buildings, particularly in densely populated barangays.
2. Launch Community-Based Fire Prevention Campaigns.
   Conduct sustained public awareness drives on fire safety, proper use of electrical appliances, and emergency preparedness through barangay assemblies, schools, radio, and social media platforms.
3. Enhance Capacity of Local Fire Stations.
   Allocate adequate budget for fire stations to improve infrastructure, training, and response equipment, especially in high-risk areas identified through historical fire data.
4. Integrate Fire Risk in Urban Planning.
   Require fire risk assessments in the issuance of building permits and subdivision approvals to ensure the inclusion of firebreaks, hydrants, and access roads.
5. Institutionalize Early Warning and Evacuation Systems.
   Develop community-based early warning mechanisms and designate safe evacuation centers to minimize displacement and fatalities during fire emergencies.

These interventions, guided by empirical evidence from this study, can significantly reduce the probability and severity of future fire disasters. Moreover, they promote a culture of prevention, resilience, and accountability in local governance.

5. CONCLUSION

Analysis of fire incident data in Negros Oriental from 2010 to 2014 reveals a consistent increase in fire occurrences, particularly those caused by electrical faults, along with rising property damages and displaced families. Projections suggest that this upward trend is likely to continue without effective interventions, driven by factors such as population growth, urbanization, and reliance on electrical systems

without corresponding improvements in infrastructure and safety measures.

Given these findings, there is a clear need for proactive, data-informed action from local government units (LGUs). Specifically, Municipal or City Disaster Risk Reduction and Management Offices (DRRMOs), Local Planning and Development Offices, and engineering departments should lead in crafting and enforcing ordinances on electrical and fire safety, integrating fire risk assessments into urban planning, and enhancing fire department capacity.

Community-wide fire prevention education and emergency preparedness campaigns are also essential to reduce future risks and household displacements. While the study provides a valuable baseline, its projections assume static conditions in population, infrastructure, and policy. Future trends may vary with significant changes. Nonetheless, the findings offer a critical foundation for informed planning and risk mitigation in Negros Oriental.

6. ACKNOWLEDGMENT

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