Philippine Military Academy (PMA) Incident Command System in Disaster Risk Reduction Management

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ABSTRACT

Disaster Risk Reduction Management (DRRM) is critical in safeguarding communities against the impact of natural and man-made disasters. At the heart of effective DRRM is the implementation of Incident Command Systems (ICS), which provide a structured framework for coordinating emergency response efforts. This study assessed the Philippine Military Academy (PMA) Incident Command System in Disaster Risk Reduction Management. The study made used of quantitative and qualitative research design employing a survey questionnaire, checklist and interview guide questions research design to gather data from 46 PMA personnel directly involved in the disaster risk reduction management function. The research findings reveal a generally high level of effectiveness in the Philippine Military Academy (PMA) Incident Command System (ICS) for disaster risk reduction management, with an overall rating of 3.58, interpreted as very effective. Key strengths include the system's ability to establish command functions and processes for transferring commands, adherence to the chain of command principles, and efficient gathering and processing of information and intelligence. However, areas for improvement are evident, particularly in the activation and management capabilities of the Incident Management Team (IMT). The lowest mean scores were associated with IMT activations based on intelligence reports, logistical support provision, rapid damage assessment, and response to sudden-onset disasters. Furthermore, common issues identified within the PMA's ICS include a lack of training and seminars, coordination and communication challenges, insufficient equipment and personnel, and gaps in coordination and disaster management tools, which impact the Academy's Incident Command System.

Keywords: Philippine Military Academy (PMA), Incident Command System, Disaster, Risk, Reduction Management.

INTRODUCTION

When disaster strikes, the Philippine Military Academy (PMA) assumes a pivotal role in disaster risk reduction management (DRRM) within the City of Baguio and nearby municipalities and provinces. The effectiveness of its Incident Command System (ICS) in handling disaster situations has piqued the interest of researchers and practitioners and underscored the criticality of this topic. Understanding the effectiveness of the PMA's ICS is not just important; it is imperative to enhance disaster response and mitigate the impact of disasters on affected communities.

Disaster Risk Reduction Management (DRRM) is critical to safeguarding communities against the impact of natural and man-made disasters. Central to effective DRRM is the implementation of Incident Command Systems (ICS), which provide a structured framework for coordinating emergency response efforts. In recent years, the effectiveness of ICS in DRRM has been the subject of extensive research and scrutiny.

The Philippines has tackled the issue of overwhelming disaster responses with a game-changing solution: the Incident Command System (ICS). This system ensures reliable and effective response operations by prioritizing integrated objectives, communication protocols, collective and strategic approaches, shared understanding, and optimized efforts. ICS fosters interdependent working by promoting collaboration, coordination, and cooperation across different public and private stakeholders. The institutionalization of ICS is critical because it resolves longstanding issues of a lack of integrated response and on-scene management during disasters. With the ICS in place, the Philippines is better equipped to respond to crises and manage operations with a single plan

that brings together all agencies harmoniously and effectively.

RA10121 Section 9 (g) states that the "Office of Civil Defense (OCD) shall formulate standard operating procedures for coordination," and Rule 7(h) of the implementing rules and regulations states, "The Office of Civil Defense shall establish Incident Command System as part of the Philippines' on- scene disaster response system." Pursuant to the law, the NDRRMC, through the OCD, issued NDRRMC Memo 4 (2012), which implements guidelines on using ICS as an on-scene disaster response and management mechanism under the Philippine DRRM System.

LITERATURE REVIEW

As defined in the National Disaster Risk Reduction and Management Council Memorandum Circular 004 s2012, an Incident Command System is a standard, on-scene, all-hazard incident management concept that can be used by all Disaster Risk Reduction and Management Councils (DRRMCs) at all levels, especially response groups- private and public sector. The established ICS in the Philippines implements an integrated organizational structure that matches the complexities and demands of a single or multiple incident without being hindered by agency mandate or jurisdictional boundaries. With the prevalence of disasters in the country, an orchestrated and harmonized effort must be implemented to ensure proper and systematic disaster response management. The salient feature of ICS is to provide efficient and systematic management of the consequences of disasters and the organized interplay of agencies and stakeholders. ICS is a system that standardizes disaster response and is generally accepted by key actors. ICS also emphasizes the preparedness aspect in response and the integration of scientific knowledge in the planning and decision-making that is urgently needed in disaster management.

Research conducted by Smith and Johnson (2019) emphasizes the importance of ICS in enhancing disaster response capabilities. Their study highlights how the systematic approach of ICS facilitates communication, coordination, and resource allocation during emergencies, ultimately improving the overall effectiveness of DRRM efforts.

Similarly, a report by Brown et al. (2020) underscores the role of ICS in fostering collaboration among various agencies and stakeholders involved in disaster response. Through standardized procedures and clear command structures, ICS enables swift and coordinated action, minimizing confusion and maximizing the utilization of available resources.

However, challenges exist in implementing and utilizing ICS within the context of DRRM. Johnson et al. (2021) identify communication breakdowns and jurisdictional conflicts as common barriers to effective ICS implementation. These challenges can impede the flow of information and hinder coordination among response teams, potentially compromising the timeliness and efficacy of disaster response efforts.

Currently, ICS in the Philippines is still transitioning from institutionalizing the system. While there are many advantages to using ICS, there have also been challenges and limitations encountered throughout the years. Thus, there is a need for further assessment and study of its level of effectiveness.

Theoretical/Conceptual Framework

In line with the policy of the state to develop, promote, and implement a comprehensive National Disaster Risk Reduction and Management Plan (NDRRMP) that aims to strengthen the capacity of the national government and the local government units (LGUs), together with partner stakeholders, to build the disaster resilience of communities, and to institutionalize arrangements and measures for reducing disaster risks, including projected climate risks, and enhancing disaster preparedness and response capabilities at all levels, an all-hazards Incident Command System is hereby established and institutionalized in the PDRRMS as an on-scene disaster response and management mechanism at all levels of DRRMCs, including public and private sector agencies.

As part of this ICS institutionalization process, all concerned shall endeavor to carry out capacity-building programs for their ICS organization through the conduct of ICS training, organization of All-Hazard Incident Management Teams (IMTs), development of stand-by arrangements and protocols for IMT notification, activation, deployment and deactivation and other related activities. The National ICS Cadre, as defined under

the NDRRMC Memorandum Circular 004 s2012 of the NDRRMC, shall take the lead in undertaking the ICS capacity building and development program under the leadership of the Office of Civil Defense.

The conceptual framework for evaluating the effectiveness of the Incident Command System (ICS) in Disaster Risk Reduction Management (DRRM) draws upon several theoretical perspectives and concepts to comprehensively understand its functionality and impact. Systems theory provides a framework for understanding the interrelated components of the ICS and their interactions within the broader context of disaster response. According to Jones and Smith (2019), systems theory emphasizes the interconnectedness of elements within a system, highlighting the importance of coordination and communication among various stakeholders in effective disaster management.

The study of organizational behavior offers insights into how individuals and groups within the ICS structure collaborate and perform during disaster response. Brown and Johnson (2020) suggest that factors such as leadership, decision-making processes, and organizational culture influence the effectiveness of the ICS in coordinating response efforts and mobilizing resources.

Communication theory plays a crucial role in understanding the flow of information within the ICS and its impact on decision-making and coordination. Smith et al. (2021) emphasize the importance of clear and concise communication channels in facilitating timely response actions and reducing the risk of misinterpretation or misunderstanding during emergencies.

Collaboration and network theory focuses on the relationships and interactions among agencies, organizations, and individuals involved in disaster response. Johnson et al. (2022) argue that effective collaboration and networking are essential for maximizing the collective capacity and resources available within the ICS, enabling a more coordinated and efficient response to disasters.
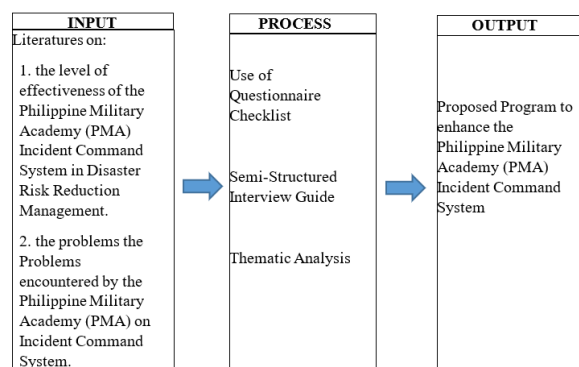
Continuity management principles address the ICS framework's need for resilience and adaptability. According to Garcia and Martinez (2023), integrating continuity management practices into the ICS enhances its ability to anticipate and respond to evolving disaster scenarios, ensuring the continuity of essential services and operations amidst disruptions.

By integrating these theoretical perspectives and concepts, the conceptual framework provides a comprehensive lens through which to evaluate the effectiveness of the Incident Command System in Disaster Risk Reduction Management.

Paradigm of the Study

The paradigm of the study is a diagrammatical presentation of research that followed the Input-Process-Output (IPO). The first box is the input that presents the research's main problem: the level of effectiveness of the Philippine Military Academy (PMA) Incident Command System in Disaster Risk Reduction Management and the issues encountered by the Philippine Military Academy (PMA) on Incident Command System. The second box presents the methods used: a questionnaire checklist, interview guide questions, focused group discussion, quantitative analysis, and thematic analysis. The third box presents the outputs: The Proposed Program to enhance the Philippine Military Academy (PMA) Incident Command System.

Figure 1. Paradigm of the Study

INPUT	PROCESS	OUTPUT
Literatures on: 1. the level of effectiveness of the Philippine Military Academy (PMA) Incident Command System in Disaster Risk Reduction Management. 2. the problems the Problems encountered by the Philippine Military Academy (PMA) on Incident Command System.	Use of Questionnaire Checklist Semi-Structured Interview Guide Thematic Analysis	Proposed Program to enhance the Philippine Military Academy (PMA) Incident Command System

Significance of the Study

The Incident Command System (ICS) is a powerful tool that ensures effective and reliable management of incidents and disasters, especially in the Philippines, where the frequency of natural and human-induced hazards is high. The ongoing implementation of ICS is a significant step towards prioritizing the organization's or jurisdiction's safety and welfare. The study's findings can help develop policy recommendations to enhance and institutionalize the system in the best possible manner. This will benefit the lead implementers in PMA and the Local Government Unit, Private Sector, Civil Society Organizations, Non-Government Organizations, and the public. By working together and strengthening the system, we can ensure that we are always prepared to face any emergency or disaster with confidence and resilience.

Objectives of the Study

The primary purpose of this study was to assess the Philippine Military Academy (PMA) Incident Command System in Disaster Risk Reduction Management. Specifically, it sought to investigate:

1. What is the level of effectiveness of the Philippine Military Academy (PMA) Incident Command System in Disaster Risk Reduction Management?

2. What are the problems encountered by the Philippine Military Academy (PMA) on the Incident Command System?

METHODOLOGY

Study Design

This used a mixed quantitative and qualitative study design method to obtain information on the Philippine Military Academy (PMA) Incident Command System in Disaster Risk Reduction Management. Quantitative Descriptive was used to assess the effectiveness of the Philippine Military Academy (PMA) Incident Command System in Disaster Risk Reduction Management. In contrast, qualitative descriptive was used to gather data on problems encountered by the Philippine Military Academy (PMA) Incident Command System.

Population of the Study

The population of the study is the Philippine Military Academy ICS AdHoc Committee members, employees, and officials. They were chosen as the subject of the study since they are the actual and direct persons in charge of implementing the ICS in the locale. The Philippine Military Academy was selected as the place of study due to its accessibility to the researcher and the participant's availability to assist during the survey. The researcher used purposive sampling to identify the primary participants. The number of participants was based on data saturation.

Data Gathering Tool

The researcher used a questionnaire checklist to seek answers on the level of effectiveness of the Philippine Military Academy (PMA) Incident Command System in Disaster Risk Reduction Management. To get data on the problems encountered by the Philippine Military Academy (PMA) Incident Command System, an interview guide using semi-structured questions was used. The tool validator validated the interview guide question.

Data Gathering Procedures

The researcher prepared a request letter addressed to the PMA Superintendent, asking permission to allow the researcher to float the questionnaire and conduct an interview with the target participants. Interview guide questions and consent forms were also prepared before the interviews. Informed consent was given to the participants if they would be willing to participate, to schedule an interview date, time, and location at the participant's discretion, and to solicit names of other possible candidates. The researcher emphasized to the participant that all conversations would be used for research purposes only. All interviews were digitally

recorded to capture the verbatim language and voice inflections. The researcher transcribed the digital recordings to ensure quality. Each participant was given exclusive access to their interview transcripts and was invited to read them thoroughly for clarity and accuracy and to provide additional insight and information.

Treatment of Data

A significant amount of data was collected and organized. The researcher used a 4-point Likert scale and weighed means to assess the level of effectiveness of the Philippine Military Academy (PMA) Incident Command System in Disaster Risk Reduction Management. Thematic analysis was used to treat the data gathered regarding the problems encountered by the Philippine Military Academy (PMA) in the Incident Command System. This method involves identifying, analyzing, organizing, describing, and reporting themes within a data set. The theme is based on the participants' statements during the interview and then defined and interpreted.

Ethical Considerations

Before the researcher floated questionnaires and interviews, respondents were adequately informed of the purpose of the study as indicated in the informed consent. There was also a provision that they would be notified of the results of the study. Furthermore, the information obtained in their interview was kept private to guarantee the confidentiality of the information. The interview procedures warrant the secrecy of the participants. Agreeing to the interview was voluntary; therefore, the respondents were assured that whether they participated, they would not suffer long-term physical, emotional, or psychological harm as a consequence of participating in the research. Moreover, participants were made to understand that they could withdraw at any time.

RESULTS AND DISCUSSIONS

The Level of Effectiveness of the Philippine Military Academy (PMA) Incident Command System in Disaster Risk Reduction Management

As gleaned in Table 1, the overall effectiveness of the Philippine Military Academy (PMA) Incident Command System (ICS) in disaster risk reduction management is highly rated, with an overall mean score of 3.58, interpreted as very effective. The highest-rated indicator within this system is its ability to establish command functions and processes for transferring commands, which received a mean score of 3.65, interpreted as very effective. This suggests that the ICS ensures clear leadership and smooth transitions between command personnel during disaster responses, critical for maintaining continuity and clarity in decision-making during emergencies.

Following closely are the indicators related to adherence to the chain of command and unity of command principles and the capability of gathering and processing information and intelligence, both with a mean score of 3.63, also interpreted as very effective. The strong adherence to the chain of command ensures that all personnel understand their roles and responsibilities within a clear, hierarchical structure, minimizing confusion and enhancing coordinated efforts. Similarly, the effective gathering and processing of information and intelligence are vital for maintaining situational awareness, enabling informed decision-making based on accurate and timely data. This capability ensures that responders can adapt to changing conditions and make strategic choices that mitigate the impact of disasters.

These findings have several important implications. Firstly, the high effectiveness ratings indicate that current training programs and protocols at the PMA are successful. Continued investment in training, particularly in command transfer processes, chain of command principles, and information management, will help maintain and potentially improve these high standards. This could include advanced simulation exercises and information technology upgrades. Secondly, the strong performance in these areas suggests that existing policies and procedures are adequate. Documenting and standardizing these best practices can provide a reference for other institutions. Regular review and policy updates based on lessons learned from incidents will ensure their continued relevance and effectiveness.

Additionally, ensuring adequate resource allocation to support the ICS's strengths is crucial. Investments in better

communication tools, intelligence-gathering systems, and command transfer protocols will reinforce the well-performing areas. The PMA's success with the ICS indicates the potential for broader application and collaboration with other military and civilian disaster response entities. Sharing insights and methodologies with other organizations could help elevate the overall disaster risk reduction management standard across different sectors. Joint training programs and exercises with other agencies could foster better inter-agency coordination and resource sharing.

Finally, while the current system is highly effective, there is always room for improvement. Embracing innovative technologies and methodologies, such as artificial intelligence for real-time data analysis or drones for intelligence gathering, could further enhance the ICS's capabilities. Continuous research and development efforts should be encouraged to keep the system at the forefront of disaster management practices. The PMA's Incident Command System demonstrates significant strengths in critical areas crucial for effective disaster risk reduction management. By focusing on continuous improvement, resource allocation, and broader collaboration, the PMA can sustain and potentially elevate the effectiveness of its disaster response efforts, serving as a model for other institutions.

Table 1. Level of Effectiveness of the Philippine Military Academy (PMA) Incident Command System in Disaster Risk Reduction Management (N=46)

	Indicators	Mean	Std. Deviation	Descriptive Interpretation
1	The Incident Management Team activates based on pre-disaster assessment results.	3.61	0.61	Very Much Effective
2	The Incident Management Team activates based on rapid damage assessment and needs analysis results.	3.52	0.62	Very Much Effective
3	The Incident Management Team activates based on intelligence report recommendations.	3.43	0.72	Very Much Effective
4	The Incident Management Team activates following sudden-onset disasters with immediate significant impacts.	3.52	0.66	Very Much Effective
5	The Response Cluster assists with and coordinates the pre-deployment of the Incident Management Team.	3.61	0.61	Very Much Effective
6	The Incident Management Team establishes the Incident Command Post.	3.61	0.58	Very Much Effective
7	The Incident Management Team ensures that all Disaster Risk Reduction and Management Councils (DRRMCs), government agencies, units, and private civil society organizations check-in.	3.61	0.58	Very Much Effective
8	The Incident Management Team ensures the safety of all personnel deployed for operations.	3.61	0.61	Very Much Effective
9	The Incident Management Team manages the provision of logistical support for operations.	3.50	0.69	Very Much Effective
10	The Incident Management Team documents and reports all situation updates and actions taken.	3.59	0.58	Very Much Effective
11	The Incident Management Team facilitates the complete demobilization process of resources.	3.61	0.58	Very Much Effective
12	Objectives manage the Incident Command System.	3.61	0.58	Very Much Effective

13	The Incident Command System ensures centralized coordination of incident action planning.	3.59	0.62	Very Much Effective
14	The Incident Command System maintains a manageable span of control.	3.59	0.58	Very Much Effective
15	The Incident Command System implements comprehensive resource management.	3.61	0.61	Very Much Effective
16	The Incident Command System uses a common integrated communications plan.	3.54	0.59	Very Much Effective
17	The Incident Command System establishes command functions and processes for transferring commands.	3.65	0.57	Very Much Effective
18	The Incident Command System adheres to the chain of command and unity of command principles.	3.63	0.57	Very Much Effective
19	The Incident Command System gathers and processes information and intelligence	3.63	0.57	Very Much Effective
	Overall Mean	**3.58**	**0.60**	**Very Much Effective**

The research reveals that the overall effectiveness of the Philippine Military Academy (PMA) Incident Command System (ICS) in disaster risk reduction management is highly rated, with notable strengths and some areas for improvement. Specifically, while still interpreted as very effective, the indicators that received the lowest mean scores suggest potential areas for enhancement. The indicator with the lowest mean score is the Incident Management Team (IMT) activation based on intelligence reports, which scored 3.43. This is followed by the IMT's management of logistical support for operations, with a mean score of 3.50. Additionally, the IMT's activation was based on rapid damage assessment and needs analysis results, and its activation following sudden-onset disasters with immediate significant impacts scored 3.52. While still positive, these scores indicate areas where the system's effectiveness could be further optimized.

The relatively lower scores in these indicators highlight specific disaster response aspects requiring attention. The activation of the IMT based on intelligence reports suggests that there might be room for improvement in how intelligence is gathered, analyzed, and utilized to trigger timely responses. Enhancing the processes and tools used for intelligence gathering and interpretation could lead to more proactive and informed decision-making.

Similarly, the management of logistical support for operations received a slightly higher score but still indicates a need for better logistical coordination and resource management. Efficient logistical support is critical in disaster scenarios to ensure supplies and resources promptly reach affected areas. Improving supply chain management practices, investing in logistics technology, and enhancing coordination mechanisms can address this gap.

The activation of the IMT based on rapid damage assessment and needs analysis results also scored lower, suggesting that the processes for conducting and acting on rapid assessments could be improved. This might involve refining assessment methodologies, ensuring rapid deployment of assessment teams, and improving data analysis tools to provide accurate and timely information.

The IMT's activation following sudden-onset disasters with immediate significant impacts indicates a need for more robust rapid response mechanisms. Developing pre-planned activation protocols, conducting regular rapid response drills, and ensuring that all team members are well-trained in these protocols can enhance the IMT's ability to respond quickly and effectively to sudden disasters.

These findings have important implications for the PMA and other similar institutions. Firstly, there is a need to

invest in improving intelligence capabilities, logistical support systems, rapid assessment processes, and rapid response protocols. This can be achieved through targeted training programs, advanced simulation exercises, and the adoption of modern technologies such as artificial intelligence for data analysis and drones for rapid damage assessment.

Secondly, the relatively lower scores suggest that existing policies and procedures in these areas should be reviewed and updated regularly. Incorporating lessons learned from past incidents and integrating best practices from other successful disaster response systems can help enhance the PMA's overall effectiveness.

Finally, continuous improvement and innovation are crucial for maintaining high effectiveness in disaster risk reduction management. Encouraging ongoing research and development, embracing cutting-edge technologies, and fostering a culture of continuous learning and adaptation will ensure that the PMA remains at the forefront of disaster management practices. While the PMA's Incident Command System demonstrates significant strengths, focusing on continuous improvement, strategic resource allocation, and broader collaboration will sustain and potentially elevate its effectiveness. Addressing the areas with relatively lower scores and embracing innovation will ensure that the PMA remains a model for other disaster risk reduction management institutions.

The Most Common Issues that the PMA faces with the Incident Command System

The research identified several common issues faced by the Philippine Military Academy (PMA) in its implementation of the Incident Command System (ICS):

Lack of Training and Seminars on ICS

One of the primary issues is the lack of training and seminars on ICS. Personnel may not fully understand or efficiently utilize the system without regular and comprehensive training. Research indicates continuous professional development is crucial for effective disaster response (Kapucu & Garayev, 2011). Inadequate training can lead to inconsistencies in response efforts and a lack of familiarity with ICS protocols, decreasing operational efficiency. Addressing this issue through ongoing education and incorporating ICS training into periodic In-Service Training programs will ensure that personnel are well-prepared to execute the system effectively during disasters.

Lack of Personnel

Another pressing issue is a lack of personnel. Adequate staffing is crucial for maintaining the ICS's readiness and resilience. Studies indicate a well-staffed response team is vital for effective disaster management (Alexander, 2015). Insufficiently trained personnel to handle disaster response demands can lead to burnout among existing staff and decrease overall operational effectiveness. This shortage strains resources and impedes maintaining rapid and efficient responses. Enhancing recruitment efforts and ensuring sufficient staffing levels will bolster the PMA's disaster response capabilities and improve overall effectiveness.

Lack of Disaster Management Tools

While the PMA's Incident Command System demonstrates significant strengths, addressing the identified issues related to training, coordination, equipment, personnel, and disaster management tools is crucial. By focusing on these areas, the PMA can enhance its disaster response capabilities and ensure a more effective and resilient ICS. This comprehensive approach will improve the PMA's disaster management outcomes and serve as a model for other institutions aiming to strengthen their disaster risk reduction efforts.

CONCLUSION

The research findings suggest that the Incident Command System (ICS) at the Philippine Military Academy is highly effective overall, particularly in establishing clear leadership, maintaining organizational structure, and ensuring situational awareness. However, there are opportunities for improvement, specifically regarding activating the Incident Management Team and logistical support. The key issues identified include a lack of training and personnel, all of which impact the effectiveness of disaster management. Addressing these issues

requires a sustained focus on professional development. By prioritizing enhancements in training, personnel, and disaster management tools, the PMA can further strengthen its disaster response capabilities and potentially serve as a benchmark for other institutions.

RECOMMENDATIONS

Based on our research findings, the following recommendations to address the identified issues and boost the effectiveness of the Philippine Military Academy (PMA) Incident Command System (ICS) in disaster risk reduction management is recommended:

1. Enhanced Training and Seminars on ICS: It is vital to develop and implement comprehensive training programs and hold regular seminars focused on the ICS to enhance skills and knowledge.

2. Request the Office of Civil Defense Cordillera (OCD-CAR) to conduct training for ICOW using the Incident Command System listed below.

> a. Basic Incident Command System Training.
>
> b. Position Courses on Incident Command System.
>
> c. Integrated Planning Courses on ICS.
>
> d. All Hazard Incident Management Team Training on Incident Command System.
>
> e. Conduct Training for Instructors (TFI) Regarding Incident Command System if needed.

3. Increased Number of Personnel in ICS: By increasing the strength, we can ensure adequate staffing levels and enhance our team's competency.

4. Regular Policy and Procedure Reviews: It is crucial to conduct regular reviews of policies and procedures, incorporating lessons learned from past incidents and staying updated with best practices in disaster management.

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